FINAL TECHNICAL REPORT

Name of Beneficiary:	**GIA / GURGAON INDUSTRIAL ASSOCIATION**
Asia-Invest Instrument:	**BUSINESS PRIMING FUND - Technical Assistance**
Contract reference no.:	**ASI/B7-301/95/108-142**
Project Title:	**Training Programme for the Industries in Gurgaon, Haryana in India on Preventive Environmental Protection Following the ECOPROFIT Approach**
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Project completion date:	**January 11, 2003** **extended on permission of EC until January 31, 2003**
Period covered by the Report:	**January 2002- January 2003**
Date of preparation of the Report:	**January 31, 2003**

On behalf of the benificary:

Dr. Gerhard Weihs

Project manager, European Counterpart

CENTRIC AUSTRIA

Expression of thanks

The project partners are grateful to the donors of this project, who are the European Commission and the Austrian government.

We further express our thanks to all experts of the partners and staff working in the background. Our special thanks we submit to the highly motivated Indian companies, who made the project with their interest and efforts to a success, at least.

January, 2003

Gurgaon Industrial Association

CENTRIC AUSTRIA

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ANNEXES in separate tapes

Copy of training materials
Sample of press releases
Standard questionnaire for companies (immediate evaluation) filled in
Final financial report

1. Summary

Indian companies are the first in Asia to recieve ECOPROFIT certificate

January 14, 2003 marks the final milestone of a one year lasting training project with Indian companies on cleaner production. 15 companies recieved the so called ECOPROFIT certificate. They are the first in Asia, who achieved this standard.

Under guidance of Austrian experts the successful entrepreneurs have worked hard to improve the environmental performance of their plants. One result are reviewed and updated environmental policies, wherein the companies commit their engagement for the environment in the present and in the future. But the most exiting result is the high number of more than 100 concrete measures, which have been implemented by the companies already during the life time of the project. The lucky entrepreneurs could achieve - mainly through simple improvements based on good housekeeping - annual savings of energy, water, raw materials, etc. with the equivalent of 1.5 million Euros. Their already formulated environmental programme for the near future promises to double this effect.

There is no doubt, that this results are appreciated not only by the companies, but also by the organisers of the project. In year 2001 the Gurgaon Industrial Association, representing about 400 member companies located in Haryana district, which is one of the most developing industrial areas in India near the capital New Delhi, applied together with the European environmental training provider CENTRIC AUSTRIA to the European Commission for co-financing of a Technical Assistance Project within the framework of the ASIA-INVEST Business Priming Fund. The project was selected for funding and could take off in January 2002. The project budget of some 180.000 Euro was co-financed to 65 % by the European Commission, to 22 % by the Austrian Government and to 13 % by the Indian applicant.

The aim of the project was to introduce the Austrian ECOPROFIT approach the first time to Indian companies. ECOPROFIT is a sophisticated tool to implement cleaner production in industries. The most amazing aspect of this management system is, that it gurantees at the same time both, environmental improvements as well as economic benefits for the industry. ECOPROFIT builds upon the concept of Preventive Environment Protection. In simple words: Do not deal with waste and emissions only after they have been produced, but explore all your options to avoid waste and emissions already at their likeley origin in the production process. The methods to achieve this objective are in-depth investigations and evaluations of production processes in kind of material flow and energy stream analysis to identify the weak points, where expensive procured production materials including raw materials, energy and water change their destination and become waste and emissions instead of sellable products. To realise improvement options systemically, ECOPROFIT provides a system of indicators to control processes not only physically, but also in terms of money. Designed as help-for-selfhelp training concept, the involvement of the company's experts and staff members in an environmental team generates motivation, responsibility and creativness in the company. The later is of high importance, as many measures for improvement need good housekeeping and common sense in first instance only.

We all know, that this is easier sayed than realised in practice. Therefore the training project consisted of a number of eight workshops, performed in India, alternatly at one of the sites of the participating companies. The final eight workshop was dedicated to evaluate the achievements of the companies to recieve the ECOPROFIT award. This workshop series was accompanied by personal site visits of the EU experts to the companies to provide know-how on technologies and management skills.

The project partners are convinced that the novel approach could influence the up to now command and control like approach of environmental authorities to foster more self-responsibility of industry. India and many other developing countries bear a huge potential for improvements like demonstrated in this project. A new door has been opened. As it is based on win-win features many followers are expected to enter.

2. Objectives of the project

The overall objective of this ECOPROFIT project was to strengthen both the economic and the ecological situation of the industry within Gurgaon by introducing cleaner production methodologies, environmental management and continuous improvement of the production regimes of companies. According to the project description the terms of reference of the project can be summarised as under:

- To identify and involve in minimum 15 companies of different sizes and branches, who learn throughout the project year the principles of cleaner production, i.e. waste and emissions minimisation in Gurgaon. Another strong emphasis in the project is put on water and energy savings, on management issues and on continuous improvement.
- To increase the efficiency of companies by reducing their demand of raw materials and energy and thus to minimise the environmental impacts caused by industry. Also introduce modern management techniques to the management and the entire staff, which leads to responsible care in production, quality assessment, security for employees, time management and through all these to more competitiveness and higher capacity to contract with European business.
- To conduct eight workshops on the identified relevant topics.
- In-depth evaluation and assessment of the improved environmental performance achieved by the participating companies during the final workshop.
- Certification of successful participating Indian companies with the ECOPFROFIT award.
- To provide individual consultancy and continuous support and guidance to all the participating companies during the project term.
- To train the trainers during the project so that similar projects can be replicated in the future in India.

3. Timetable of implementation

MONTH	PHASE	ACTIVITY	LOCATION	IMPLEMEN-TING BODY
Jan 2002	PREPARATORY	?? Memorandum of understanding between project partners	India	GIA, CA
		?? Co-financing by the Austrian government	EU	CA
		?? Establishing the international project team and personal	India	GIA, CA
Feb 2002		?? Preparatory meeting in India	India	GIA, CA
		?? Final selection of Indian companies	India	GIA
March 2002		?? Fact-finding to participating Indian companies	India	GIA,CA
		?? Internet and purchasing of equipment		
		?? Preparation of training materials	India	GIA
			EU	CA
Apr 2002	TRAINING PHASE	?? First visit of participating companies through the EU expert team	India	GIA, CA
		?? First workshop on Cleaner Production	India	GIA, CA
Apr-Jun 2002		?? Progress and Follow-up on Environmental reports	India, EU	GIA, CA
		?? Second workshop on Environment Team and Environmental Policy	India	GIA, CA
		?? Third workshop on Mass Flow Analysis and Waste Management	India	GIA, CA
Jul 2002		?? Fourth workshop on Energy, Energy Conservation and Energy Efficiency	India	GIA, CA
		?? Second visit of participating companies through the EU expert team	India	GIA, CA
Aug-Oct 2002		?? Progress and Follow-up on Environmental reports	India, EU	GIA, CA
		?? Interim Report to EU in September 2002	EU	CA
		?? Fifth workshop on Management (ISO 9002/14001) Strategies/ Standards, Eco-Controlling and Environmental Indicators	India	GIA, CA
Nov 2002		?? Sixth workshop on Ecological Purchasing, Hazardous Materials, Waste Management And Safety Datasheets	India	GIA, CA
		?? Seventh workshop on Business culture and Environmental laws	India	GIA, CA
		?? Third visit of participating companies through the EU expert team	India	GIA, CA
Dec 2002	POST	?? Final inputs to the Environmental reports	India, EU	GIA, CA
		?? Eighth workshop on Reflection and Evaluation of Policy Performance & Programme	India	GIA, CA
Jan 2003		?? Fourth visit of participating companies through the EU expert team	India	GIA, CA
		?? Certification Ceremony	India	GIA, CA
		?? Final Report submission to EU	India, EU	GIA, CA

3.1. Justification of slight modifications in the actual workplan

Compared to the actual workplan the duration of the preparatory phase was only 2,5 months instead of 4 month. To save time and enable a better implementation it was decided to combine the first visit of EU experts to the Indian companies and the first workshop in one mission to India already in April 2002.

Taking into consideration the special requirements of the participating companies and the emphasis laid down by the ASIA INVEST programme, the schedule of the workshops has been carefully altered and rescheduled. It arised as better for the Indian companies to bloc the workshops 2, 3 and 4 in one week in July 2002 and to combine these activities with a second visit of EU experts at the participating companies.

In the period from begining August till end of October 2002 it was necessary to plan more time for an intensive work done by the participating companies on the Environmental Reports in guidance with the local experts and via email by Austrian experts.

Taking into consideration the special requirements of the participating companies, it was decided to alter and reschedule the agenda of the workshops again. It arised also at that moment as better for the Indian companies to bloc the workshops 5, 6 and 7 in two weeks in November 2002 and to combine these activities with a third visit of EU experts at the remaining participating companies, which were not visited in July.

That was the reason, why the eigth and final evaluation workshop and the certification ceremony could not be scheduled earlier than begining of January 2003 together with a fourth visit of EU experts at selected participating companies with the aim to provide final specific technical inputs to the companies and to dwell upon future plans.

We are grateful to EC for giving the permission to extend the project duration for three weeks.

4. Description of project implementation (activities undertaken)

4.1. Preparatory Phase: January - March 2002

The preparatory phase, originally scheduled with 4 month, could be abbreviated to 2,5 month to save time for the training phase. Some tasks like the procurement of equipment were postponed as appropriate to May 2002, but are reported under this heading.

January 2002 **Memorandum of understanding between project partners**

Based on the EC contract (including specific and general contract conditions) the Indian and European project partners reviewed the project and agreed on their responsibilities and tasks to meet the project objectives the best way. The European counterpart, who is responsible for the financial matters on mandate of the Asian beneficiary submitted to all partners the reporting and accounting requirements.

Co-financing by the Austrian government

The European counterpart applied successfully to the Austrian government for a co-financing of the European project expenditures to balance the budget.

Establishing the international project team and personal

In India as well as in Europe the experts for the project implementation were named in detail (see stakeholders and list of participating companies).

February 2002 **Preparatory meeting in India**

In the last week of February 2002 the leading EU trainers used their presence in India to meet the Indian project partners. The objectives of this preparatory meeting were the detailed introduction of the working programme of the project, the fixing of a detailed time schedule for all activities and the organisational arrangements. The project partners agreed on the following terms:

- Schedule for the fact finding and first visit in April
- Complete detailed working plans for all partners involved
- Draft mailers to be sent to the companies
- Basic information feedback questionnaire to be filled by the participating companies
- Board discussions on workshop materials and logistics planning to be carried out
- Plan for introducing the programme to the local and state authorities
- Selection criteria for the participating companies

March 2002 **Final selection of Indian companies**

Following the selection criteria and to get the most relevant companies to participate,

75 companies were shortlisted out of the 400 member list of Gurgaon Industrial Association. Direct mailers were sent to these companies in the first week of March 2002. For the final selection of 15 participants (see stakeholders), the companies were shortlisted on the basis of relevance to the project, commitment shown by the companies, and their ability, resources and will to take the lead in Gurgaon for ECOPROFIT concept sustainability.

Fact-finding to participating Indian companies & amendation of training materials

The fact finding to the participating companies was carried out in the third week of March 2002. The information on the companies was collected by the project coordinator in coordination with the local experts. The information was then processed and informative company profiles of the participating companies were prepared and forwarded to the Austrian experts by March 25, 2002 by the local experts. On the basis of these company profiles preliminary amendments of the ECOPROFIT training materials, appropriate to needs of companies were made.

Internet and purchasing of equipment

The concept and content of the internet portal was initially discussed in the second week of March. A web designing company Brainstorm Software Solutions Pvt. Ltd. was subcontracted to design and launch the portal by May last week. The finalised name of the Internet portal / website is www.gia-india.com. The website should be completed by EU and ASIA INVEST logos next time.

Quotations for the purchase of a LCD projector and a computer system have been called for and the final decision for the purchase of the equipment was done by the end of the first week of May 2002.

4.2. Training Phase: April - November 2002

Taking into consideration the special requirements of the participating companies and the emphasis laid down by the Asia Invest programme, the schedule of the workshops has been carefully altered and rescheduled (see also 3.1).

April 2002 First visit of participating companies through the EU expert team

Each of the participating companies was visited by a team comprising of two Austrian experts, tow local experts, senior expert and the project coordinator from April 08 to 12, 2002 and April 15 to 16, 2002. The aim of the activity was to have first hand experience of the manufacturing activities being undertaken in the companies, with the basic idea of having one to one discussions for mutual understanding to initiate the ECOPROFIT concept. The visits were a great success as the experts got an insight to the actual situation and got to know the participants well, which enabled them to interact better during the workshops. Also the suggestions made by the experts were very well taken by the companies and some even took immediate actions to make improvements. Also it was felt that the sequence of the workshops

needs to be rearranged looking onto the needs of the companies.

First workshop on Cleaner Production

The first workshop held on April 13, 2002, was organised in the premises of Gurgaon Industrial Association on the topic of Cleaner Production and continuous improvement as basis of successful business principles. Dr. S. S. Kadian, Regional Officer, Haryana State Pollution Control Board, inaugurated the workshop and also appreciated the project concept and encouraged the companies to derive maximum benefits from the project. The workshop comprised of three components – technical presentations by the Austrian Experts, a special performance introduction of all the 15 companies attending by one representative of each company and an interactive session on Cleaner Production -The fun factory – a practical example for waste minimisation and pollution prevention coordinated by the Austrian experts along with the two local experts.

April-June 2002 Progress and Follow-up on Environmental reports

In the period from April 15 till June 15, 2002 intensive work was done by the participating companies on the Environmental Report provided by the trainer team. Continuous follow-up and technical guidance was provided to the companies by the local experts and via email by Austrian experts. Inputs of the reports were then sent to the Austrian experts by June 17 for analysis and their comments.

July 2002 Second workshop on Environment Team and Environmental Policy

The second workshop was held on July 17, 2002 on the topic of Environment Team, Team motivation & Environmental policy. The same was hosted by one of the participating companies Sandhar Locking & Devices, in their own factory premises. This gave the participants attending that workshop an opportunity to tour their premises and learn from their achievements.

Third workshop on Mass Flow Analysis and Waste Management

The third workshop was held on July 19, 2002 on the topic of Mass Flow Analysis and Waste Management. There was a little deviation from the earlier planned topics for this workshop as hazardous waste and ecological purchasing was not included. This would be taken up in the later workshops as the trainers felt that the topic of mass flow analysis is very crucial for all the participating companies and hence needs dedicated time. This workshop was hosted by another very enthusiastic participating company Carrier Aircon India Ltd.

Fourth workshop on Energy, Energy Conservation and Energy Efficiency

The fourth workshop was held on July 21, 2002 on Energy, Energy Conservation & Energy Efficiency. This workshop was highly interactive and presentations were made both by the local and the international experts.

Second visit of participating companies through the EU expert team

The Expert team visited participating companies in the period July 15 to 24, 2002 for the second time. The aim of the activity was to discuss the inputs provided by each

of the company in the Environmental Reports and also to provide individual consulting on potential areas for these companies.

After having the first hand experience of the companies activities in April, which has given the basic idea of the production process, there was a need to undergo detailed industrial process studies of all the participating companies and it was a time consuming task; that is why the second phase of the company visits was divided into two parts: seven companies were visited in July and detailed visit for rest of the companies was kept due for November. The basic idea of the visit this time was to know the exact production process, various input process streams, to find out the standardised process related figures about input as well as output streams, specific consumption at various stages, to know the key figures like energy supply sources, consumption, exact machinery requirements, etc.

The visit was followed by brainstorming sessions with the company project team leader and other team members to discuss their specific process related problems and to suggest them the easy lying options for the improvement in the process (which experts had find out during the visit only) and various utilities of that company. Also the progress of the environmental report was always discussed at the time of the post visit brainstorming session.

Aug-Oct 2002 Progress and Follow-up on Environmental Reports

In the period from beginning August till end of October 2002 intensive work was done by the participating companies on the Environmental Reports under guidance of the local experts and via email of the Austrian experts. Regular inputs of the reports were sent to the Austrian experts by the local experts for analysis and their comments. Also work progressed on the inputs to the website.

Interim technical progress report and interim financial report to EC

These reports covered the time from January 12, 2002 to July 31, 2002 and were submitted to EC in August and with amendements in September 2002.

November 2002 Fifth workshop on Management (ISO 9002/14001) Strategies, Standards, Eco-Controlling and Environmental Indicators

The fifth workshop on November 9, 2002 was held at the Unitech Country Club It covered topics such as Management (ISO 9002/14001) Strategies/ Standards, Eco-Controlling and Environmental Indicators. Various interactive sessions and exercises organised along with the discussions made the sessions much more informative and practical.

Sixth workshop on Ecological Purchasing, Hazardous Materials, Waste Management And Safety Datasheets

The sixth workshop on November 14, 2002 was held at the premises of Denso Haryana, one of the participating companies This workshop focused on Ecological Purchasing, Hazardous Materials, Waste Management and Safety Datasheets. The workshop was inaugurated by senior officials of the company. The topic discussed on

the safety datasheets in this workshop was new to the industries of Gurgaon and thus attracted much interest from the participants and various exercises related to risk management were organised.

Seventh workshop on Business Culture and Environmental Laws

The seventh workshop on November 19, 2002 held at Unitech Country Club, included a much interesting session on Indian Environmental Law, by Dr. D.D. Basu, Senior Scientist- Central Pollution Control Board, New Delhi. The other topics included were Business culture and law, both Indian and European environmental laws. The various potentials for Indian companies for doing business with the European companies were discussed.

Third visit of participating companies through the EU expert team

The expert team visited the remaining participating companies, which they did not visit in July, in the period from November 05 to 22, 2002. The aim of the activity was again to discuss the inputs provided by each of the companies in the Environmental Reports and also to provide individual consulting on potential areas for these companies. In some of the industries the detailed production process was studied with an eye to find out the improvement options and the experts recommended to the project team members a few easy measures of improvements.

