



ECOPROFIT Programme for the benefit of SMEs

BACKGROUND

GTZ - the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, (German Technical Cooperation) is a federal enterprise based in Eschborn near Frankfurt am Main. The German Federal Ministry for Economic Cooperation and Development (BMZ) is its major client. The company also operates on behalf of other German ministries, the governments of other countries and international clients, such as the European Commission, the United Nations and the World Bank, as well as on behalf of private enterprises. GTZ works on a public-benefit basis. As an international cooperation enterprise for sustainable development with worldwide operations, GTZ provides viable, forward-looking solutions for economic, ecological and social development in a globalised world. GTZ is implementing a number of projects related to environmental, energy, natural resource management and health related projects in more than 131 countries in the regions of Latin America and Caribbean, Africa, Asia, Near and Middle East and the Maghreb Asia, Mediterranean region, Europe and Central Asian countries. (www.gtz.de).

CONTEXT ...to the present scenario!

There is a trend of increasing industrialisation as well as increasing trends of threats to environment. The highly competitive market environment is a compulsion to industries to keep up productivity while controlling production costs, which often becomes rather difficult to sustain considering the ever increasing prices for resources like skilled workforce, raw materials and energy. Added to this, industries have mandatory requirements to comply with several environmental laws and rules, and are under constant environmental regulatory risks facing threats of closure. The industries, especially the SMEs are often confronted with constraints in making investments for improved productivity as well as for improvement of environmental situations. As is said 'prevention is better than cure', there is a need for industries to improve productivity through improved manufacturing processes or operations, resource conservation, and to address environment and energy issues. What could be a better solution for industries than deploying a tool that helps the industries in both process improvements as well environmental improvement and **helping industries make profits from the investments made?**

THE PROBLEM...in the industries!

Industries in the SME sector often lack knowledge and know-how on how to profitably increase the productivity and to reduce emissions and discharges. Achieving improved productivity and reducing emissions/effluents/wastes within affordable investments appears to be an uphill task for the SMEs. **Is there a solution?**

ECOPROFIT APPROACH... a possible solution!!

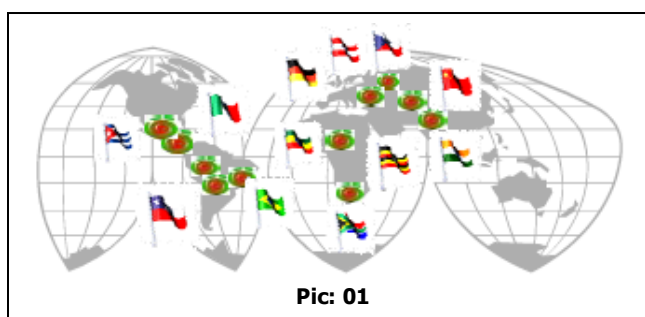
ECOPROFIT[®] is a possible solution to industries. **ECOPROFIT[®]** is a win-win-model, using integrated environmental technologies to strengthen businesses economically & simultaneously improving local environment. Enterprises from heterogeneous sectors works in cluster project, which enabled them to cut their costs through investments into operational environmental protection and to increase their eco-efficiency.

ECOPROFIT[®] helps in enhancing the efficiency of industries, reducing the demand for raw materials and energy, and minimizing associated environmental impacts from

emissions/effluents/wastes thereby facilitating sustainable development. **ECOPROFIT**[®] tool works on the model of sustainable development focusing on the application of preventive environmental strategies by adopting best practicable measures related to various aspects of operations such as technology integration, raw material conservation, process optimisation, reduction of wastes/emissions/effluents and improved products.

ECOPROFIT[®] started in Europe in early 1990 by STENUM Environmental Consulting and Research Company GmbH, Austria. Initially, the industries were forced to participate, but very soon the industries realised that participating in **ECOPROFIT**[®] was bringing them dual benefits, both Environmental as well as Economical. The industries had on one hand reductions on usage of energy and reductions in waste water and waste material generation as well had economic gains from savings due to better resource utilisation, efficient production, less waste and hence realised that participating in ECOPROFIT was bringing them DUAL BEEFIT (Environmental + Economical).