Some of the companies were visited specifically to study and assist them on Energy and Mass Flow Analysis based on the information the EU experts had received & analysed while they were in Austria.

4.3. Assessment and evaluation phase: December 2002 - January 2003

December 2002 Final inputs to the Environmental Reports

Although this month is time for festivity and holidays the companies devoted for finalisation of their inputs to the reports and adoption of tools that they had gained from the workshops.

January 2003 Final workshop on Reflection of Policy Performance & Programme

The eighth and final workshop was scheduled on January 13, 2003 in Unitech Country Club, Gurgaon. This workshop included the presentations of the environmental reports by the companies discussing their performance during the project and their future programmes.

Fourth visit of participating companies through the EU expert team

The Expert team visited selected participating companies in the period from January 09 to 11, 2003 for the fourth time. The aim of the activity was to discuss in detail the performance being carried out by these companies as a result of this project, also to provide specific technical inputs to the company and to dwell upon future plans.

Certification Ceremony

The certification ceremony was held on January 14, 2003 at the premises of Gurgaon Industrial Association. The function was attended by not only the representatives of

the participating companies but also by a number of other company representatives, who are members of Gurgaon Industrial Association. The certificates were given away by Mr. Anurag Rastogi, IAS, Deputy Commissioner Gurgaon and Mr. Gerhard Weihs, Managing director of Centric Austria. The function was also attended by Ms. Hengstler, Deputy Trade Commissioner, Austrian Embassy and Mr. B.S. Singroha, Regional Officer, State Pollution Control Board, Gurgaon. The ceremony was extensively covered by the print and mass media. The ceremony was followed by a lunch which enabled the people attending the ceremony to interact with the international experts and also with the officials present in the function.

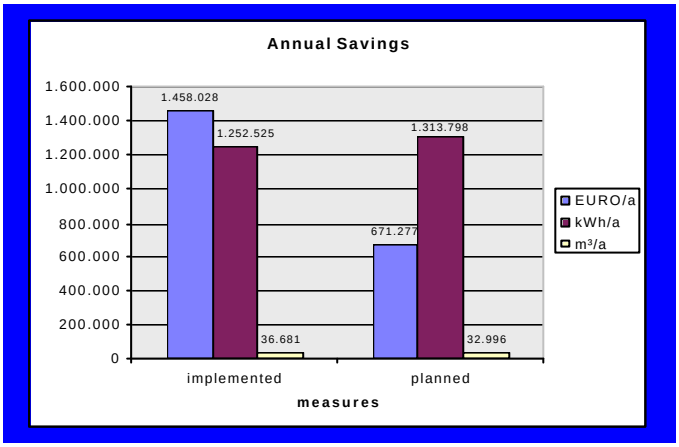
Final evaluation and reporting

The rich outcome of the project (see also chapters 5 and 7 of this report) was reviewed by the local and international expert team and prepared for the final report to EC.

5. Summary evaluation of results achieved by the participating companies

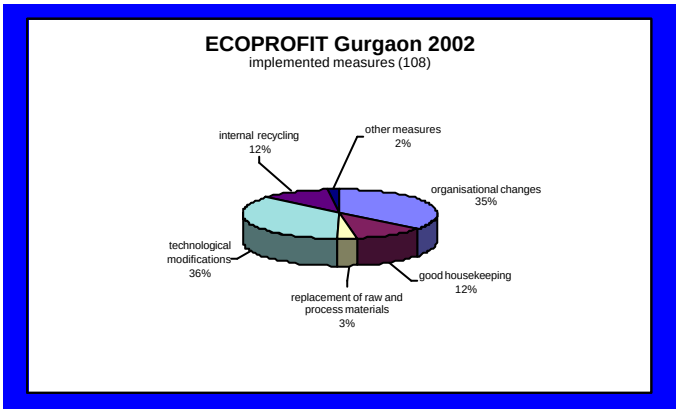
The project aimed on economic as well as ecological benefits. The participating Indian companies could identify under guidance of the EU experts various measures (in total more than 200 concrete measures) of environmental protection and cost reduction through decline in material usage and energy utilisation. The main figures achieved are shown in this chapter.

5.1. Annual savings in EURO, kWh energy and m³ water achieved and planned



The 206 measures identified by the Indian companies during the project have already generated a reasonable number of savings in terms of money, energy and water. The figure shows, that this results will be continued in the near future almost to the double effect.

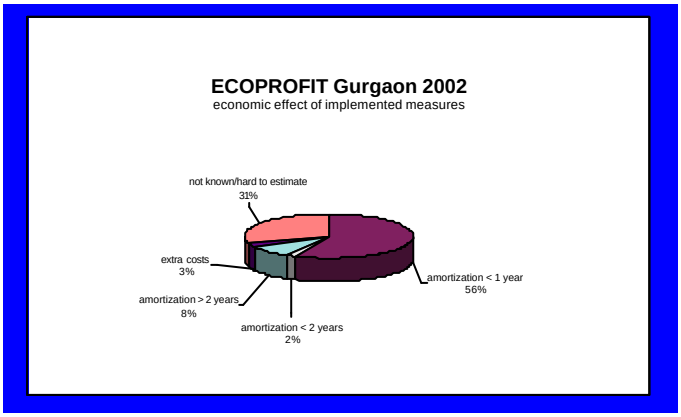
5.2. Types of implemented measures



Almost 50 % of the implemented measures are organisational changes or good housekeeping options like efficient utilisation of daylight. For thes types of measures no investments are necessary.

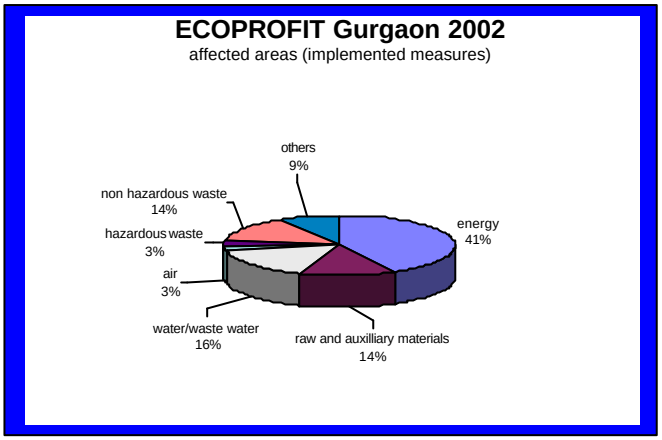
More than 1/3 of all implemented measures are technological modifications like the installation of timer systems, above all for reduction of energy consumption.

5.3. Economic effects of implemented measures



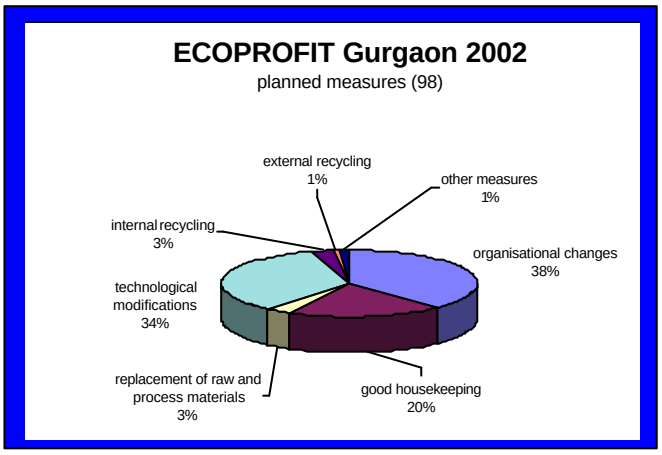
This diagram shows the great success of the Ecoprofit approach: Almost 60% of all measures have an amortisation time below two years and are meaningful from an economic point of view.

5.4. Affected areas of implemented measures



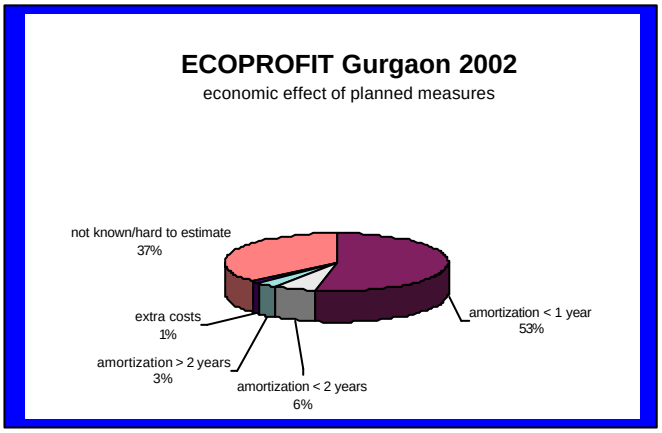
The main focus of the participating companies was to reduce their energy consumption and to optimise the use of water. Further affected topics were non hazardous waste and raw and auxilliary materials.

5.5. Types of planned measures for the near future



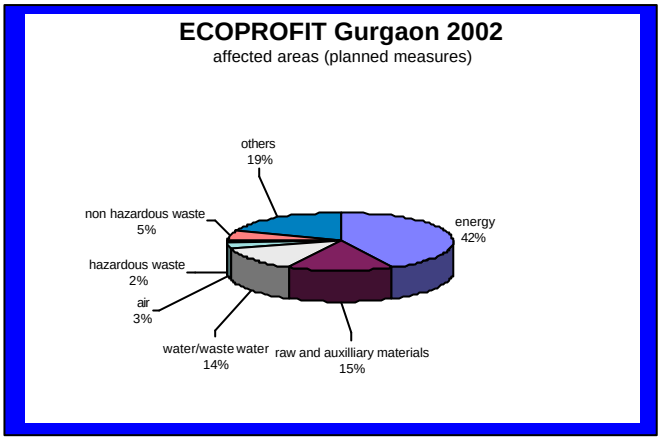
Almost 60 % of the planned measures are again organisational changes or good housekeeping options like training and motivation of workers to switch off utilities, if they are not in operation. This shows that the companies have learned to focus on the easy and simple things. More than one third of all planned measures are technological modifications, mainly for the reduction of energy consumption, which shows the huge potential of improvements in this area.

5.6. Economic effects of planned measures for the near future



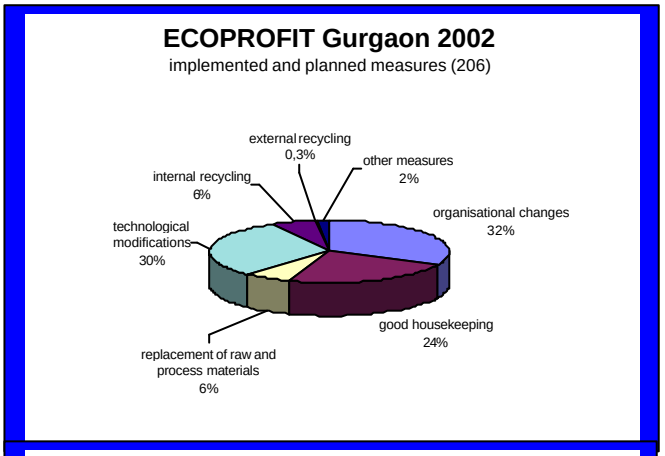
Even almost 60 % of planned measures have an amortisation time below two years.

5.7. Affected areas of planned measures for the near future



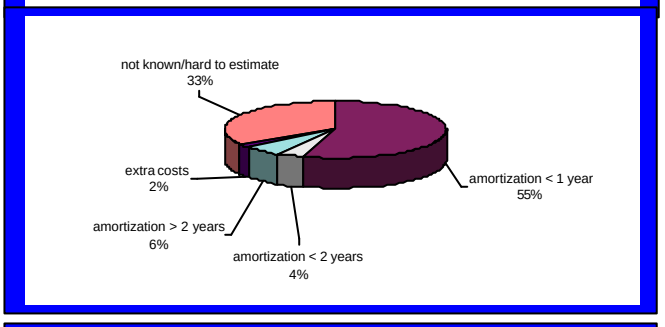
The main focus of the participating companies for the next year is a further reduction of the energy consumption, the consumption of water and of raw and auxilliary materials.

5.8. Summary of implemeted and of planned measures

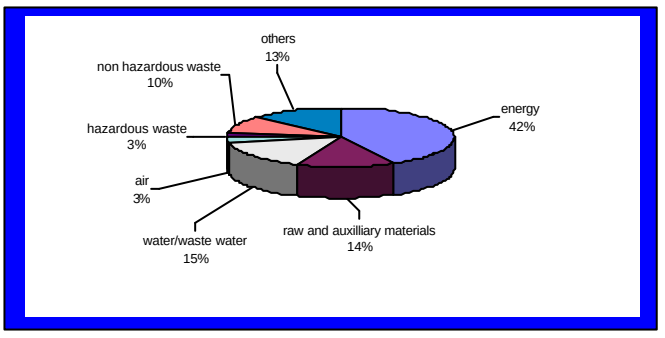


Almost 60 % of all measures are organisational changes or good housekeeping options.

Almost 1/3 of all measures are technological modifications.



Almost 60 % of all measures have an amortisation time below two years.



The main focus of the participating companies was a reduction of energy consumption, consumption of water and of raw and auxilliary materials, because in this areas they can achieve the most economic and ecological benefits.

6. Stakeholders and participating companies

6.1. International project team

Applicant - Asian beneficary	Persons in charge	Role in the project
Gurgaon Industrial Association	Mr. J.N. Mangla	Senior Expert
	Mr. B.K.Methi	Senior Expert
	Mr. K.C. Papereja	Project Manager
	Mr. Ajay Kumar	Project Coordinator
	Mr. Satish Kumar	Administrative Staff

Gurgaon Industrial Association was established in 1966 with a view to discuss the common problems being faced by industries and represent the same effectively with the Government Department and get solution for the same. Further, its objectives include to promote, protect, develop and encourage the industries in Gurgaon. With a mere start with 9 members, today more than 400 companies are its members.

GIA is a service-oriented organisation and its presence in all facets of industrial activities is being actually felt by its members. GIA endeavours to provide to its members as much useful information as possible. The Association organises special programmes from time to time on diverse subjects of interest to the industries.

- Organising Seminars and Workshops.
- Redressal of industrial grievance & settlement of their problems.
- To look after the industrial developments, technological changes & taking care about the political and external forces affecting industrial growth and development.
- Help the government in the process of making industrial policies.
- Organising interactive session with senior Government officials to discuss various issues and tries to solve the problem then and there.
- Strives to take care of social needs and welfare of its members.
- Implementing policies to safeguard the environment from pollution oriented industries and to provide their valuable advices to set right the position.
- Haryana State Pollution Control Board has always sort help from the Association to co-ordinate their environmental programmes in Gurgaon. Accordingly, GIA circulates the message among its members through their newsletter for making them aware of the environment.
- GIA represent in the committees like Regional Advisory Committee and Public Grievance Committee.
- GIA is also a member of State Electricity Board Monitoring Committee.
- GIA is member of Confederation of Indian Industries and the President is convenor of Small Industry panel of Haryana State Council of Confederation of Indian Industries.
- GIA is member of PHD Chamber of Commerce & Industry.

With this project, which introduced the first time innovative environmental management systems to a selected number of their member companies, GIA expects the begin of a campaign in Cleaner

Production in Gurgaon.

EU Counterpart	Persons in charge	Role in the project
CENTRIC AUSTRIA Association	Dr. Gerhard Weihs	Project Manager
Management Unit	Mrs. Lydia Kampl	Administration
CENTRIC AUSTRIA Member	Dr. Johannes Fresner	Leading Trainer
STENUM	Dr. Thomas Dielacher	Leading Trainer
	DI Christian Angerbauer	Trainer
CENTRIC AUSTRIA Member	Ms. Parul Sood	Local expert
Green City India	Mr. Lalit Sharma	Local expert
	Mr. Navinder Singh	Local expert

CENTRIC AUSTRIA Association – Center for Environmental Training and International Consulting - was founded in November 1997 as a registered non-profit association according to Austrian law. After a preparation and pilot period activities started in October 1998. By now CENTRIC AUSTRIA has dozens of members and partners and can refer back to hundreds of experts with technical, scientific, commercial, legal and public background in the fields of environment, energy, water, waste water and waste. The main purpose of the association consists in uniting competences and experiences of our members and partners, to act competitive with a critical size on the international market. Main business fields are training and consulting and similar technical assistance services, which are provided tailormade for the requirements of the international clients. An organisation represented like CENTRIC AUSTRIA enjoys the charm of plurality – a feature which is thought highly of, especially in the fields of training. Competences of members in a synergetic form are usually better fitting for training and consulting projects.

The permanent expert pool can be complemented by further partners at any time to provide further special know how and to rounden up the professional concept on the particular project level. CENTRIC AUSTRIA acts as a non-profit-making organisation with the mission of a long term embodiment of the service possibilities of its members for their target customers in the new markets. In the actual project mainly the two permanent member expert companies STENUM and Green City India were involved.

?? STENUM is an innovative training and research company with a strong emphasis on preventive integrated energy and environmental concepts with the result of effective saving for the companies.

?? Green City India is a local Indian consulting firm and a permanent member of the European counterpart CENTRIC AUSTRIA. GCI was associated with the project by contributing technical experts to assist the international experts, who in the process have been trained for the future implementation of the concept in cooperation with the Gurgaon Industrial Association.

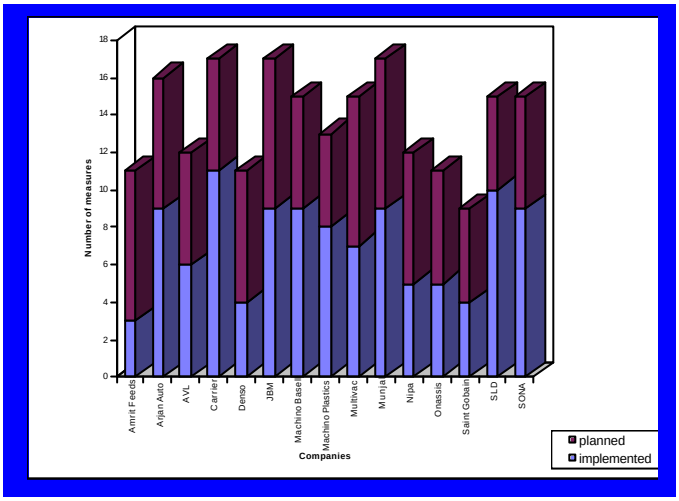
6.2. Participating Indian companies

The following listed 15 Indian companies were selected for active participation in the project out from a shortlist of 75 companies, proposed by the Indian applicant from its 400 member companies.

For more details to each company see chapter 7, which provides company profiles of each company. Addresses and further contact details are given in the Annex of this report.

Name	Branch	Emplo-yess	Main concern
AMRIT FEEDS.	Livestock Feeds Manufacturer	10	Optimal Raw Material Handling
ARJAN AUTO PVT. LTD.	Auto Accessories Manufacturers	85	Optimal Energy Utilisation
AVL INDIA PVT. LTD.	Pollution Monitoring Instruments	125	Optimal Energy Utilisation
CARRIER AIRCON LTD.	Air Conditioners Manufacturer	350	Optimal Energy Water & Power Paint Utilisation
DENSO HARYANA PVT. LTD.	Essential Auto Components	300	Optimal Energy Utilisation
JAY BHARAT MARUTI LIMITED.	Auto Accessories Manufacturers	1100	Optimal Energy & Row Sheet Metal Utilisation
MACHINO – BASELL INDIA LTD.	Auto Accessories Manufacturers	122	Optimal Energy & Water Use
MACHINO PLASTICS LTD.	Auto Accessories Manufacturers	75	Optimal Energy & Raw Material Utilisation
MULTIVAC INDIA PVT. LTD.	Auto Accessories Manufacturers	54	Optimal Polyurethane Raw Material & Energy Utilisation
MUNJAL SHOWA LTD.	Auto Accessories Manufacturers	1002	Optimal Energy, Paint Shop & Plating Process Utilisation
NIPA INTERNATIONAL (P) LTD.	Manufacturing Light-engineering items.	160	Optimal Plastic Raw Material Utilisation
ONASSIS AUTO PVT LTD.	Auto Accessories Manufacturers	100	Optimal Energy & Raw Material Utilisation
SAINT GOBAIN DIAMANT LTD.	Manufacturing Stone Cutting Tools	165	Optimal Energy & Water Utilisation, Paint Shop
SANDHAR LOCKING DEVICES.	Auto Accessories Manufacturers	126	Optimal Energy & Moulding Shop
SONA OKEWAGA PRECISION FORGINGS LIMITED.	Auto Accessories Manufacturers	100	Energy. Material Use, Waste, Storage

7. Detailed evaluation of results achieved by the participating companies



The 15 participating companies have identified during the project in total 206 concrete measures. About 52 % of these measures have been implemented already. 42 % are planned measures for the next future, which means the coming next year. The figure shows the distribution amongst the participating 15 Indian companies.

In the following chapters the participating companies and their achievements are reported in more detail. Information consists to each company of:

?? Profile of the company

?? Environmental policy (reviewed and new formulated during the project)

?? Environmental performance (implemented measures during the project life time)

?? Environmental programme (planned measures for the near future)

7.1. AMRIT FEEDS

Company profile

?? Number of employes: 10

They mainly produce all kind of cattle feed, poultry feed and concentrates. Established in 1989, they are supplying their product in Punjab, Haryana, Rajasthan and Delhi.

The production capacity of the unit is about 7- 8t/ day of which the waste % is negligible, about 0.5%that too majorly in the form of dust particles which are not being collected. They are leading manufacturers of cattle feed and duck feed and now also diversifying into horse, rabbit and pig feed. The feed they use is mainly of two types, concentrate- i.e. without carbohydrates and the other is mashed- i.e. with carbohydrates.

The only kind of rejection is the material damaged due to moisture or weather change that results in the growth of fungus or bacteria. This feed remains good only for the poultry as the fungus leads to a change in color and foul smell in the feed.

?? Areas for improvement: dust, moisture, raw material use, workers care

Environmental policy of Amrit Feeds

- ?? Importance to clean and pollution free working conditions
- ?? Pollution free surroundings
- ?? Awareness among the neighbouring industries
- ?? Seminars and meetings on the awareness on clean and green environment

Environmental performance of AMRIT FEEDS (implemented measures in 2002)

Description of the measure	annual reduction / use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	absolute	%	further use	Savings (Rs / a)	Invest. Costs	When realised?
Use of two planks for loading and unloading to reduce time for transportation and to improve workers care	time for loading	32	hrs/a	16	50	improvement in workers care	2700	1200	December, 02
Installation of three bulbs as indicator for low voltage to optimize energy consumption and prevent the damage of the grinder motors	electricity/ maintainance costs	20350	kwh/a	1020	5	improvement in efficiency of motors	5000	150	October, 02
Reduction in the Gunny Bags used in the packing of the finished goods	packing material	30000	bags /a	1500	5		40500	nil	July, 02

Environmental programmeof AMRIT FEEDS (planned measures for the near future)

Description of the measure	annual reduction / use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	absolute	%	Further use	Savings (Rs / a)	Invest. Costs	who	till when?
Material Loss Reduction: Training of employees in handling and storage of raw and auxiliary materials	raw material which goes as waste	1,8	t/a	0,036	2	material saving	400	nil	Rajan	Jun, 03
Efficient utilization of daylight: motivation of employees to switch off lights, Installation of modern tube lights with reflectors, cleaning of glasses and windows	electricity	20350	kwh	1018	5	energy saving	5000	nil	Rajan	Jun, 03
Training and awareness of employees in using energy: switch off of utilities if they are not in operation	electricity									
Installation of a transparent cover on top of the mixer	dust which goes as waste	180	kg/a	45	25	improvement in workers health	500	1500	H.K. Khera	Feb, 03
Installation of a dust collector system to reduce raw material losses	dust which goes as waste	180	kg/a	18	1	improvement in workers health	200	10000	H.K. Khera	Feb,03
Improvement in workers care: training and motivation of workers to ware dust masks or cloths	workers care/ costs for accidents	10000	Rs/a	3000	30	improvement in workers health	3000	1000	Rajan	Continue
Fuel Injector Calibration at dg-set	diesel	2400	L	600	25	Smoke Reduction	11000	NA	H.K. Khera	Aug, 03
Proper storage and handling of hazardous materials like diesel: Storage in a seperate section over a tray, labeled and protected against damage	land contamination	-	-	-		proper utilization of diesel	intangible	5000	H K Khera	March, 03

7.2. ARJAN AUTO PVT. LTD.

Company profile

?? Number of employees: 85

Arjan Auto started in 1990 in Gurgaon with the production of sheet metal components like padels for the automobile sector. Their main clients are Maruti, Honda and Mitsubishi.

They also supply sheet metal parts to other suppliers.

The main activities are stamping (press work), welding, tool maintenance and assembly.

The company is taking care about the quality of their products and is therefor running ISO 9001. One next target is to implement ISO 14001 and ISO TS 16949.

?? Areas for improvement: dust, noise, storage of chemicals, energy use, raw material use (scarp)

Environmental policy

Arjan Auto manages its activities, products and services in an environmentally friendly manner, by setting and achieving environmental objectives. The management is committed to:

?? Minimisation of pollution and optimal utilisation of natural resources by adoption of economically feasible best practices

?? Compliance to related legal and regulatory requirements

?? Continually improving the environmental performance of the company

?? Encouraging all employees to contribute to the policy through training and awareness

This policy is reviewed and updated periodically, and made available to all interested parties.

Environmental performance of ARJAN AUTO (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure	what	basis	unit	absolute	%	further use	Savings (Rs/a)	Invest. Costs	When
Use of water from hand wash area for toilet flushing in workers toilets. This has resulted in saving of approximately 400 litres of water every day	water	854	m^3	120.0	14	-	3600	14000	08/02
Continuous measurements on welding wire to optimise consumption	welding wire	3.7	Rs/m	0.2	5	-	3600	0	07/02
Continuous measurements on shielding gas to optimise consumption	shielding gas	3.9	Rs/m	0.5	12	better air quality	9000	0	07/02
Separate storage area for different kinds of waste such as Oils, Cardboard boxes and Plastic. Now we are looking for organisations that will recycle these materials, so we will not need to discard to the Municipal waste areas.	mixed waste	300	kg	50.0	15	-	-	2500	Ongoing

Optimisation of rust removal process to reduce the chemical consumption for the same treatment surface area	rust remover	100	Rs/ m³	5.0	5	improvement in workers care	4800	3000	10/02
Use of hand gloves and goggles for weld penetration checking	workers care	-	-	-	-	-	-	-	12/02
Optimisation of rust removal process by changing to cleaning in Vibro-deburring machine	rust remover	805	Lt.	805	100	Emissions	537200	100000	12/02
Replacement of two Halogen lamps (700W) with seven tube lights (280W) better arranged near press machines in Press Shop	electricity	700	W	420	60	Safety - better illumination near machines	950	1400	12/02
Formulation of Environmental Policy for the company	Awareness	-	-	-	-	Conveys commitm.	-	-	12/02

Environmental programmeof ARJAN AUTO (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibility	
short verbal description of the realised measure	what	basis	unit	absolute	%	Further use	Savings (Rs/a)	Costs	who	when
Use of an environmental friendly cleaning agent for toilet bowl cleaning instead of Acid	acid	15	lt.	7.5	50	improvement in workers care	100	-	RST	02/03
Training and awareness of more people in the organisation	Awareness	-	-	-	-	morale	-	-	RST	12/03
Detailed study on energy analysis at a spot welding machine	energy	6.3	MW/a	0.6	10	lower connected load	2500	5000	Mdl	04/03
Proper storage and handling of hazardous materials like oil: Storage in a separate section over a tray, labelled and protected against damage. Proper disposal	hazardous materials	200	lt.	-	-	-	-	4000	RST	03/03
Detailed study on Material flow analysis in Press Shop	Steel scrap									
Continuous improvement in use of sheet steel and steel pipe products to minimise scrap quantity: Optimisation of design of the dies and/or the shape of steel sheets. Training and motivation Indicators on a daily basis (by weighing).	Steel scrap	147	T	3	2	improved quality	40000	10000	Mdl	05/03
Automatic control (on/off) for DG set	diesel	31600	lt.	4700	15	reduction of emissions	80000	25000	RST	02/03
Optimisation of the stack height of DG-set to reduce direct emissions	emissions	-	-	-	-	regulatory compliance	-	~10,000	RST	01/03
Optimisation of dg-set building to reduce noise level	noise	-	dB	-	-	regulatory compliance	-	n.a.	RST	06/03
Efficient utilisation of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows	electricity	2.3	MW/a	0.57	25	lower connected load	2,400	5,000	RST	03/03
Improvement in waste separation	mixed waste	300	kg	150	50	-	-	-	RST	05/03
Optimisation of the pressing machines to avoid injuries	workers care	-	-	-	-	-	-	25,000	Mdl	05/03
Optimisation of welding wire used per meter of welding length	welding wire	3.5	Rs/m	1.5	43	-	27,000	8,000	AKV	06/03
Optimisation of shielding gas quantity at the weld shop	shielding gas	3.4	Rs/m	1.0	29	improved air quality	18,000	10,000	AKV	06/03

7.3. AVL INDIA PVT. LTD.

Company profile

?? Number of employees: 125

AVL India Pvt. Ltd. is a joint venture with AVL List GmbH, Graz, Austria, and is an ISO 9001 certified company. AVL List GmbH, Graz, Austria is the worlds largest private owned and independent company for the development of power train systems with the internal combustion engines, pollution monitoring equipment as well as engine instrumentation and test system. AVL India Pvt. Ltd. was incorporated in 1984 with the objective of marketing and providing after sales services to equipment sold by AVL Austria to India. Till 1992 all equipments needed for vehicle pollution monitoring, fuel economy, instrumentations and test systems for engines/vehicles were imported in India. AVL India Pvt. Ltd. started production of these equipment in 1992 at their manufacturing facility in Udyog Vihar, Gurgaon, Haryana. This manufacturing facility is rated as per with those of AVL Austria.

AVL India Pvt. Ltd. has a 100 % export oriented software development unit namely AVL India Software Pvt. Ltd engaged in development and export of state of art software for instrumentation and engine test systems. AVL India Pvt. Ltd. is also setting up an AVL Technical Center Pvt. Ltd. for development and improvement of engines, which shall be operational very soon.

The main activities of AVL comprise the following: Engine Test Systems and Instrumentation. Equipment for pollution monitoring and fuel saving. Powertrain Engineering. AVL India Pvt. Ltd. is a leading manufacturers of Diesel Smoke Meters, Petrol Exhaust Gas Analyzer, computerized state of art pollution monitoring system for diesel and petrol vehicle (temper proof PUC centers) and other engine diagnostic equipment. AVL products are approved by the test agencies like ARAI, Pune and IIP, Dehradun as per latest guidelines issued by the Ministry of Road Transport and Highway (MORH). AVL products are being used by various Research Organization, Transport Undertakings, Pollution Control Boards, Private Garages, Fleet Owners, Automotive Manufacturers, Engineering Collages etc. They have 1500 Installations all over India performing to the utmost satisfaction of the users through their network of service centers at Banglore, Calcuta, Chandigard, Chennai, Delhi, Gurgaon, Kochi, Luchnow, Mumbai, Pune and Secunderabad manned by company trained engineers to provide effective service in case the need arises.

?? Areas for Improvement: Lighting, energy use

Environmental policy

"We are committed

?? to provide products & services of high quality and reliability

?? to fulfill customer requirements

?? through continuous improvement of our processes,

?? which would not have adverse impacts on the environment."

Environmental performance of AVL INDIA (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Investm. Costs	When realised?
Optimization in storage of products(Reduction of Screen Printing rejection due to delay in packing and lack of proper handling.)	scrap	18	piece/ annual	8	45		2000	0	30/11/2002
Rework of scrap (Trolley Legs of instruments scrapped from customers ends.)	scrap	7,0	piece/ annual	7,0	100		2765	1400	30/11/2002
Rework of scrap (Rubber hoses of instruments scrapped from customers ends.)	scrap	7	piece/ annual	7	100		18480	7420	26/01/2002
Rework of scrap (Power supply of instruments scrapped from customers ends.)	scrap	13	piece/ annual	13	100		33455	5000	30/11/2002
Rework of scrap (Transformer supply of instruments scrapped from customers ends.)	scrap	5	piece/ annual	5	100		1450	0	15/09/2002
Optimisation of the Air Conditioning units in the Offices Areas by setting their temperature at 26 °C instead of 22°C, which gives out the savings in terms of electicity reduction.	electricity	41400	kwh/a	6624	16		28480	nil	19/07/2002

Environmental programmeof AVL INDIA (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	absolute	%	Further use	Savings (Rs/a)	Investm. Costs	who	till when?
Improvement in illumination by replacing existing reflectors by mirror optics reflectors and hence reduction of unwanted tube lights & Providing separate switches for different work stations in production area.	electricity	16896	kwh/a	10770	64		46311	250000	Mr. Vinod Sharma/M R. SDS	June,03
Instalation of the Electronic Balast Unit in all existing tubelights in Maintenance and Production room as a result there are direct savings in terms of electricity	electricity	62400	kwh/a	7488	12		32000	10000	Mr. Kapoor (Material)	July,03
Replacing all existing taps of wash basins by push type taps in all the the toilets	water	400	m^3	200	50	Electricity Saving	intangible	NA	Mr. SDS/Mr. Yadav	May,03
Maintaining room tempreture 24 Deg C instead of existing 22 Deg C in the Production area.	electricity	276000	kwh/a	5520	2		23736	nil	Mr. Vinod Sharma	Apr,03
Switching off condensor pumps & Cooling tower fan automatically, when compressor of AC plant is not running	electricity	36000	kwh/a	7200	20		30960	2500	Mr. Vinod Sharma	Apr,03
Motivation to employees to switch off the lights during when not required.	electricity	60000	kwh/a	6000	10		25800	nil	Mr. Yadav	Jan,03

7.4. CARRIER AIRCON LTD.

Company profile

?? Number of employees: 350

Indian Summers have never been the same since 1988, when Carrier first introduced its products to the Indian consumer. Carrier started its operations in India with the setting up of Carrier Aircon Limited in 1987. Its competitive advantage lay in the fact that for the first time, the Indian consumer was provided access to advanced technology and air-conditioning products from the worldwide product portfolio of Carrier. Carrier Corporation & Carrier Mauritius International Ltd. owns more than 86% of the equity in Carrier Aircon Limited, India. By virtue of this 86% holding by Carrier Corporation & Carrier Mauritius, Carrier Aircon Limited is guaranteed a steady stream of technologically advanced air-conditioning products from the Carrier worldwide products portfolio - an advantage that no competitive air conditioning company can match. Carrier Aircon has many firsts to its credit:

?? First air-conditioning company to introduce the concept of a Comfort Shop.

?? First to develop exclusive dealer networks in the country. Today, there are over 400 Carrier Aircon exclusive dealers and 60 Carrier compressor dealers in India.

?? Setup the Willis Carrier Engineering Center to provide technological support to develop new products and upgrade existing ones.

?? Introduced finance schemes that have taken air-conditioners out of the luxury category and made it affordable for the home buyer.

Gurgaon operations are spread across 20 acres having full-fledged manufacturing facilities starting from compressors, windows splits and chillers supported by strong R&D facility. The Corporate office is also located in the same campus that gives Carrier fast and effective control over the product decisions.