ECOPROFIT[®] has been in various parts of the world including **Europe** (Austria, Czech Republic, Germany, Finland, Hungary, Ireland, Portugal, Slovakia Slovenia, Spain, Ukraine,) **Latin America** (Brazil, Chile, Colombia, Costa Rica, Cuba, Nicaragua) **Africa** (Ethiopia, Uganda, South Africa) and in **Asia** (China, India, Lebanon, Philippines, Korea, Srilanka) (Pic: 01).



In India, **ECOPROFIT**[®] was introduced through an exposure programme conducted in February 2002 followed by a cluster programme (2002) spread over 1 year, where 15 industries participated. The second programme was implemented in 21 industries with a duration of two years (2003-05). These two projects were funded by the European Commission and the Austrian Government.

The **ECOPROFIT**[®] **Team India** has taken up the first self sustained project that was paid by the industries, successfully in the year 2006 in the National Capital Region of Delhi, the second project in 2007 in Ludhiana and the third in 2008 in Gurgaon.

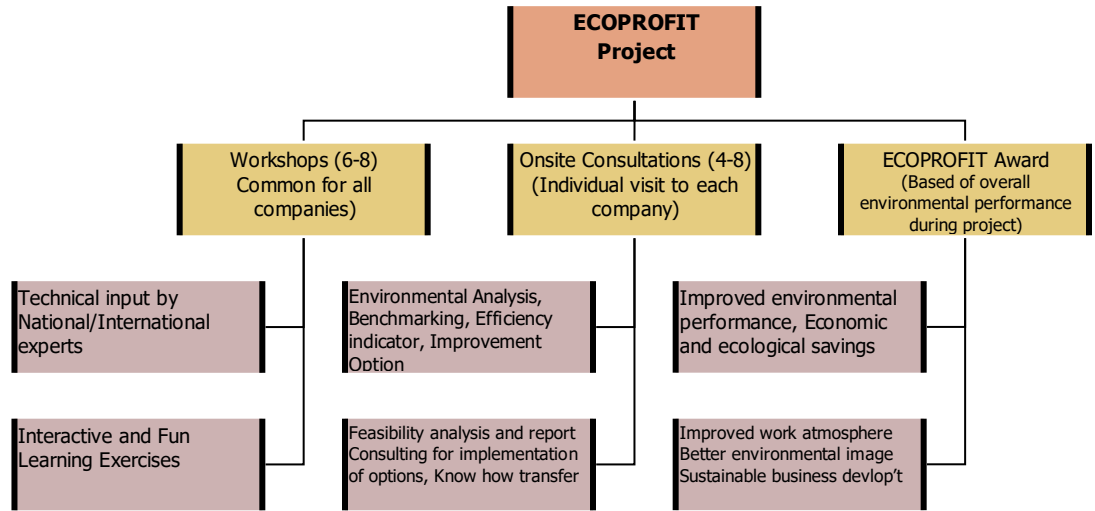
Today, **ECOPROFIT**[®] has already been implemented successfully in more than 60 enterprises in India and it is estimated that the return of investment (annual) in Indian companies was identified to be a minimum of 1:4 in comparison to programme cost in addition to significant environment savings and improved performances. There have been a number of case studies for the implemented measures highlighting the DUAL BENEFIT of environmental and economic savings to the companies.

THE APPROACH... How it works!

The main focus of **ECOPROFIT**[®] programme is to establish a fully capable team of 3-4 employees from within the chosen company through step by step process gradually training them on topics of cleaner production and preventive environmental approach. This **ECOPROFIT**[®] programme is bundled with proper training tools, interactive exercises, onsite assistance/consultation, working out economic and environment savings and at the end of the programme it is ensured that participating companies not only utilize their resources (raw materials, production streams, energy, water, etc.,) optimally, but also be able to minimize the waste in all possible streams.