Carrier produces in Gurgaon compressors, chillers, and window chillers. Approximately 60% of the parts used are bought from vendors. The company has an integrated management system. Key company strengths are the integration of health and safety, environmental and quality considerations and the strive for continuous improvement. The contractors are equally involved in the quality management system and the training scheme of Carrier.

?? Areas of improvement: pressurized air, scrap, storage of raw materials and products, segregation of waste, material use, water use, air conditioning, energy consumption

Environmental policy

Carrier Aircon is committed to provide its employees a work place safe from recognised Occupational Health and Safety hazards and ensuring adequate protection of natural environment. This Policy will apply to all our organization and will encompass the following fundamental principles:

?? To comply with relevant national laws and the policies and standard practices of the United Technologies Corporation;

?? Demonstrate leadership in the introduction and promotion of products for all market segments that utilize environmentally safe refrigerants;

?? Eliminate Ozone Depleting Substances (ODS) from our products at least one year before Montreal Protocol;

?? To establish and review Environmental, Health & Safety (EHS) goals and make them integral parts of our business plan and demonstrate to continually improve our environmental, occupational health & safety performance;

?? Minimize pollutants in manufacturing processes to the best practicable levels and prevention of pollution;

?? Optimize natural resources in the design, manufacture, use and disposal of products and delivery of services;

?? Commitment of the means and resources necessary to direct, support, monitor and maintain accountability for EHS performance;

?? Integrate EHS in new product development and influence contractors and suppliers to improve EHS performance.

“Working together for a better world - inside and outside!"

Environmental performance of CARRIER AIRCON (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
A CLOSED WATER CYCLE FOR THE COOLING OF THERMOPACS: REUDCTION IN WATER CONSUMPTION BY 5%	water	30000	m³	1500	5		375000	n.a.	June, 02
PROVISION OF GRAVITY FLOW HSD TANK FOR D.G.SET: SAVING OF HSD 100 LITRE/MONTH (HSD OVERFLOW PROBLEM THROUGH PRESSURISE SYSTEM)	diesel	303000	L	1200	0		21276	n.a.	April, 02
INSTALLATION OF AUTO FLOAT SYSTEM IN DRINK WATER TANK: REDUCTION IN WATER CONSUMPTION BY 10%	water	30000	m³	3000	10		750000	125000	June, 02
MODIFICATION IN HAIR PIN BENDING MACHINE: INCREASE THE M/C EFFICIENCY BY 50%(4 CU TUBES TO 6 CU TUBES)	electricity	n.a.	kwh/ piece	n.a.			n.a.		May, 02
EFFECTIVE P/M & CLOSE MONITERING OF D.G.SET INCREASE THE EFFICIENCY BY 3.1UNIT/LITRE TO 3.25UNIT/LITRE	diesel	303000	l/a	15150	5		287000	nil	Dec, 02
SAVING OF HSD (200LITRE/DAY) BY PROVIDING SMALL D.G.SET FOR NIGHT LIGHTING (62.5KVA w.r.t. 400KVA)	diesel	303000	l/a	30300	10		500000	n.a.	Dec, 02
SAVING OF MACHINES HYD.OIL APPROX. 2500 LITRES: THROUGH OIL FILTERATION SYSTEM ,GET CONTAMINATED FREE OIL.	hyd. oil	7500	l/a	2500	33		120000	10000	July, 02
PREVENTION OF LAND CONTAMINATION: PROVIDING SECONDARY CONTAMINATION TREYS FOR HSD TANKS ETC.	land contamin-ation	-	-	-	-		n.a.		Dec, 02
ENHANCEMENT OF STATE ELECT.BOARD SUPPLY(950KVA TO 1900 KVA) : SAVING OF RS. 1.25 / UNIT (APPROX.UNIT CONSUME/MONTH 4.5LKACS) S.E.B.UNIT COST RS.4.30 & OWN D.G.GENERATION COST RS.5.50	electricity costs	-	-	-	-		562500	nil	July, 02
Maintainance of compressed air system. Fixing of 44 leaks	electricity	n.a.	kwh/a	n.a.			n.a.		July, 02
Instalation of the Photoltic Sensor in their Maintanence Shop for day light utilisation	electricity	2331657	kwh/a	18650	0,8		93250	2500	July, 02

Environmental programmeof CARRIER AIRCON (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Improvement in use of coolant: black oil separation with oil skimmer and filtration to optimize the time of use (20 weeks)	coolant	14500	L	12200	85		621000	nil	Mr. Kapil	Dec, 02
Energy analysis and Audit to be conducted in Production area - I, to reduce the energy consumption	energy	932600	kwh/a	139800	15		700000	120000	Mr. Manoj	July 03
Proper storage and handling of hazardous materials like oil: Storage in a seperate section over a tray, labeled and protected against damage	land contamin-ation	-	-	-	-		n.a.		Mr. Kapil	Dec, 02
Optimization of paint shop: Material flow analysis on powder paint.	powder paint losses	8420	kg	2024	25		265877	-	Mr. Kapil	Dec, 02
Optimization of water use by reuse of water, analysis of water streams (with pintch technology)	water	65400	m3/a	6540	10		1635000	-	Mr. Manoj	May 03
(1) Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows. (2) Installation of timer systems to reduce unnecessary energy consumption (3) Training and awareness of employees in using energy: reduction of compressed air leakages , switch off of utilities if they are not in operation (4) instalation of the specific timers on the specific machines to avoid the energy losses and to inspect the workers performance	Electricity	2331657	kwh/a	116580	5		582000	150000	Mr. Arun Prakash - Mr. Kapil Sardana	September, 03

7.5. DENSO HARYANA PVT. LTD.

Company profile

?? Number of employees: 300

Denso Haryana Pvt. Ltd. (DNHA) is a 100% subsidiary of DENSO CORPORATION, Japan, and is the first company in India to produce Gasoline Engine Management Systems. Company is backed by DENSO's strong R & D base and latest technology. With the strength of over 200 team members, DNHA is a well-represented community of individuals from all parts of the country. DNHA incorporated under the Company's Act, 1956 in August 1997 and since then they started concentrating on their work and just with in two year of their incorporation they had a first consignment to Maruti Udyog Limited in November, 1999 and since then started the commencement of commercial production for the automobile industry. Within two years of start DNHA has started going for the Environment Protection Activities. Thus there is no doubt to it that at DNHA, environment is a priority and the products aims at marking the world a safer and a healthier place to cohabit.

To make sure that their production system runs with clockwork precision DNHA has made concepts of TPM, etc., as a part of their daily life. Even more the systems are managed by dedicated Maintenance and Qualitry Assurance team members who ensure100% Quality and Customer satisfaction. DNHA is

also in process of obtaining QS 9000 and ISO 14000 certification as an integral element of ongoing efforts to ensure that the product quality meets world standards.

The various areas of manufacture are:

?? Electronic Control Unit (ECU): - which stores information of abnormalities of sensors and actuators in its memory and display to enable failure diagnosis.

?? Fuel Pump: -operates through a circuit opening relay, consisting of coil and one contact point. When the current flows through the coil, the contact point turns ON and the fuel pump is electrified.

?? Ideal Speed Control Valve: - controls the speed of engine in ideal condition to save fuel as well as reduce emission of harmful gases by controlling the opening of the air bypass passage for controlling airflow.

?? Injector: - The most precious part made by DENSO by providing all the essential conditions for the manufacturing unit which ion itself is a task to achieve. It is an Electro-magnetically operated nozzle that injects fuel, based on a signal from the ECU.

Their main clients are Maruti and Hero Honda.

?? Areas for improvement: Lighting, water consumption, air conditioning

Environmental policy

We, at DENSO HARYANA PVT. LTD., as a manufacturer of Engine Management System components are involved in environmental protection through our activities and products. We, are committed to continually improving our Environmental performance by

?? Creating organizational awareness about the importance of environment protection

?? Complying with applicable environmental legislation, regulations, standards & guidelines.

?? Minimizing waste generation and by promoting recovery, recycle and reuse of resources.

?? Conserving Energy through optimizing resource usage.

Environmental performance of DENSO HARYANA (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Installation of Exhaust Gas Boiler (EGB) – The Boiler uses the energy or heat of the exhausts for heating the water to produce steam	diesel	2678400	l/a	2678400	100	less emissions	42854400	5000000	April , 02
Change of gardening times for efficient use of water for gardening	water	40515	m3/a	2026	5		506500	nil	July , 02
Installation of timer (time schedule for Photovoltic sensor) for illumination	electricity for lightning	1739000	kwh/a	34780	2		173500	n.a	May, 01
Optimization of A/C: Switch off during night	electricity	869866	kwh/a	17397	2		87000	nil	Oct, 02

Environmental programmeof DENSO HARYANA (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Reduction of polythene Scrap: reduction of the thickness of polythene packing sheet	polythene Scrap	3900	kg	750	19		41250	nil	NARENDER MEHRA (PCD)	2003 march
reduction of cardboard scrap: introducing returnable plastic packing	cardboard scrap	63350	kg	1800	3	reuse	NA	nil	do	2003 march
reduction of plastic/ steel scrap: return of plastic pellets, brush sticks & steel bars to vendor for reuse	plastic/ steel scrap	14600	kg	2100	14	reuse	NA	nil	do	do
green purchase: initiate EMS at supplioers facilities: suplier	hazardous	-	-	-	-		NA	nil	Praveen Bhat	2003-2004

7.6. JAY BHARAT MARUTI LTD.

Company profile

?? Number of employees: 1100

Jay Bharat Maruti Limited, set up in 1987, is a joint venture of Maruti Udyog Limited (MUL) with about Rs. 1136 million fixed assets. The plants are equipped with state of art technology, in Metal Forming and Welding. The plants are unique combination of modern Press Shop and Weld Shop capable of supplying components, Just-In-Time, meeting customer's quality and quantity requirements.

The company is producing varied range of Sheet Metal components and Welded Sub-assemblies such as; Front Under Bodies, Rear Under Bodies, Member Assembly Rear Floor, Fender Assembly and exhaust system for various models of Maruti Udyog Limited; all Cabin Skin Panels for LCV of Eicher Motor Limited; Front grill for HCV of TELCO; Longitudinal Members, Cross Members, Floor Panels and Wheel Housings for JBM Auto Component Limited; Engine Hood for Farm Track Tractors of Escorts Limited, Front Dome for Greaves Limited, Exhaust Systems Parts for Delphi Automotive Systems Limited and Mufflers for Honda Motors & Scooter India Ltd.

Owing to company's policy of continual improvement, use of latest manufacturing technologies, establishing effective quality management system, continually improving employee skills, JBML has constantly been upgrading and improving company's resources.

?? Areas for improvement: Workers care, pressurized air, exhaust air, lighting, noise, scrap

Environmental policy

Jay Bharat Maruti Limited, engaged in manufacturing of sheet metal components, welded sub assemblies and exhaust systems for automotive applications, re-affirms its commitments to minimise the adverse impacts of its operations on the environment. To this end,we shall endeavor to:

?? Develop and maintain an Environmental Management System and continually monitor,set and review the environmental objectives and targets.

?? Meet all applicable environmental legislations, regulations and customer requirements.

?? Conserve natural resources and energy by constantly seeking to reduce their consumption / wastage and maximise their recycle / reuse.

?? Minimise / prevent air ,water,noise and land pollution generated from our activities

?? Maintain a system for hazard waste management

This policy shall be communicated to all the employees of JBML and be made available to public and all interested parties on demand.

Environmental performance of JAY BHARAT (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Timers provided for lights in shop floor and fan centerlisation (6 timers installed)	electricity	6140000	kWh/ annum	70000	1,14	less genration	315000	4000	September, 02
Transformers lowered down to reduce the size of kickless cables	electricity	6140000	kWh/ annum	55000	0,9	less genration	247500	NA	November, 02
1. Product no. N-14251, length of the input pipe reduced by improving bending opn.	scrap	200	mm/ pipe (1 veh.)	48	24	use in product	411000	nil	July, 02
2. Product no. R-14132, length of pipe reduced	scrap	166	mm/ pipe (1 veh.)	42	25	use in product	312000	nil	July. 02
3. Product no. R-14260, length of the pipe reduced	scrap	695	mm/ pipe (1 veh.)	50	7	use in product	390000	nil	July, 02
3 forelifts removed, replaced by battery operated ones	diesel	63000	l/a	31500	50	smoke reduction	598500	15000	November, 02
Reduction in the water consumption by various environmental awareness programme	water	65100	kl/a	8463	13	resource reduction	2115750	nil	June, 02
Optimization of the cooling system (pipes) to reduce water losses	water	3,8	kl/day	1,6	50	resource reduction	57000	10000	June, 02
System modification to avoid wastage of compressed air during cushion adjustment	electricity	6140000	kWh/ annum	20667	0,3		93000	NA	Oct, 03

Environmental programmeof JAY BHARAT (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Improvement in workers care: training and motivation of workers to ware safety goggles and ear plugs and Optimization of the exhaust system in the weld shop to reduce the normal number of accidents which took place there in an year.	workers care	20000	Rs/a on acci-dents	10000	50	reduction of accidents and risk	10000	nil	EHS	June, 03
Optimization of design of the dies and/or the shape of steel sheets to reduce the scrap quantity	scrap	8000	t/a	400	5		7554000	NA	Maintan-ence	Dec, 03
Optimization of welding gas quantity at the weld shop, training and motivation of employees.	welding gas	68973	m^3	3448	5		148292	nil	EHS	Aug, 03
Installation of modern taps in sanitary area, reduction of pressure in the water system	water	115000	m^3/a	11500	10	resource reduction	115000	10000	Maintan-ence	June, 03
Instalation of the Electronic Balast Unit in all existing tubelights in office area as a result there are direct savings in terms of electricity	electricity for lightning	62400	kwh/a	7488	12		32000	15000	Maintan-ence	July,03
(1) Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows. (2) Installation of timer systems to reduce unnecessary energy consumption (3) Training and awareness of employees in using energy: reduction of compressed air leakages , switch off of utilities if they are not in operation	electricity	6014865	kwh/a	120300	2	energy reduction	601400	200000	Maintan-ence	Dec, 03
Proper storage and handling of hazardous materials like oil: Storage in a seperate section over a tray, labeled and protected against damage	land contamin-ation	-	-	-	-	environmental protection	intangible	NA	Maintan-ence	June, 03
Proper storage and handling of hazardous materials like gas: Storage in a seperate section, labeled and protected against damage with a chain	workers care	-	-	-	-	environmental protection	intangible	NA	Maintan-ence	July, 03

7.7. MACHINO BASELL INDIA LTD.

Company profile

?? Number of employees: 122

Machino-Basell India Ltd.'s mission is to be the most successful Polypropylene Composite Materials and Alloys Company in India, by measurably enhancing customers' performance, through fulfilling their needs and responsibly applying our assets, people, technology and expertise. Their performance has to be recognized by their customers as being the leader in technology, quality, cost/ performance and service. They aim to maintain a long-term leading position in India's Automotive Market and other selected market segments.

MBI is based at Gurgaon, 25 Kms from New Delhi airport.

The company's production capacity for Polypropylene compounds is 15,000 MT/year.

MBI produces an extensive range of unfilled and filled compounds based on polypropylene and supplies to the automotive, industrial and appliance industries.

?? Areas for improvement: Water use, energy use, lighting

Environmental policy

MACHINO-BASELL INDIA LIMITED plant Environmental Policy is to be a responsible corporate citizen in protecting the environment. The Machino-Basell India Ltd., plant is committed, through compliance with Montell and Indian standards, to strive for continual improvement in environment performance, and prevent the creation of waste, pollution, and minimize adverse impact on environment. We are committed to manage processes, materials and people to reduce on environmental impact of our activities.

MACHINO-BASELL INDIA LIMITED plant pledges to implement and operate the ISO14001 Environmental Management System to identify and address significant environmental aspect of its operations including matters such as:

?? Managing air emission from plant operations

?? Reduce, reuse and recycling of waste

?? Improving the efficiency of energy, water and other utilities usage

?? Develop good gardening and greenbelt within the facility and arrange good house keeping.

Environmental performance of MACHINO BASELL (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
The sock Pit Water from the Process is been use for the Gardening leading to 25% of saving on water Consumption for Gardening.	water	360	m³/d	90	25	Saving of ground water.	intangible	NA	2002-03-02
Installation of More efficient Cooling Tower	water	60,0	m³/d	NA			NA	NA	2002-08-02
Diesel Saving by Optimising the Production	diesel	1200000	L	144000	12	Energy saving.	2419200	nil	2002-09-02
Fuel Injector Calibration is been done which resulted into 3 % of Diesel saving and had surely lead to Significant Smoke Reduction	diesel	1200000	L	36000	3	Smoke Reduction	558000	120000	2002-09-02
Reuse of the old bags had given saving of 3 %	packing bags	260878	No.	7826	3	Reduction bag scrap.	64176	nil	2002-09-02
Installation of a new compressor	electricity	4058350	kwh/a	NA		reduction of oil losses	NA	NA	2002-05-02
Cleaning of engine oil for DG-set in a centrifuge to extend usage	oil	1800	L	300	17	Reduction of oil wastage.	21000	75000	2002-12-02
Replacement of High Speed Diesel with Low Density Oil so the savings were only in terms of money as the consumption of fuel remains the same	diesel	1200000	L	1200000	nil	Cost saving	3600000	800000	2002-12-02
Optimisation of the Air Conditioning units in the office area by setting their temperature at 26 °C instead of 22°C, which gives out the savings in terms of electicity reduction.	electricity	4058350	kwh/a	NA			NA	nil	2002-12-02

Environmental programmeof MACHINO BASELL (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Reduced Fuel Consumption through production optimisation.	diesel	1056000	L	144000	14	Increased efficiency of DG.	1987200	0	Maintenance /Production	Cont.
Replacement of High Speed Diesel with Low Density Oil	diesel	1056000	L	---		Cost Saving	3168000	0	Maintenance	Cont.
Material Loss Reduction: Training of employees in handling, contiuous maintanance of machines, optimization in storage	raw material	125,6	T	45,216	36	Reduction in scrap and less contaminatio n of soil.	2260800	20000	Production/ Logistics/R &D	Mar 04
Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, instalation of hanging switches on the electric tubelights in office area, electronic preactivation and daylight dependent control, cleaning of glasses and windows for daylight entrance	electricity	4058350	kwh/a	324668	8		1623340	600000	Maintenance department	Dec 03
Use of water from hand wash area for toilet flushing in workers toilets	water (Domestic Consump.)	8040	m³	800	10		intangible	10000	Plant Maintanence	Dec 03
Installation of modern taps in sanitary area, for water loss reduction	water (Domestic Consump.)	8040	m³	4010	50		intangible	NA	Plant Maintanence	Dec 03

7.8. MACHINO PLASTICS LTD.

Company profile

?? Number of employees: 75

Machino Plastics has Microprocessor Controlled Injection moulding operations: an ultra modern plant credited with sophisticated 1300, 1600 and 2200 ton machines. Equipped with State- of –the – Art Technology from Japan, it manufactures Bumpers, Instrument Panels and other components.

It is producing a range of moulded auto components as a part of its phased expansion program. It's also ready for the development of Polypropylene Polymer advanced materials, which have key applications in the auto and consumer industries in the future.

Machino supplies its plastic injection moulded parts to Maruti. Machino has 75 employees.

Daily 10 to 12 tons of raw material are processed. Currently typically 5 out of 7 existing machines operate. The raw materials are delivered in 25 kg sacks.

?? Areas for improvement: Energy use, pressurized air, lighting, handling with hazardous waste, water consumption.

Environmental policy

MACHINO PLASTICS LIMITED, GURGAON IS COMMITTED TO BE A RESPONSIBLE CORPORATE CITIZEN IN PROTECTING THE ENVIRONMENT AND SHALL ENSURE:

?? THE ENVIRONMENTAL POLICY SHALL BE COMMUNICATED TO ALL THE EMPLOYEES AND WILL BE AVAILABLE TO INTRESTED PARTIES ON NEED BASIS.

?? A GOOD WORKING ENVIRONMENT FOR EMPLOYEES.

?? THE IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT SYSTEM DESIGNED TO ENSURE THE COMPLIANCE WITH GOVERNMENT REGULATIONS AND TO ACHIEVE CONTINUAL IMPROVEMENTS.

?? THE EFFICIENT & EFFECTIVE USE OF MATERIALS, ENERGY, WATER AND OTHER RESOURCES THROUGH INNOVATIVE TECHNOLOGY, EDUCATION AND GOOD MANAGEMENT PRACTICES.

?? THE MANAGEMENT PROCESSES OF MATERIALS AND PEOPLE TO REDUCE ENVIRONMENTAL IMPACT OF OUR ACTIVITIES.

?? THE REDUCETION, REUSE AND RECYCLE OF WASTE.

?? THE PROMOTION OF A POSITIVE CULTURE , WHICH IS BASED ON THE FULL INVOLVEMENT AND COMMITMENT OF EMPLOYEES AND OBJECTIVE OF THE ORGANISATION.

?? TO PROVIDE EMERGENCY RESPONSE PROGRAMMES TO MINIMIZE THE HARM TO ENVIRONMENT AND ASSETS OF THE ORGANISATION.

?? THE DEVELOPMENT AND MAINTENANCE GOOD GARDENING & HOUSE KEEPING.

Environmental performance of MACHINO PLASTICS (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Material Loss Reduction: Training of employees in handling, contiuous maintanance of machines, optimization in storage	oil	21840	L	218	1		NA		May, 01
Training and motivation of employees and improvement at tools	raw material waste	64800	kg/a	1296	2		5715360	nil	June,02
Change from paper copy to email system	materials in admin.	NA					NA		Nov,02
Maintenance activities in crushing area to reduce noise level (close area, installation of blower)	noise	106	dB	26	25		Intangible	NA	Nov,02
Optimisation of the Air Conditioning units in the Offices Areas by setting their temperature at 27 °C instead of 23°C, which gives out the savings in terms of electicity load reduction.	electricity for A/C	60500	kwh/a	9680	16		48400	nil	July, 02
Training and awareness of employees: reduction of compressed air leakages and unwanted tube lights, switch off of utilities if they are not in operation	electricity	3537500	kwh	274156	7,75		1370780	150000	July, 02
Use of reusable covers for transportation of the products, installation of trollies	poly-ethylen covers	33000	No.	15000	50		30000	NA	April. 02
Installation of a rain water harvesting system	water	14400	kl/a	1440	10		500	25000	June 02

Environmental programmeof MACHINO PLASTICS (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Material Loss Reduction: Training of employees in handling, contiuous maintanance of machines, optimization in storage	raw material, water	480	kg	4,8	1		25200	nil	Mr. Birla	Dec, 03
Efficient utilization of daylight: motivation of employees to switch off tube lights, cleaning of glasses and windows	electricity costs	6000000	Rs/a	120000	2		120000	nil	Mr. M. Sharma	Dec, 03
Installation of modern tube lights, electronic preactivation and Electronic balasts in the existing tubelites to reduce the chock losses in the complete OFFICE AREA	electricity for lightning	176875	kwh/a	35375	20		176000	250000	Mr. Birla	May, 03
Use of water from hand wash area for toilet flushing in workers toilets	water	1680	kl/a	84	5		6720	NA	Mr. M. Sharma	Aug, 03
Electronic Balast instalation in all existing tubelights in the other areas as a result there are direct savings in terms of electricity	electricity for Lightening	353750	kwh/a	42450	12		237720	55000	Mr. M. Sharma	July,03

7.9. MULTIVAC INDIA PVT. LTD.

Company profile

?? Number of employees: 54

This manufacturing unit set up in Gurgaon was commissioned in April 1996 to manufacture moulded headliners. The company had technical collaboration for manufacturing, processing and testing know how with M/s. Benecke- Kaliko AG, Germany through their 100% subsidiary M/s. Beneform GmbH. Another technical collaboration is with M/s. R+S Technik GmbH, Germany for the manufacturing, processing and testing knowhow to make interior auto trim components from a composite material called Loprefin.

The company has established a quality system in conformance to ISO 9002 requirements and is working towards QS 9000 certification. The quality checks at present are carried out at the following stages:

?? of incoming materials and inputs (incoming inception)

?? at every sub- process in the production process (in- process inspection)

?? just before dispatch (pre- delivery inspection)

?? 100% checking is done for visual quality and dimensional accuracy i.e. hole matching, trim line and contour matching.

The various areas of manufacture are:

?? Moulded Headliner

?? Surface Material: Kinitted or non- woven fabric or PVC sheet.

?? Based Material: Fibre –glass- Rigid PUR foam sandwich Panel

?? Loprefin Components

?? Surface Material: Knitted or non- woven fabric of PVC sheet

?? Based Material: Loprefin (PP+PE+ Jute composite)

The major customers for moulded headliners are Maruti Udyog Ltd., Hindustan Motors Ltd., Swaraj Mazda Ltd. and Reva Car Co. while the major customers for Loprefin based Auto Components are Volvo India Pvt. Ltd., Eicher Motor Ltd., Hyundai Motors Ltd

?? Areas for Improvement: Lighting, pressurized air, noise, energy use

Environmental policy

WE, MULTIVAC INDIA PVT. LTD. IS COMMITTED TO PREVENT THE POLLUTION IN THE COMPANY THROUGH CONTINUOUS IMPROVEMENT IN:

?? MINIMISATION OF SCRAP GENERATION AT SOURCE

?? MAXIMUM AND EFFICIENT USE OF NATURAL RESOURCES

?? EFFICIENT USE OF UTILITIES LIKE ENERGY, COMPRESSED AIR AND TREATED WATER

?? FORMAL TRAINING TO WORKMEN , SUPERVISORS, OFFICERS AND MANAGERS ABOUT ENVIRONMENT , SAFETY AND HEALTH

?? DEVELOPMENT GOOD GARDENING AND GREENBELT AND GOOD HOUSEKEEPING

?? MEETING THE COMPLIANCE WITH LEGAL REQUIREMENT

?? IN-HOUSE USE OF GENERATED WASTE AND SCRAP

Environmental performance of MULTIVAC INDIA (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Change time of gardening to Early Morning and evening for effective use of water instead of Afternoons	water	106	m3/a	11	10		2650	0	04/02
Filtration of hydaulic oil	hydr. Oil	1200	lt.	1000	83		52000	NA	06/01
Change of double acting cylinder to one acting cylinder at compressor	electricity	700	cfm	130	18,5		156000	0	03/02
Installation of 4th frame at moulding machine:decrease of idle time	idle time	450	pcs./shift	100	22	energy savings	70000	NA	08/02
Reduction in contract demand to 300 KVA	electricity cost	450	kva	150	33		1224000	0	04/02
Uplifting of machines to reduce leaks	land contamin-ation	-	-	-	-		intangible	NA	10/02
Reuse of scrap as packaging material	PU cutting	24000	kg	500	2	reduction of packaging material	200000	0	06/02

Environmental programmeof MULTIVAC INDIA (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Efficient utilization of daylight: motivation of employees to switch off tube lights, cleaning of glasses and windows	electricity for lightning	13720	kwh/a	2744	20		13720	0	Mr. S. Kumar	March, 03
Installation of modern tube lights, electronic preactivation and daylight dependent control.	electricity for lightning	13720	kwh/a	1372	10		6860	10000	Mr. S. Kumar	July, 03
Installation of timer systems to reduce unnecessary energy consumption in the utility and at specific high energy consuming machines	electricity	548800	kwh/a	5488	1		27440	30000	Mr. S. Kumar	July, 03
Training and awareness of employees in using energy: reduction of compressed air leakages , switch off of utilities if they are not in operation	electricity	548800	kwh/a	5488	1		27440	0	Mr. S. Kumar	July, 03
Improvement in workers care: training and motivation of workers to ware safety equipments and ear plugs and Optimization of the exhaust system in production line	workers care	10000	Rs/a on accidents & other	5000	50	reduction of accidents and risk	5000	0	Mr. Tiwari EHS	December , 03
Installation of modern taps in sanitary area, reduction of pressure in the water system in the Domestic Consumption	water	1060	m3/a	106	10	resource reduction	26500	10000	Mr. Dube Maintanence	March, 03
Instalation of the Electronic Balast Unit in all existing tubelights in office area as a result there are direct savings in terms of electricity	electricity for lightning	13720	kwh/a	1646	12		8200	15000	Mr. Dube & Tiwari Utilities	December, 03
Optimisation of the Air Conditioning units in the Offices Areas by setting their temperature at 26 °C instead of 22°C, which gives out the savings in terms of electicity reduction.	electricity	13720	kwh/a	2200	16		11000	0	Mr. Dube Maintanence	March, 03

7.10. MUNJAL SHOWA LTD.

Company profile

?? Number of employees: 1000

An offshoot of Hero Group of Companies, Munjal Showa Ltd. (MSL) was established in 1985 in technical and financial collaboration with Showa Corporation of Japan – the pioneer and leader in the world of shock absorbers. MSL products enjoy wide patronage while serving as original equipment to companies like Maruti, Hero Honda, Honda Motors etc.

A continuous relentless pursuit for perfection has laid to the company to achieve coveted QS 9000 and ISO 9001 in 1997. Other accomplishments are – National Safety award in 1992, ISO 9002 in 1995 and British Safety Council's National Safety Award in 1996. The company is growing at an average rate of over 20% p.a. Growth plans of our key customers becomes guidelines for timely expansion of existing capacity. Production is reviewed periodically and is planned in tune with the customer needs. A team of expert engineers trained at Showa, Japan support and monitor what are virtually zero-defect products. Their manufacturing methods are continually modified and improved upon in an attempt to realize higher productivity.

MSL enjoys complete R & D support from Showa Corporation, Japan. A team of highly qualified Japanese technical advisor deputed to India, together with trained professionals of MSL ensures proper implementation of procedures and practices.

The various areas of manufacture are: MSL supply a variety of high quality, specialized product to fit today's hi-tech automobiles and include the following

?? Front Fork

?? Rear shock absorbers

?? Front struts

?? Rear Struts

?? Gas springs / Rear door lifter

?? Areas for Improvement: Lighting, noise, waste disposal, waste segregation, storage of chemicals and hazardous waste, workers care, exhaust air, water treatment

Environmental policy

We are committed to continually monitor, improve and maintain the environment through:

?? Complying with all applicable environmental legislation and regulations.

?? Adopting pollution prevention approach to our activities though continual improvement.

?? Reducing waste generation and promoting recovery, recycles, reuse of resources like water and oil.

?? Setting Objectives and Targets and by providing necessary resources to achieve those objectives.

?? Enhancing Environmental awareness among our employees, contract workers and suppliers.

We commit to communicate this policy to all employees and to make it available to the public and interested parties on request.

Environmental performance of MUNJAL SHOWA (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Installation of one additional dust collector in the buffin shop to reduce dust emissions into air	air pollution	-	-	-	-		intangible	NA	June, 01
Change of motors in one production area from delta to star configuration	electricity in one production ar.	2035200	kwh/a	407040	20		1628160	150000	July,02
Installation of timer systems at machines to reduce unnecessary energy consumption	electricity in production	10176000	kwh/a	20350	0		81400	80000	Aug, 02
Installation of a new plating unit: optimization in energy consumption, increase of productivity	electricity	12720000	kwh/a	NA			NA		Oct, 02
Installation of a new transformer (2000 kVA)	electricity	12720000	kwh/a	NA			NA		Nov, 02
Use of electricity of Maruti at plating area to ensure plating quality and decrease of number of products for deplating	deplating chemicals	NA	kg/a	NA			intangible	NA	Aug, 02
Efficient utilization of daylight: motivation of employees to switch off tube lights, cleaning of glasses and windows	electricity for lightning	254400	kwh/a	127200	20		508800	nil	June, 02
Reduction of the water consumption by utilising the ETP effluent water for the gardening purpose	water for gardening	6025	kl/a	1205	20		482000	555000	July, 02
Installation of modern tube lights and specific timer on the office and store, dispatch area	electricity for lightning	254400	kwh/a	17808	7		71230	150000	Dec, 02

Environmental programmeof MUNJAL SHOWA (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Continuous maintenance to reduce oil and gas leakages	waste	20000	l/a	2000	10		96000	45000	Mr. Tripathi	june, 03
Proper storage and handling of hazardous waste like old plating chemicals: Storage in a seperate section over a tray	land contamin-ation	-	-	-	-		intangible	NA	Mr. Dhuilakar	Dec, 03
Improvement in workers care: training and motivation of workers to ware safety goggles, ear plugs and gloves	workers care	250000	Rs/a	125000	50		125000	nil	Mr. Dhuilakar	Dec, 03
Proper storage and handling of hazardous materials like acid: Storage in a seperate section over a tray, labeled and protected against damage	land contamin-ation	-	-	-	-		intangible	NA	Mr. Dhuilakar	Dec, 03
Installation of modern taps in sanitary area, reduction of pressure	water	120500	kl/a	2410	2		intangible	NA	Mr. Tripathi	Aug, 03
Instalation of the Electronic Balast Unit in all existing tubelights in office area as a result there are direct savings in terms of electricity	electricity for lightning	254400	kwh/a	30530	12		122000	75000	Mr. Tripathi	June 03
(1) Training and awareness of employees in using energy: reduction of compressed air leakages , switch off of utilities if they are not in operation (2) Instalation of the specific timers on the specific machines to avoid the energy losses and to inspect the workers performance	electricity	#######	kwh/a	127200	1	energy reduction	508800	200000	Mr. Dhuilakar	June 03
Optimisation of the Air Conditioning units in the Offices Areas by setting their temperature at 26 °C instead of 22°C, which gives out the savings in terms of electicity reduction.	electricity for other purposes	254400	kwh/a	20352	8		81408	nil	Mr. Tripathi	March 03

7.11. NIPA INTERNATIONAL PVT. LTD.

Company profile

?? Number of employees: 160

They are a professionally managed group of independent industrial establishments in the private sector. During their long journey since inception in 1968, they have successfully established a separate identity in the market for their quality products. They manufacture light engineering items for industrial and consumer goods covering electronics, electrical goods, home appliances and office automation products.

They have full potentials and complete infrastructure for designs, development of the moulds and tools, mouldings, assemblies and processing of any plastic/sheet metal components under one roof. They produce exotic range of over 130 varieties of electrical modular switches and plates moulded in polycarbonate (F.R. Grade) material and silver cadmium contacts for the longer life. There are five moulding machines of different capacity. They also produce various plastic and sheet metal items for televisions, Photo Copiers, Air-Conditioner, AC front Grills and Computer peripherals. They have recently made Moulds for Glass Filled Nylon Liners, the product to be supplied to Indian Railways.

Laboratory: They have an equipped laboratory for testing of various electrical switches and other items based on specific requirements. The lab is certified by the Bureau of Indian Standards and confirms to the latest standards for switches.

Quality Control: They impose 100% quality check on all of the products and for this they have been awarded ISO-9001 certification by DNV, The Netherlands. Not only this the group is actively preparing for the export of switches to the North America markets and UL certification for electrical switches and accessories (Under Writers Lab) shortly, one of the most stringent certification bodies in the world. Their specific samples also undergo Tests at U.L. Lab located in Santaclara (U.S.A).

?? Areas for improvement: Storage of chemicals, scrap, workers care, lighting, energy use, raw material use

Environmental policy

To ensure that production and its processes are designed to be completely environmental friendly.

All care is taken by the work force to ensure that all the environmental pollutant such as noise, solid, liquid and gaseous wastes if unavoidable are reduced to bare the minimum level. Even those produced must be disposed off efficiently in a manner that cause nil or lease pollution.