The project has three basic pillars (Pic: 02):

- **Technical presentations** (6-8 modular workshops on specific topics like cleaner production, team work, material flow analysis, water, energy, waste, legal requirements, hazardous wastes, logistics etc.)
- **On site consultation and follow-up** (by international and national experts on specific topics to identify, evaluate, implement and monitor the options)
- **ECOPROFIT[®] Award** (to be issued to participating companies on recognition of efforts after the quantification of associated benefits)

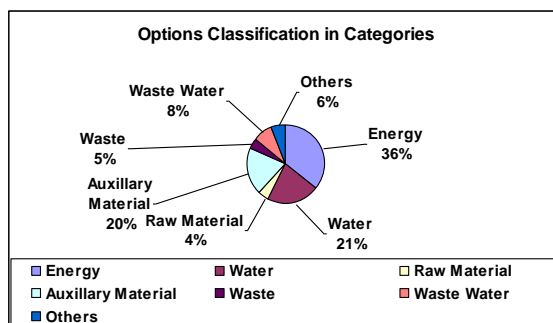


Pic: 02

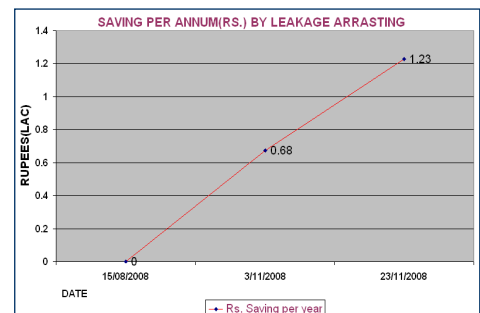
The ECOPROFIT Programme would be conducted by a team of local and international experts and a certificate would be issued at the end of the programme for the successful industries.

IMPACT... savings/case studies from last few projects ! (First Sustainable Project NCR 2006)

The **ECOPROFIT[®]** programme aimed of keeping profits as a driving force for implementing the measures in the industries and as a result out of one last concluded project (2006) the teams from all participating industries, with the support of national and international experts, has identified 235 options for realising benefits covering the aspects of energy, raw materials, water, waste, hazardous waste as shown in the Pic: 03 below.



Pic: 03



Pic: 04

Some success stories:

- By regular use of **ECOPROFIT®** tool on Compressed Air Line, a company reduced its compressed air losses from 40 % to 34 % and gradually to 23 % which saved them Rs. 1,23,000/- with no investments made (Pic: 04).



Pic: 05

- In a renowned confectionary industry a compressed air system is replaced with micro fans that have a potential saving of 608,865 kWh per year with a very low cost optimization. This energy saving can account upto 450 tonnes of CO₂ reduction. (Pic:05)

- In an electroplating industry, a whopping 4,644 cubic metre per year of ground water reduction was possible by installing conductivity based flow meters and further optimization of process and rinse baths. There were further savings due to lesser treatment costs at effluent treatment plant and reduced energy consumption. (Pic:06)



Pic: 06

- In an automobile component manufacturing industry top open surface of degreaser tank maintained at 60 °C has been covered with thermal insulating balls which produced the saving in fuel consumption of 35 lit/hr as the working hour of Hot water generator was reduced from 55 hr/month to 23 hr/month, which results in saving of INR Rs 4.5 lacs/yr with negligible investment (Pic:07)



Pic: 07

- In an automobile component manufacturing industry, the air to fuel ratio of aluminium melting furnace was optimised to required level, the saving achieved with it is shown in table below and in Pic: 08

Parameters	Before	After
Air/Fuel	<11	16-17
Operation hours	4800	4800
Fuel consumption (l/year)	210000	157500
Reduction (l/year)	0	52500
Savings (INR/year)	0	1,850,000
CO ₂ reduction	No	Yes (154 t/a)

Pic: 09

- In an automobile component manufacturing industry, compressed air usage was replaced by side channel blower air in paint shop P.T. Line, which resulted in saving of Rs 64,000 per annum with investment of only Rs 30,000 providing payback of less than 6 months.



Pic: 08

- In an automobile component manufacturing industry, an oversized 30 HP motor was replaced by lower capacity 20 HP according to process requirement of buffing section resulting in saving of Rs 41,746 with an investment of Rs 30,000 resulting in payback within one year.

- In a diecasting machine, by utilising the heat from waste flue gas to preheat, the melting raw material resulted in temperature increase of 50°C in the input material, this arrangement with further modification will give significant savings in fuel consumption by these machines.