Environmental performance of NIPA (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Use of available water of state board to save ground water and electricity required for running the motors for the water uptake	water	233	kl/a	23	10	resource utility	2300	nil	April, 02
Proper Storage of Hazardous Dust Chemicals	land contamin-ation	-	-	-	-		nil	nil	Aug, 03
Discharge of Plating waste water after pH neutralising process	water	72	kl/a	14	19		3500	nil	April , 02
Reduction of Q.C. rejections with use of Pneumatic Screw Driver.	material	2000	kg/a	100	5		15000	nil	June 03
Instalation of the Electronic Balast Unit in all existing tubelights in Maintenance and Production room as a result there are direct savings in terms of electricity	electricity	1095000	kwh/a	131400	12		657000	150000	July,03

Environmental programmeof NIPA (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Material Loss Reduction: Training of employees in handling, contiuous maintanance of machines, optimization in storage with putting some new measures for the machines which woud ultimately reduce the raw waste	raw material	1000	kg/a	50	5		75000	15000	Mr. Tiwari	Aug, 03
Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows	electricity	1E+06	kwh/a	54750	5		273750	65000	Mr. Tiwari	July, 03
Installation of timer systems to reduce unnecessary energy consumption	electricity									
Installation of modern taps in sanitary area, reduction of pressure	water	233	kl/a	70	30		17500	10000	Mr. Anwar	July, 03
Optimisation of the Air Conditioning units in the Offices Areas by setting their temperature at 26 °C instead of 22°C, during the summer seasons, which gives out the savings in terms of electicity reduction.	electricity	638750	kwh/a	102200	16		511000	nil	Mr. Anwar	May, 03
Proper storage and handling of hazardous materials like chemicals an oil: Storage in a seperate section over a tray, labeled and protected against damage	land contamin-ation	-	-	-	-		intangible	NA	Mr. Tiwari	Oct, 03
Change of the present moulding system to "hot runner" system to reduce raw material input, scrap quantity and energy consumption	raw material/ energy	NA					intangible	NA	Mr. Anwar	Dec, 03

7.12. ONASSIS AUTO PVT. LTD.

Company profile

?? Number of employees: 100

Onassis Auto Pvt Ltd is a fully integrated auto component manufacturing facility, which excels in making precision-engineered auto components. The company has two plants located at Gurgaon and has a state of art manufacturing unit to produce Axle, Steering, Brake and Engine components. This is a QS 9000 certified company, which has OE contract with Maruti Udyog Ltd., Sona Koya Steering Systems Ltd., Rico Auto Industried Ltd. and Delphi Automotive Systems Ltd. along with many other auto industry giants.

Set up in 1991, the main process in this industry is machining the raw materials i.e. casting, steel etc. this work is carried out in extended shifts of 10 hrs each. The range of products has wide spectra of application in passenger cars, jeeps, vans, commercial vehicles and motorcycles. Due to their inhouse, state of the art technology, they have an earned a wide client base in the auto industry. Shell Production process if adopted here which is actually a line process where coming in of raw material to finished good and then packing is done in the same line.

They had a continuous increased in their production since their establishment and such relentless pursuit for perfection has lead them to got registered for QS 9000.

The various areas of manufacture are:

?? Flange Universal Joint (which joins the propeller shaft and rear axle)

?? Ball Nuts (a part of ball screws used in Steering Assembly)

?? Yoke Slide Propeller (a steel forging component transmits torque in propeller shafts)

?? Cap Differential (used in carrier-rear axle assembly)

Growing from strength to strength, the company has managed to earn an unseconded identity for itself in the market and their client include the world's largest Auto Brands like Hyundai, Toyota, Maruti, Mitsubishi Motors and other companies like Rico, Sona, Delphi etc.

?? Areas for improvement: Energy use, raw material use, pressurized air

Environmental policy

Objectives:

?? Continuous Improvement in internal as well as external environment

?? Improvement in productivity through waste elimination and adoption of cleaner technologies

?? Reduction in use of fossil fuels and efficient utilization of natural resources and energy.

?? Promoting the use of renewable energy resources.

?? Employee motivation and continual training and awareness about environment issues.

?? Continuous improvement through bench marking

Environmental performance of ONASSIS AUTO (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Reduction in the oil spilage from various machines by uplifting the molding machines	oil	120	l/a	95	80		4050	1500	April, 02
Complete replacement of the jute bags by Plastic bags which were used in internal transport	packing bags	500	bags/ a	500	100		4500	30000	July, 02
Optimization of the cooling tower (pipes) to reduce water losses	water	900	kl/a	270	30	resource reduction	67500	10000	July, 02
Instalation of the Electronic Balast Unit in all existing tubelights in office and manufacturing area	electricity	2640	kwh/a	317	12		1580	4000	July , 02
(1) Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows. (2) Installation of timer systems to reduce unnecessary energy consumption (3) Training and awareness of employees in using energy: reduction of compressed air leakages , switch off of utilities if they are not in operation	electricity	55820	kwh/a	4466	8	energy reduction	22328	10000	September, 02

Environmental programmeof ONASSIS AUTO (planned measures for the near future)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows	electricity	55820	kwh/a	2792	5		13955	10000	Mr. Abdul	Sept, 03
Installation of Photovoltaic Timers for the Day time to avoid the artificial light utilisation at various places in the plant	electricity	11260	kwh/a	560	5		2790	2500	Mr. Amit	Sep, 03
Installation of timer systems to reduce unnecessary energy consumption on the production line for all the plant machines	electricity	44650	kwh/a	890	2		4400	8000	Mr. Abdul	Sep, 03
Installation of modern taps in sanitary area, reduction of pressure	water	8066	kl/a	1615	20		400	350	Mr. Bhatia	April,03
Proper storage and handling of hazardous materials like chemicals: Storage in a seperate section over a tray, labeled and protected against damage	land contamin-ation	-	-	-	-		intangible	NA	Mr. Amit	Aug, 03
Improvement in workers care: training and motivation of workers to ware safety goggles, ear plugs and gloves if necessary	workers care	-	-	-	-	cost reduction for accidents	intangible	NA	Mr. Bhatia	July, 03

7.13. SAINT GOBAIN DIAMANT WINTER LTD.

Company profile

?? Number of employees: 165

This industry is a leading manufacturer of diamond cutting glass in India and is amongst the first six 500 fortune companies in India. The main products of the company are Diamond tools used for abrasive work. The major raw materials for this are diamond powder and other powders, which are all imported form Europe.

The company's products include a wide variety of Diamond Circular Saws and Frame Saw Blades for varied applications in the processing of stones. The Frame Saw, Monolama Blades and segments are suitable for all types of machines. They also manufacture state- of- the- art Wire Saw Beads used for all varieties of marble and also have a wide range of application in Mining and for Block Dressing. Winter offers a complete range of Circular Saws with a wide range starting from a diameter of 200 mm to 4200mm for processing all varieties of stones. The complete range of their tools offers block cutting, Calibration, Milling, Edge Cutting, Grinding, Polishing, and Grooving etc.

?? Areas for Improvement: Dust, waste segregation, energy use, pressurized air, lighting, material use, storage of chemicals

Environmental policy

We at Saint Gobain Diamant Winter, India as a responsible corporate citizen & employer are committed to : -

?? Protect the environment against industrial pollution

?? To ensure the Health & Safety of our employees

To fulfill this commitment, we will conduct our business so that to: -

?? Comply with all applicable legislations on EHS

?? Enhance environmental awareness of our employees by communicating this policy & promoting their involvement in ensuring sound environmental management.

?? Help to continue product innovations to improve environment compatibility & integrate environmental attributes in our business. Processes and practices with specific considerations to hazardous chemicals.

?? To integrate health and safety matters in all our activities

?? Promote health and safety awareness among employees, contractors and suppliers.

?? Empowering employees to ensure safety in their respective work places

?? Institute measurements systems for periodical assessment of the status on air, water & sound pollution & take corrective measures to control.

Environmental performance of SAINT GOBAIN DIAMANT WINTER (implemented measures)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	further use	Savings (Rs/a)	Costs	When realised?
Instalation of the modern taps (Automatic and Gravity dependent) for reduction of the water consumption	water	1750	m3/a	140	8		35000	20000	april, 02
Efficient utilization of daylight: motivation of employees to switch off tube lights, cleaning of glasses and windows.	electricity	468000	kwh/a	9360	2	energy reduction	37440	nil	april, 02
Training and awareness of employees in using energy, reduction of compressed air leakages and even replacing the defected pipes, switch off of utilities if they are not in operation	electricity	23400	kwh/a	7020	30		28000	14000	july, 02
Optimisation of the Air Conditioning units in the Offices Areas by setting their temperature at 27 °C instead of 23°C, which gives out the savings in terms of electicity load reduction.	electricity	93600	kwh/a	14976	16		59900	nil	july, 02

Environmental programmeof SAINT GOBAIN DIAMANT WINTER (planned measures)

Description of the measure	annual reduction/use for the environment						economical effect		responsibilty	
short verbal description of the realised measure (type of the measure, improvement effect)	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Installation of timer systems to reduce unnecessary energy consumption	electricity	234000	kwh/a	4680	2		18720	2500	Mr. Srivastava	July,03
Proper storage and handling of hazardous materials like oils: Storage in a seperate section over a tray, labeled and protected against damage	(Oil) hazardous materials	4500	l/a	900	20		36000	15000	Mr. Bhatia	April,03
Improvement in workers care: training and motivation of workers to ware safety goggles and gloves if necessary	workers care	15000	Rs/a	6750	45		6750	nil	Mr. Srivastava	December, 03
Installation of modern tube lights, electronic preactivation and daylight dependent control (Photovoltaic Controle).	energy	468000	kwh/a	9360	2		37450	50000	Mr. Sharma	December, 03
Installation of timer systems to reduce unnecessary energy consumption on the sepcific machines to avoid the wastage of Energy	energy	93600	kwh/a	9360	1		37450	15000	Mr. Bhatia	April,03

7.14. SANDHAR LOCKING DEVICES LTD.

Company profile

?? Number of employees: 126

SLD believes that an environment friendly attitude across all areas of production will take them to make good honest and professional business as their way of life and keeping this in mind they have done so good in the Environment, health, Safety, and quality control that they have achieved ISO 14001, ISO – 9002, QS 9000, ISO/ TS 16949 and ISO 18000 (OHSAS) certificates in very short time duration. There are lots of such aspects that bring them the credit to maintain the same. Few of the identified points related to their present status are as follows:

They have 34 Procedures including:

?? Identification and Updation of Legislatives

?? Identification of Aspects and Impacts (IER)

?? Identification of Hazards and Consequences (IHR)

?? Emergency Preparedness and Response

?? Accident reporting and Analysis, etc.

The various areas of manufacture are:

?? Locking Sytems: SLD has comprehensive and complete facilities for the manufacture of locks and associated systems and has the capacity to manufacture over 2 million locksets for automobiles.

?? Mirrors: Mirror plate manufacturing capabilities include CNC profile cutting machines, automatic mirror plate washing machines, convexing furnace and vacuum coating facilities. Mirrors are produced in manual and remote controlled configurations and in finishes for 2 wheelers and 4 wheelers.

?? Sheet Metal: This division manufactures a wide range of components for automotive applications.

?? Door Handles: SLD manufactures external door handles for automobiles.

?? Zinc Die Casting and Plastic Moulding: In house capabilities for various hot chamber die-casting and plastic injection moldings ensure a high level of consistency in components with thin walled sections to give SLD the edge in integrated component manufacture.

?? Areas of improvement: Maintenance of machines, exhaust air, workers care, scrap, lighting, energy consumption, air conditioning

Environmental policy

Total Customer Satisfaction, Prevention of Pollution and Minimise Risks as low as possible through continual improvement in Products, Processes, Services, Technology and Resource Utilization.

In order to achieve the above we shall strive for:

?? Integrating improvement programmes for Quality, Environment, Health & Safety in our performance.

?? Generate awareness among the employees and the persons who may be affected by our operations and adopt measures for:

?? Safety & Health to minimise potential risk.

?? Safer Environment to minimise potential impacts.

?? Ensuring compliance with all applicable legislations and regulations.

?? Train and motivate employees for achieving individual's Environment, Safety & Health obligation through team spirit.

Environmental performance of SANDHAR LOCKING DEVICES (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	When realised?
Sound proof arrangement in the generator room	noise	88	db	29	33	Human control	Intangible	500000	Jul. 2002
Increasing the hight of all machines by 6-7 inches to find out leaks	waste	10.0	Ltrs	10.0	100	Prev. of L/C	630	5000	Apr. 2002
Optimization of the pressing machines: change from one-hand operation system to double-hand operation system	workers care	64700	Rs.	31319	48		31319	6000	Aug. 2002
Installation of sensors at all possible water consumption points	water	-	Ltrs	Nil	-	Nil	Intangible	150000	Dec. 2001
Installation of a rainwater harvesting system	water	-	-	-	-	-	Intangible	100000	Dec. 2001
Replacement of conventional tubes by CFL	Electricity	18720	Kwh	1872	10		7844	46800	Mar. 2001
Provide cycling timer in air cooling	``	2384	``	1490	62		74952	2400	April.002
Optimisation of A/C Temperature by 4 ^{0} C (From 22 to 26^0 C in all those units where there are displayers)	``	To be calculated					NA	Nil	Sep 2002
Stop cooling tower fan during winter	``	112	kwh	112	100		470	Nil	Sep 2002
Timer provided in toilet exhaust fan	``	2880	kwh	2160	75		10860	2000	Sep. 2002

Environmental programmeof SANDHAR LOCKING DEVICES (planned measures for near future)

Description of the measure	annual reduction/use for the environment						economical effect		Responsibility	
short verbal description of the realized measure	what	basis	unit	abso -lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Material Loss Reduction: Training of employees in handling, continuous maintenance of machines	raw material	941	PPM	623	66	Waste Reduce	Being calculated		All	Mar. 03
Efficient utilization of daylight: motivation of employees to switch off tube lights, Installation of modern tube lights, electronic preactivation and daylight dependent control, cleaning of glasses and windows	electricity		KWH			Waste Reduce	452565	21000	Maint.	Mar. 03
Training and awareness of employees in using energy: reduction of compressed air leakages and unwanted tube lights, switch off of utilities if they are not in operation	electricity	128664	KWH	107529	83	Waste Reduce	1342440	-	Maint.	Mar. 03
Installation of time switch systems to reduce unnecessary energy consumption	electricity		KWH			Waste Reduce	5363760	3000	Maint.	Mar. 03
Improvement in workers care: Emergency evacuation in each shop floor, installation of hand support in generator room,	workers care	-	-	-	-		Intangible	-	P&A	Mar. 03

7.15. SONA OKEGAWA PRECISION FORGINGS LTD.

Company profile

?? Number of employees: 100

Sona Okegawa Precision Forgings Ltd. is a technical and financial joint venture company of Mitsubishi, Japan. With a Market share of nearly 100 %, the company is the largest manufacturer of differential bevel gears & pinions and synchronizer rings in India. Mitsubishi gets 55% of the products. In India every big automobile producer is a customer. In the future the company wants to explore Amerika and Europe.

They are surging ahead in their journey of Total Quality Management (TQM). They are also developing their core competence and aligning objectives at all levels so as to realise synergy in operations. An initiative of improving the most important resources, the Human Resource, as well as the plant equipment has been initiated. This technique, Total Productive Maintenance (TPM), has been adopted to improve performance through the philosophy of prevention.

Customer Satisfaction continues to be of utmost importance to Sona Okegawa Precision Forgings as do consistent quality, constant innovation, value engineering, process improvement and customer orientation.

They will be an ISO 14001 Company in 2003 and have also adopted TQM (Management Improvement) and TPM (for Operational Excellence) to achieve results training and Education in TQM.

?? Areas of improvement: energy consumption, material use, waste segregation, storage of scrap.

Environmental policy

Sona Okegawa Precision Forgings Ltd., engaged in the business of manufacturing differential bevel gears & pinions and synchronizer rings, is committed to demonstrate excellence in environmental performance on continual basis through :

?? Elimination or minimization of environmental impacts of processes, activities and services.

?? Meeting or exceeding the compliance with legal requirements.

?? Conservation of resources like oil, water, Electrical energy, packaging material and paper.

?? Instilling awareness to the employees for maintaining a pollution free environment.

?? Enhancement of environmental awareness to our group companies, business associates, suppliers and contractors.

Environmental performance of SONA (implemented measures in 2002)

Description of the measure	annual reduction/use for the environment						economical effect		date
short verbal description of the realised measure	what	basis	unit	abso-lute	%	further use	Savings (Rs/pm)	Costs	When realised?
Installation of smaller DG set for Heat Treatment shop for non-working days	diesel	3120	ltrs	310	10	environmental protection	134400	50000	01/02
Use of septic tank water for horticulture.	Water for gardening	1800000	ltrs	600000	33	water saving	9000	0	08/02
Use of oil containers with bottom tray for storing oil which are used in the machines.	land contamin-ation	-	-	-	-	environmental protection	intangible	NA	04/02
Increasing heat treatment charge size.	Energy	840000	kWh	NA		Energy saving	146000	0	09/01
Change of DG fuel from HSD to LDO	Fuel	10000	ltrs	10000		cost saving	202000	600000	03/02
Waste disposal system for segration of waste product.	Residual Waste	500	Kg	500	-	environmental protection	1500	7500	07/02
Recycle of lubrication oil in forging press [Tonna 68]	Oil	NA	ltrs	NA			NA		07/02
Plantation	Enviroment Protection	-	-	-	-		intangible	NA	09/02
Replacing the conventional balast with new electronic energy saving balast.	Convetional balast units	350	nos.	350		Energy saving	18500	143780	09/02

Environmental programmeof SONA (planned measures for near future)

Description of the measure	annual reduction/use for the environment						economical effect		date	
short verbal description of the realised measure	what	basis	unit	abso-lute	%	Further use	Savings (Rs/a)	Costs	who	till when?
Rain water harvesting : increasing water table	water for gardening	1200	m³	60	5	environmental protection	900	NA	Mr. Kochar	06/03
Installation of ETP : Treatment of waste water to use it for horticulture.	water for gardening	1200	m³	120	10	environmental protection	1800	NA	Mr. Kochar	09/03
Replacing of CFC base refrigiant in AC : Enviroment protection	CFC	100	ltrs	100	100	environmental protection	intangible	NA	Mr. Kochar	05/03
Reduce consumption of LDO in DG	LDO	10000	ltrs	500	5	Natural Recources	9000	0	Mr. Kochar	12/03
Reduction in Energy consumption by continuous maintanance and training and motivation of employees	Energy	840000	kWh	84000	10	environmental protection	378000	0	Mr. Chauhan	11/03
Optimization of storage of cutting scrap to avoid ground and water pollution from cutting oil	land contamin-ation	-	-	-	-	environmental protection	intangible	NA	Mr. Chauhan	04/03

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8. Dissemination of project results

The project idea and the final outcome of the same was disseminated in a very methodical manner in order to achieve a multiplier effect and promote the project in such a way, that it acts as a catalyst to trigger other similar projects and attract the attention of other companies, which were not a part of this project. Various platforms and medias were used at different times during the project to create awareness and interest of other companies and also the local state Government of Haryana, especially the State pollution Control Board and Central Pollution Control Board. The various methods used are briefly stated below:

8.1. Distinguished speakers frome State & Central Government

In order to involve and to generate awareness within the State Government and the relevant Central Government body the Regional officer from the State and senior scientist from central pollution control boards were invited as guest speakers during the training programmes. They were sent details about the concept and as they were a part of the workshops they got an insight to the project. This has facilitated in the promotion of the concept in the both the state and central government departments and through them to companies which come to them for various matters.

8.2. Introduction to new members

Gurgaon Industria Association continuously sent out letters to new companies, who have become members during the project, to introduce to them and motivate them to join and attend the training programmes. This helped the further promotion of project through several new companies attending the training programmes in the mid way to get an idea about the project and generate interest in future projects.

8.3. Promotion during World Environment Day

Haryana State Pollution Control board celebrated the 'World Environment Day' on 5th June 2002; a programme was organized at the local Gymkhana Club. Various political heads, Government officials, delegates from Haryana Urban Development Authority, industries, school children, NGO's, other environmental organisations were invited, of which Green City India was also a part. Printed material detailing the Ecoprofit concept were distributed to the people and presentations were also made to people, helping them understand about the concept.

8.4. Website

Another major initiative for giving the project a wide platform is the hosting of the interactive GIA website, the website gives the complete information about the project, its objective and purpose. It also gives a brief history of the project, about its initiation and propagation in other parts of Europe and the world. It gives an introduction of the partners both national and international, and their main activities. The list of participating companies and links to their websites have been provided in the same. The various events being organized, a complete schedule of the implementation of the project, the workshops, training programmes and onsite consultancies with the topics and venues are given in detail with the dates. It

also mentions about the prominent guests and other foreign delegates who witnessed the project. It also cites various exercises performed in the workshops to make the concepts clear to the participating companies. The website also provides exclusive pictures of the training programmes, showing active participation of the delegates in the project.

8.5. GIA Monthly Bulletin

The Gurgaon Industrial Association through its monthly bulletin titled 'GIA Bulletin' has disseminated the information on the Ecoprofit by publishing regular articles and periodic reviews on training programme and workshops conducted under the project. It mentioned about the various guests and other prominent people who participated in the workshops.

8.6. ECOPROFIT Certification award ceremony

The invitations for the Ecoprofit certification ceremony were sent to about all 400 member companies of GIA, the invitation letter also mentioned a brief note on Ecoprofit and its results in the participating companies. This helped in disseminating the results and idea of Ecoprofit approach to more companies, which would further help them to participate in the future in similar projects.

During the 'Certification ceremony on January 14, 2003', the main benefits achieved by the participating companies were also announced.. A luncheon party followed the certification ceremony was attended by all the delegates, organizers and guests. The press reporters present at the venue also recorded individual views of various guests and delegates about the project results, during the luncheon, these reviews and interviews were later published in the bulletins as well as newspapers.

A list of the participants attending the ceremony is annexed to the report.

8.7. Print media

A number of articles and reviews about the project accomplishments and programme were published in the local newspapers in Gurgaon. The certification ceremony was witnessed by prominent people like the Deputy commissioner of Gurgaon and Deputy Trade Commissioner, Austrian Embassy. This has helped in promoting the project amongst the state administration as well as the Austrian diplomatic mission in India.

8.8. Mass media

The other mass media sources involved in the promotion of the project was a local television channel. News about the certification ceremony and the training programme were presented in the local channels, mentioning about the project, its concept and the speeches and addresses given by the distinguished guests during the presentation ceremony.

8.9. Austrian Trade Commission in India

The project concept and results of the same were introduced to the Austrian Trade Commission in India and it was a privilege to have the Austrian deputy trade commissioner as a distinguished guest for the certification ceremony. The Austrian deputy trade commissioner informed the gathering about the

present and future cooperation areas among the host and the Austrian republic, strengthening the trade ties between both of them.

9. Sustainability of action

9.1. A pilot activity promising a long impact on the target groups

The implementation of the ECOPROFIT approach in 15 industries of Gurgaon has proved to be the pioneering initiative in the area of Cleaner production and Environment Management in the Indian Industry. It is unique in the sense that it was a voluntary approach of the Industries of Gurgaon to participate in the project guiding them to cleaner production and environmental protection. It is an initiative taken by the industries of Gurgaon towards cleaner environment.

The project, based on economic as well as ecological benefits, has led the industries to identify various measures of environmental protection and cost reduction through decline in material usage and energy utilization (see details in chapters 5 and 7 of this report).

The main methodologies used in the project were based on the information provided by the company through the environment report given to them by the experts. The material flow and energy analysis were the major methods used to determine the areas of improvement. These methods were discussed in detail with the company delegates during the workshops as well as site visits and related exercises were carried out. The main aim was to foster a secure and reliable energy system that is environmentally and economically sustainable. This helped the delegates to understand about the analysis so that they could perform by themselves and help their company.

After the on site consultations, workshops, training programmes and exercises, the information obtained was amassed in the form of environmental reports. The environmental reports included the environmental performance of the company during the project tenure and its environmental programme in the upcoming year.

The project provided a rich number of lessons learned. This was to the benefit of all stakeholders of the project, the participating companies as well as the organisers and trainers. The good success of the project will motivate to follow up with similar and new actions. The partnership established for this project the first time between the different parties has proved to be a stabil basis for further common activities.

9.2. Lessons learned from the project

All the organisations associated with the project learned and gained immensely from this year long endeavor in their own different ways. Although the maximum capacity building has been for the participating companies, the trainers too have gained an insight to the industry scenario in India. Few of the lessons learned by the various partners of the project are summarized below based on feedback from all the parties involved:

Environment and economy are no longer irreconcilable antagonism

?? The most impressive results for the participating companies were, to achieve savings in the energy utilization through improvement in the processes, proper maintenance, change in material designs etc. that led to significant reductions in the energy investments, which are reoccurring.

?? Another significant achievement was the motivation & awareness of the participants to adopt the ECOPROFIT approach not only in their organisations but also encourage their suppliers to follow the approach.

Capacity building in environmental management and cleaner production for the participating companies

The most important aspects, in which the participating companies could increase capacity building are mentioned below:

Preventive Environment Protection (PEP Concept) - The concept has been introduced to the participants to show, how an organisation can achieve PEP Concept by adopting the Cleaner Production Strategy. They companies have learned to deal with their waste problems by adopting Cleaner Production by investigating the root of waste generation i.e. from where and why, waste generates, instead of thinking of end of the pipe solutions. Waste can be avoided, if not, then it can be reduced, if again not, then it can maybe be recycled. Wastes and emissions are input materials that have been bought for money and have not been converted into products that can be sold for money. Waste is more or less the material, which has not been used efficiently.

?? Process evaluation by material balance for waste reduction - The participants have learned, that only minor adjustments in the process can decrease the waste to a notable extent. For example the chemical dosing in the process plants is one of most common and potential options for the improvement in waste reduction. Decreasing or increasing 5-10% of the chemical dose is common practice in the industries, because the majority of operators does not understand the effects. This practice however leads to unstable process conditions, quality problems, and unnecessary waste and emissions. Thus by material balances (process, units, etc), graphical evaluation, methodical help (quality circles, etc), brainstorming with employees in a team, by learning about the problems and solutions of other branches/sectors, literature search and also by adopting technical evaluation in the company, one can get the options for the improvements in the CP.

?? Environmental Team Development as method to improve the working efficiency - The project showed the advantages of working with an Environmental Team. Some success stories of organisations from Austria were presented, who are improving day by day their environmental performances by adopting teamwork. It was discussed that the team should represent different departments of the same organisation to combine the view and the technological knowledge from various sectors within the organisation together and thus help in improving all the sectors. This approach also provides motivation among the workers to use their personal creativity to find better solutions for their processes.

?? Material flow analysis - was described as a systematic inventory of the way a chemical element, a compound or a material passing through their pysical and economical cycle. It was explained, that the material flow analysis is based upon the physical balance principle.

?? Energy analysis - As all the participants were from energy intensive companies, this topic was of great importance for them as mentioned by the participants several times during all the workshops and company visits. The results of their efforts lead to major savings especially from good housekeeping measures and minor technological changes in the energy supply and distribution systems of the plants. Participants have learned to conduct the energy analysis, which will serve as the base for a

successful future energy management. Below mentioned are the important aspects learned by the Participants for conducting the energy analysis for their own organisation:

- to understand the importance of a systemic analysis of the companies energy system (consisting of energy supply, conversion, distribution, consumption, and disposal)
- which data have to be collected and how to identify potentials for savings out of them
- options and potentials for energy saving: renewable energy sources, weekly curves interpretation, energy conversion equipments, energy distribution path analysis, consumption points analysis, heating and air conditioning process evaluation, heat disposal and recovery, etc.
- Indicators - the environment controlling elements - While discussing the Environmental programme and indicators in one of the workshop session, the elements of environmental controlling were presented. Starting from policy & goals, mass & energy balance analysis, planning, implementing and control for better environmental performance and other such sensible topics needed for a better management in an organisation were explained to the participants. The sessions on indicators showed the relevance of Ecoprofit for Environment Management Systems. Relative indicators, which connect environmental effects (emissions, consumption of energy and materials) with production characteristics like costs, number of employees etc, were discussed, to illustrate how an organization can set and then reach their improvement targets with the help of indicators.

Experts of training provider got insight to Indian industries

- The local Indian consulting firm Green City India, which is a regular member of the European counterpart CENTRIC AUSTRIA, was assisting the international expert team. In the process of the project they have been trained for the future implementation of the concept in cooperation with the Gurgaon Industrial Association. They got an extensive capacity building and upgradation in their management and trainer skills.
- For the EU experts the co-operation with the local Indian partner and the participating companies was very motivating and a good experience and help for further projects in India. The Indian participants were very open, interested and hard working. The participating companies were very active during the workshops, even more than the average companies in Europe. So it was possible to implement important tools like material flow and energy analysis. The EU experts could also realise that the Indian companies have still huge potentials for optimisation and that they are interested to participate also in future projects.

9.3. Potentials for follow-up activities

The actual project has served as a window opener for the member companies of GIA and as a platform for the European experts providing technologies and know-how. It gave an opportunity for exploring new markets in the environment and Cleaner Production sector. The project was a begining and has provided new closer contacts between specific companies from Europe and the companies from Gurgaon. This cooperation will continue in the future after the co-financing is cloesed. The envisaged potentials for future activities are:

- Co-operation between the partners to take up the formation of an ECOPROFIT club as a platform for ongoing exchange of experiences and building up Indo-European co-operation in the field.
- A number of inquiries have been received from industrial houses that they are keen on the ECOPROFIT concept and seek consultancy from European experts.
- Gurgaon Industrial Association along with the technical local consultants have been trained during the project and hence are equipped with skills for marketing this approach in other parts of India.
- Possibilities for sourcing of products and services from Europe for the implementation of various suggested actions under the ECOPROFIT concept.
- Potential market for EU for buying emission credits to meet its Kyoto targets, where the participating companies would be potential partner organisations.
- European experts and their experience in European industry could help the Indian industry in reaching global standards and thus increasing trade.
- Through the data collection and the process analysis the companies understand their processes much better. So most of the companies have recognised that they can benefit more from European technologies, e.g. modern paint shops, than from cheaper Indian technology.
- The identification and implementation of cleaner production has proven the concept, yielded actual benefit and thus motivated to continue on the journey of improving the environmental performance of the companies
- With the knowledge that a positive image concerning environmental protection is also important for Indian companies, new strategies can be developed to implement the ECOPROFIT and Cleaner Production approach.
- Bringing network of all European companies having adopted ECOPROFIT approach to come in contact with Indian participating companies.
- Next implementation phase workshops /seminar and training planning.
- Review of actual achievements vis a vis targets set
- Introduction of ECOPROFIT concept to other Industrial cities in India and larger number of companies in Gurgaon.

To realise these follow-up otions the following partnerships are of main interest

- Industrial Associations and Industrial Development Authorities in India
- State Pollution Control Boards and the Central Government Pollution Control Board
- Central Government Ministry of Environment & Forests in India
- Sector wise Industry Associations
- Large public sector corporations
- Research & Training Institutes
- European Universities
- ECOPROFIT companies in Europe and India

9.4. Impact of the project on the Indian environment and economy and on the relationship between India and the EU

The concept of identifying win/win approaches has been proven within Indian boundary conditions the first time.

- The results are likeley motivating industry to act proactively identifying options for ecological and economic improvements. Authorities can confidently propagate the concept and agree with regional industries upon environmental programmes developed and followed voluntarely by the industries. More companies will come forward for the cleaner production and environment improvement.
- This novel approach for dealing with environmental problems could revolutionize the current command and control approach of regional environmental authorities.
- Improvement in Indian environment and recognition of Indian industries globally as they would be at par with their European counterparts.
- Implementation of the Ecoprofit concept, (Cleaner Production, material & Energy analysis, etc.) in the industries would lead them to reduce a lot on their waste side, which would inevitably improve their production process to a greater efficiency and better and sustainable utilisation of raw materials and would bring them the benefits in the terms of capital.
- Consequently more industries from the region would be attracted towards the concept, and try to adopt the same. This would lead to the improvement in the environment of the region on the whole and be a showcase for other industrial cities in India and consequently recuperate Indian environment.
- The outcome of the project will stimulate more cooperative projects in future, as the industries in India would be at par on the environmental standards with the companies in EU. This might also lead to more joint collaborative projects between other bigger industries in India for direct trade and environmental projects with EU and other developing nation neighboring India.
- India would be a paradigm in the region for other nations as its one of the first ones that has adopted such an initiative. Looking at the success of the concept in India these other nations would also be interested in strengthening their trade ties with the EU.
- India being a non annexure country of the Kyoto protocol has lot of potentials for and can emerge out to be a potential market for EU for buying emission credits to meet its Kyoto targets.

List of participating companies (contact details)

Name of company	Address	Phone	Fax	URL	E-mail	Contact	Role in company/project
Amrit Feeds	Bajghera road, Gurgaon-122017	91-124-6360836, 6360342				Mr. S.B. Aggarwal Mr. Rajan Aggarwal	Managing Director, Project Coordinator Team Leader
Arjan Auto Pvt. Ltd.	81, Udyog Vihar, Phase-I, Gurgaon-122016	91-124-6439587, 8901761-2	91-124-6341254, 6345403		arjanauto@vsnl.com	Mr. Rajat Batra Mr. Mohammad Irfan Mr. Ravinder Singh	Director, Project Coordinator & Team Leader Mainatenance & production related data Mainatenance & production related data
AVL India Ltd.	367-377, Udyog Vihar, Phase -IV Gurgaon -15	91-124-6455277-81, 6455272	91-124-6455273	www.avl.com	sukhdev.singh@avl.com materials@avl.com	Mr. Sukhdev Singh Mr. R.C.S. Negi Mr. Sanjay Kapoor Mr. Vinod Sharma	DGM (works), Project Coordinator Team Leader Maintenance & Production related works Energy related data
Carrier Aircon Ltd.	Kherki Daula Post, Gurgaon-122001	91-124-6372231-38	91-124-6372230	www.carrierindia.com	mohd.abdul.mannan@carrier.utc.com	Mr. M.A. Mannan Mr. Arun Prakash Mr. Kapil Sardana Mr. Dinesh Kumar Mr. Manoj Kumar	Manager, Project Coordinator Team Leader Maintenance, Production & Utilities related works Maintenanace Data Process
Denso Haryana Ltd.	Plot No.3, Sector-3, IMT, Manesar, Gurgaon	91-124-6290611, 6290605-19	91-124-6290601-02		dnha_gad01.ndoa@notes.denso.co.jp	Mr. Shyamal Chakraborti Ms. Dilraj Kaur Mr. Praveen Bhutani	General Manager, Project Coordinator Team Leader Energy & Utilities related data
Jay Bharat Maruti Ltd.	5, Maruti Jointventure Complex, Gurgaon-15	91-124-6398446-50	91-124-6341321	www.jbm.co.in	jvjain@jbm.co.in	Mr Jai Veer Jain Mr. Sanjay Narula Mr. H.P. Arya Mr. Rajesh Yadav Mr. N.K Gupta Mr. R.S. Chauhan	Chief Operating Officer, Project Coordinator Team Leader Team Member Maintenanace & Production related data Energy related data Energy analysis, material flow analysis, environmental report
Machino-Basell India Ltd.	Plot No.2, , Sector-33, Delhi Jaipur Highway Gurgaon-122001	91-124-6371902-35	91-124-6371904	www.machinobasell.com	svarshney@machinobasell.com	Dr. J.S. Anand Mr. Sanjeev Kr. Varsh Mr. K.G.Gopinath Mr. R. R Singh Mr. S. Prakash	Vice President, Project Coordinator Team Leader Environmental Report Utilities and realted data Production related information