- Around 300 KL/yr of fresh water usage has been reduced in a water deficit area by cascading the water line of surface treatment water tanks.

(Second Sustainable Project ECOPROFIT Club NCR 2008)

- In an automobile component manufacturing industry, nozzles of compressed air gun (80 nos.) used for machine cleaning were replaced from 3 mm to 1 mm diameter size and thus resulting in saving of Rs. 7,52,000 with a minor investment of Rs. 20,000
- The injection barrels on the injection moulding machines (6 nos.) were insulated and thus results in saving of Rs. 2,55,000 with investment of Rs. 1,02,000.
- Other plant was running 3 cooling water pumps in parallel throughout the year but will now stops running one pump in winter seasons when the temperature of water is below required temperature thus plant can reduce the flow of water through machines which results in savings of Rs. 1,58,000 without any investment.
- Other industry installed a roots blower in place of compressed air used for the agitation of water in the rinsing tanks. This reduction of compressed air usage by simple blower air has provided savings of Rs. 66,000.
- In an automobile component manufacturing industry, they installed an STP Plant and now treated water from ETP and STP plant is being used for gardening this resulted in saving of 1050 KL of water.
- Compressed air generation pressure is reduced from 7.2 bar to 6.5 bars after evaluating and reducing pressure drops in the compressed air lines and thus saved Rs. 1,68,000.



ECOPROFIT Programme Hyderabad 2009

- In an printing press facility, two air washer with over sized motors were running for air supply to printing press area with approximately 30 % motor loading only, company will couple the two ducts and will run only one motor for air supply of all printing press area estimated savings were Rs. 2,20,000.
- Also this plant has reduced the frequency of AHU motor upto 40 Hz through VFD to reduce the blower RPM, actual savings obtained are Rs. 15,000 per year (at 9 hrs operation/day). Actual power consumption of motor reduced by 35 %. Also plant has installed two small separate units for server room and reduced AHU operation by 15 hrs a day provided saving of Rs. 70,000 additionally.
- In an pharma company, it is suggested to preheat the effluent with the hot vapour formed inside the evaporator, need a heat exchanger whose tubes can be easily cleaned, such heat exchangers are available saving potential is Rs. 1,20,000 per year approximately.
- In another pharma company, plant is elevating the buffer tank height to use gravity for feeding effluent at feeding tank. This arrangement will directly save approximately Rs. 70,000/yr by stop using a 3 HP pump.



- In another bulk drug company, plant is suggested to replace leaking steam traps (3 nos.) with long life and effective float type steam traps, this will save approximately Rs. 80,000 with investment of Rs. 20,000 only.



- In other unit (pharma), it is suggested to preheat the incoming air of 45 °C, for the spray drier with hot exhaust air of 90°C. This will save approximately Rs. 3,50,000 for the company.



- In another pharma company, it is suggested to use the hot exhaust air of spray drier directly into the fluidized bed drier, as the moisture content in this exhaust air of spray drier is in very less quantity. This will save approximately Rs. 1, 50,000 for the company.



FEEDBACK from participating industries.....

“The major and difficult tasks of reducing and eliminating waste or conservation of energy can be made so simple through **ECOPROFIT**[®] Tools. We have benefited a lot through it over the time and would like to be a part of it”.

....**Mr. Jamil Ashraf, Executive Director Sandhar Group of Industries**

“**ECOPROFIT**[®] provided us easy to use tools to help us understand and improve the environmental performance of our operations while saving precious resources and money with negligible investment”.

....**Mr. Rajat Batra, Director Arjan Auto Pvt. Ltd.**

“**ECOPROFIT**[®] witnesses the paradigm shift from pollution control to pollution prevention strategies by emphasizing on waste reduction at source. It makes a business sense to be associated with **ECOPROFIT**[®] where better environmental performance means better savings. We loved the way it was all conceived, practiced and dispensed”.

....**Dr. Christof Krogmann, CMD Machino-Basell India Ltd.**

“**ECOPROFIT**[®] programme has brought us half the way to get ISO 14000 certification requirements done

....**Mr. Shambhi Sharan, DGM Hella India Electronics Pvt. Ltd.**