Machino Plastics Ltd.	3, Maruti Joint Venture Complex, Gurgaon-122001	91-124-6341218, 6340806	91-124-6340692		pankajkumar@rediffmail.com	Mr. Sanjiv Jindal Mr. Kapil k Birla Mr. Manoj Sharma Mr. Prashant Dubey	Managing Director, Project Coordinator Team Leader Maintenance, Production & Utilities related works Energy related data
Multivac India Ltd.	75-C, HUDA Industrial estate, Sector-18, Gurgaon-122015	91-124-6345075, 6346075	91-124-6345075, 6346075		multivac@del3.vsnl.net.in	Mr. Uday Karnadhikar Mr. Sudhir Kumar Mr. V.K. Tiwari	Executive Director, Project Coordinator Team Leader Environmental Report
Munjal Showa Ltd.	9-11, Maruti Industrial Area, Gurgaon	91-124-6341001-03, 6340427-29	91-124-6341359, 346		msll@vsnl.com	Mr. B.K. Chopra Mr. Nirmal Dhulekar Mr. Akshay Tripathi Mr. S.K Arora	Vice President, Project Coordinator Team leader Production & Maintenance related information Utilities and realted data
NIPA International Ltd.	412, Udyog Vihar, Phase-II, Gurgaon-16	91-124-6341127,6439624	91-124-6341149		nipaintl@vsnl.com	Mr. J. C. Khanna Mr. A.K. Tiwari	Managing Director, Project Coordinator Team Leader
Onasis Autos Product (P) Ltd.	Sector-34, Plot No. 35, EHTP, Gurgaon	91-124-6371285	91-124-6371546	www.onassisauto.com	rohit@onassisauto.com	Mr. Rohit Bhatia Mr. A.K. Dasgupta	Managing Director, Project Coordinator Team Leader
Saint Gobain Diamant Winter Ltd.	4, IDC, Mehrauli Road, Gurgaon-122001	91-124-8984541-45	95-124-8984538	www.winter-india.co.in	pradeep@winter-india.co.in	Mr. H.B. Singh Mr. Pradeep Srivastava Mr. D.D. Pandey Mr. Arvind Bhatia	General Manager, Project Coordinator Team Leader Energy & Utilities related data Stores & Maintenance related information
Sandhar Locking Devices Ltd.	3, HSIDC Idustrial Area, Delhi-Gurgaon road, Gurgaon-15	91-124-6340269, 6340368, 6340572	91-124-6340352	www.sldl.com	pradeep@sldl.com	Mr. Jamil Ashraf Mr. Pradeep Hatgaonkar Mr. D.S. Gangwar Mr. Vikas Sethi Mr. Mahipat	Vice President, Project Coordinator Team leader Energy analysis & Maintenance related data Utilities related datas Environment report
Sona Okegawa Precision Forgings Ltd.	Sona-Enclave-Village Begumpur Khatola P.B. No. 90, Gurgaon-1	91-124-6215761-64	91-124-6215183, 6215766	www.sonagroup.com	shivasishdas@sonagroup.com	Mr. T. K. Pal Mr. Shivasish Das Mr. Arvind Gautam Mr. Ajay Chauhan Mr. Rishi kochar	Managing Director, Project Coordinator Team Leader Energy & Maintenance related information Environmental Report Utilities and realted data

List of participants at ECOPROFIT award ceremony

Name of the participant	Name of the company	Address	Phone
Nella G Hengstler	Austrian Embassy	12-A, Amrita Shergill Marg, New Delhi-3	91-11-24618395
Anurag Rastogi	Deputy Commisioner, Gurgaon	Civil Lines Gurgaon	91-124-2321144, 2325500
B.S. Singroha	HSPCB	Vikas Sadan, Ist floor Gurgaon	91-124-2332775
J.N. Mangla	Gurgaon Industrial Association	GIA House, GIA Marg, IDC Mehrauli Road, Gurgaon	91-124-2320746
K.C. Papreja	Gurgaon Industrial Association	GIA House, GIA Marg, IDC Mehrauli Road, Gurgaon	91-124-2320746
B.K. Methi	Gurgaon Industrial Association	GIA House, GIA Marg, IDC Mehrauli Road, Gurgaon	91-124-2320746
N.K. Singh	Gurgaon Industrial Association	GIA House, GIA Marg, IDC Mehrauli Road, Gurgaon	91-124-2320746
Ajay Kumar	Gurgaon Industrial Association	GIA House, GIA Marg, IDC Mehrauli Road, Gurgaon	91-124-2320746
Ajay Gulati	Green City India Pvt. Ltd	D-191,Gf, Saket, New Delhi-17	91-11-26564404, 05
Parul Sood	Green City India Pvt. Ltd	D-191,Gf, Saket, New Delhi-17	91-11-26564404, 05
Lalit Sharma	Green City India Pvt. Ltd	D-191,Gf, Saket, New Delhi-17	91-11-26564404, 05
Navinder Jeet Singh	Green City India Pvt. Ltd	D-191,Gf, Saket, New Delhi-17	91-11-26564404, 05
Thomas Dielacher	Stenum GmbH	A-8010 Graz, Geidorfguertel 21, Austria	43-316367156-60
Johannes Fresner	Stenum GmbH	A-8010 Graz, Geidorfguertel 21, Austria	43-316367156-60
Christian Angerbauer	Stenum GmbH	A-8010 Graz, Geidorfguertel 21, Austria	43-316367156-60
Gerhard Weihs	Centric Austria	A-9300 St. Veit/ Glan, Hauptplatz 27A, Austria	43-421228728-30
Dr. D.D. Basu	CPCB	Parivesh Bhavan, East Arjun Nagar, Delhi-32	91-11-2225792
Tribhuvan Goyal	R.K. Enterprises	Sheetla Mata Colony Sector-5, Road, Gurgaon	91-124-6306484
Yogesh Virmani	Yogesh Industrial corporation	85,I.D.C.,Mehrauli road, Gurgaon.	91-124-6320028, 6328143
R.K. Gupta	Bee Enn Metals	Bajghera Road Near Baba Prakash Puri, Gurgaon	91-124-6360909
B.N.Gupta	Bee Enn Metals	Bajghera Road Near Baba Prakash Puri, Gurgaon	91-124-6360909
S.Mishra	Roop Polymers Ltd.	27,I.D.C.,Mehrauli Road, Gurgaon	91-124-6320103, 6320111
S.K. Sharma	Roop Polymers Ltd.	27,I.D.C.,Mehrauli Road, Gurgaon	91-124-6320103, 6320111
Mr. Sheel Kumar	A.M.C.Systems.	2/, Shivaji Nagar 93,Gurgaon	
B. Kumar	Ashta Plastic & Engineering Works	318/21, Gali No.5, Madan Puri Gurgaon.	91-124-6326543
Nirmal Singh	Ashta Plastic & Engineering Works	318/21, Gali No.5, Madan Puri Gurgaon.	91-124-6326543
Anil Bhasin	EASKAY India	671/7 Urban Estate Gurgaon	91-124-6301357
M.K Kukreja	Henkal Teroson India Ltd.	74, I.D.C., Mehrauli Road Gurgaon	91-124-6321749, 6321085
Shyam Kwatra	Plasto Rubber Industries India Ltd.	P.B.NO.11, Khandsa Road, Gurgaon.	91-124-6322192
V. P. Nangia	AAR PEE Enterprises.	Plot.No.6, Street No.4,Opp.Sec-5 Road Sheetla Mata C	91-124-6300361
Pradeep Malhotra	Shivam Techno	359/21, Gali no.6, Madanpuri, Gurgaon.	91-124-6335586
B.K. Mishra	Shivam Techno	359/21, Gali no.6, Madanpuri, Gurgaon.	91-124-6335586
Yashpal	Shivam Industries	453/25, Gali no.12, Madan puri, Gurgaon.	91-124-6316386
D.K Pandit	Asia Rubber Mills	Railway road Gurgaon	91-124-6320548, 6330692
P.S. Singh	Asia Rubber Mills	Railway road Gurgaon	91-124-6320548, 6330692
Yogesh Jain	Zenith Industries	Railway road Gurgaon	91-124-6320564
Prem Kishore	MARC India Ltd.	78, I.D.C., Mehrauli Road Gurgaon	91-124-6320168
N.K. Malik	JAY KAY Industries.	GP-78,Maruti Industrial Area Sector-18, Gurgaon.	91-124-6346622
S.K. Sharma	JAY KAY Industries.	GP-78,Maruti Industrial Area Sector-18, Gurgaon.	91-124-6346622
Sunil Harjai	Siddharth exports	7-A, I.D.C.,Mehrauli road Gurgaon	91-124-6401494
Arvind Dham	AMTEK Auto Ltd.	16-Roz-Ka Meo Ind. Area Gurgaon	91-124-6362454-56
Ramesh Kumar	AMTEK Auto Ltd.	16-Roz-Ka Meo Ind. Area Gurgaon	91-124-6362454-56
Naveen Bansal	Anokhisons Agro(I) P. Ltd.	Vill. Narhera, Pataudi-Bilaspur Road, Distt. Gurgaon.	91-124-6374501
Col. Shyam Malhotra	SAM Smokeless Fuel Pvt. Ltd.	743, Sector-4, Gurgaon.	91-124-6331958
Avtar Singh Yadav	Meenu Spring India.	Karam Potteries Campus Pataudi Road, Gurgaon.	91-124-6323696, 6307980
R. K. Tyagi	Meenu Spring India.	Karam Potteries Campus Pataudi Road, Gurgaon.	91-124-6323696, 6307980
Vikas Kapoor	Deekay Plastics	Gali No. 4 Laxman Vihar extn.Gurgaon	91-124-6300618
Thakur Das	Laxmi Metals.	New Rly. Road, Gurgaon	91-124-6321263
Om Khosla	Frontier Technologies, P Ltd.	Vill : Mohmedpur Jharsa, Old Manesar Road Gurgaon	91-124-6372599
Vikram Sharma	Shree Lakshmi Palkers	Khasra No.2377/2, Gali No.5 Sheetla Mata Colony , Sec 5 Road Gurgaon	91-124-6302400
S.K. Sharma	Shree Lakshmi Palkers	Khasra No.2377/2, Gali No.5 Sheetla Mata Colony , Sec 5 Road Gurgaon	91-124-6302400
Y.P Mahendru	Aureola Chemicals (P)Ltd.	351/15, Jacobpura Gurgaon	91-124-5063117
Anil Gupta	Gurgaon Packaging P. Ltd.	871,Sector-14, Gurgaon	91-124-6321771
Deepak Maini	D.M.Enterprises.	Main Road, Jyoti Park Gurgaon	91-124-6324617
S.K. Singh	D.M.Enterprises.	Main Road, Jyoti Park Gurgaon	91-124-6324617
Sukhdev Singh	AVL India Ltd.	367-377, Udyog Vihar, Phase -IV, Gurgaon-15	91-124-6455277-81,6455272
R.C.S Negi	AVL India Ltd.	367-377, Udyog Vihar, Phase -IV, Gurgaon-15	91-124-6455277-81,6455272
Sanjay Kapoor	AVL India Ltd.	367-377, Udyog Vihar, Phase -IV, Gurgaon-15	91-124-6455277-81,6455272
Col. Batra	Arjan Auto Pvt. Ltd.	81, Udyog Vihar, Phase-I, Gurgaon-16	91-124-6439587, 8901761-2
Rajat batra	Arjan Auto Pvt. Ltd.	81, Udyog Vihar, Phase-I, Gurgaon-16	91-124-6439587, 8901761-2
Atul Batra	Arjan Auto Pvt. Ltd.	81, Udyog Vihar, Phase-I, Gurgaon-16	91-124-6439587, 8901761-2
Md. Irfan	Arjan Auto Pvt. Ltd.	81, Udyog Vihar, Phase-I, Gurgaon-16	91-124-6439587, 8901761-2
S.B. Aggarwal	Amrit Feeds	Bajghera road, Gurgaon-122017	91-124-6360836, 6360342
Rajan Aggarwal	Amrit Feeds	Bajghera road, Gurgaon-122017	91-124-6360836, 6360342
M.A. Mannan	Carrier Aircon Ltd.	kherki Daula Post, Gurgaon-122001	91-124-6372231-38
Kapil Sardana	Carrier Aircon Ltd.	kherki Daula Post, Gurgaon-122001	91-124-6372231-38
Dilraj Kaur	Denso Haryana Ltd.	Plot No.3, Sec-3, IMT, Manesar, Gurgaon	91-124-6290611, 6290605-19
H.P Arya	Jay Bharat Maruti Ltd.	5, Maruti J.V.Complex, Gurgaon-15	91-124-6398446-50
Rajesh Yadav	Jay Bharat Maruti Ltd.	5, Maruti J.V.Complex, Gurgaon-15	91-124-6398446-50

Sanjay Singh	Machino Plastics Ltd.	3, Maruti J.V.Complex, Gurgaon-15	91-124-6341218, 6340806
Manoj Sharma	Machino Plastics Ltd.	3, Maruti J.V.Complex, Gurgaon-15	91-124-6341218, 6340806
Kapil K Birla	Machino Plastics Ltd.	3, Maruti J.V.Complex, Gurgaon-15	91-124-6341218, 6340806
Dr. J.S Anand	Machino-Basell India Ltd.	Plot No.2,Sector-33, Gurgaon	91-124-6371902-3-5
S.K Varshney	Machino-Basell India Ltd.	Plot No.2, Sector-33, Gurgaon	91-124-6371902-3-5
K.G Gopinath	Machino-Basell India Ltd.	Plot No.2,Sector-33, Gurgaon	91-124-6371902-3-5
Sudhir kumar	Multivac India Ltd.	75-C, HUDA Ind. estate, Sec-18, Gurgaon	91-124-6345075, 6346075
G.S Das	Multivac India Ltd.	75-C, HUDA Ind.estate, Sec-18, Gurgaon	91-124-6345075, 6346075
Nirmal Dhulekar	Munjal Showa Ltd.	9-11, Maruti Industrial Area, Gurgaon	91-124-6340427-29
Akshay Tripathi	Munjal Showa Ltd.	9-11, Maruti Industrial Area, Gurgaon	91-124-6340427-29
Ajay Bhanot	NIPA International Ltd.	412, Udyog Vihar, Phase-II, Gurgaon-16	91-124-6341127,6439624
Pradeep Srivastava	Saint Gobain Diamant Winter Ltd.	4, IDC, Mehrauli Road, Gurgaon-122001	91-124-8984541-45
H.B. Singh	Saint Gobain Diamant Winter Ltd.	4, IDC, Mehrauli Road, Gurgaon-122001	91-124-8984541-45
Arvind Bhatia	Saint Gobain Diamant Winter Ltd.	4, IDC, Mehrauli Road, Gurgaon-122001	91-124-8984541-45
Jamil Ashraf	Sandhar Locking Devices Ltd.	3, HSIDC Idustrial Area, Gurgaon	91-124-6340269,6340572
Pradeep Hatgaonkar	Sandhar Locking Devices Ltd.	3, HSIDC Idustrial Area, Gurgaon	91-124-6340269, 6340368
D.S. Gangwar	Sandhar Locking Devices Ltd.	3, HSIDC Idustrial Area, Gurgaon	91-124-6340269, 6340368
Mahipat	Sandhar Locking Devices Ltd.	3, HSIDC Idustrial Area, Gurgaon	91-124-6340269, 6340368
Vikas Sethi	Sandhar Locking Devices Ltd.	3, HSIDC Idustrial Area, Gurgaon	91-124-6340269, 6340368
V.K Bhardwaj	Bonafide Manufacturing Co.	21, Govind Puri, Basai Road Gurgaon	95-124-6323528
G.D. Singh	Lumax Filters (P) Ltd.	5-A, I.D.C.Mehrauli Road Gurgaon	91-124-6326913, 6322310
Pramod Goel	K.K.Organics (P) Ltd.	98, HOPE Appt. Sec-15, Gurgaon	91-124-6332254, 6332257
Krishna Bhadana	N.R.Industries.	Plot No-3, Gali No.10, Devi Lal Ngr , Gurgaon	91-124-6303637
M. Bhadana	N.R.Industries.	Plot No-3, Gali No.10, Devi Lal Ngr , Gurgaon	91-124-6303637
Sameer Mehra	Norind Industries (P) Ltd.	11,I.D.C.,Mehrauli Road Gurgaon	91-124-6327937, 6331261
Sunil Khurana	Hydraulics Ltd.	Plot No.1/21/2/1 Old Khandsa Road, Narsingh Pur Gurgaon	91-124-6372734, 6370314
M. Kumar	Hydraulics Ltd.	Plot No.1/21/2/1 Old Khandsa Road, Narsingh Pur Gurgaon	91-124-6372734, 6370314
Rupesh Jain	Flexo Foam (P) Ltd.	Opp.Northern Minerals Ltd. Daulatabad Road, Gurgaon.	91-124-6366716
K.L Jain	Kesaria Rubber Indus (P) Ltd.	508/9 Shivpuri, Gurgaon	91-124-6307503, 6328500
D.P. Goel	Madhu Electricals.	365,Udyog Vihar, Phase-II Gurgaon	91-124-6347249, 6346810
S.C. Jain	Madhu Electricals.	365,Udyog Vihar, Phase-II Gurgaon	91-124-6347249, 6346810
Sanjay Agarwal	NU-Packing & Jointing.	55,I.D.C., Mehrauli Road Gurgaon	91-124-6320958, 6303747
Rajat Jawa	Jawa Pham (I)Pvt.Ltd.	129, Udyog Vihar Phase-IV, Gurgaon.	91-124-6340450, 6340451