

INDUSTRIAL ENERGY EFFICIENCY IMPROVEMENT PROJECT

IN SOUTH AFRICA

Moving towards a more energy efficient industry

*Creating skills and strengthening capacities.
Government and the private sector
working together for a better future.*



Background to the Project

Collaborating to put energy efficiency within local reach

The Industrial Energy Efficiency Improvement Project (IEE Project) was introduced in South Africa by the United Nations Industrial Development Organization (UNIDO) after rolling blackouts in 2008 exposed the country's acute shortage of electricity generation capacity. It is a collaborative initiative between the South African government through the Department of Trade and Industry (the dti) and the Department of Energy (DoE), the Swiss Secretariat for Economic Affairs (SECO) and the UK Department for International Development (DFID). The Project is implemented by UNIDO and is hosted by the National Cleaner Production Centre of South Africa (NCPC-SA) at the CSIR.

The IEE Project contributes to the sustainable transformation of energy usage practices in South African industry and aims to enhance national energy security, promote job creation and reduce carbon dioxide emissions. It facilitates the implementation of the new South African Energy Management Standard under the framework of the recently released international energy management standard [ISO50001](#), as well as builds the capacity to introduce a systems optimization approach in industry in South Africa.

Towards future global sustainability

It has been demonstrated time and again that energy efficiency saves industrial firms money, increases the reliability of operations and has a positive effect on productivity and competitiveness. The IEE Project aims to

provide a solid framework for businesses to follow when embarking on their journey towards becoming more energy efficient, resulting in costs savings, increased profitability, a reduced carbon footprint and enhanced international competitiveness through the implementation of energy management best practices. In countries and companies where energy management systems are relatively new, as in South Africa, between 10% and 20% savings have been reported by participating enterprises within the first two years of implementation.

The Project currently focuses on five key industry sectors which have the potential to bring about significant reductions in the overall energy consumption of the country. These are agro-processing, chemicals and liquid fuels, metals processing and engineering, automotives, and mining. The objective is to contribute to the national energy demand reduction target of 15% by the year 2015 for mining and industry, and 12% for the country as a whole.

South African experience for SADC expansion

Given the positive response of South African industry and the need for the introduction of Energy Management Standards and Systems Optimization around the continent as a means of increasing industrial competitiveness, the IEE Project will be raising awareness of the potential impact of these initiatives in SADC through a series of regional workshops. The scope of the programme will be adapted in accordance with the needs of participating countries, incorporating lessons learnt from the South African experience.

Following a holistic project approach

The IEE Project is following holistic approach to ensure the sustainability of industrial energy efficiency improvements in the country, with a focus on the following:

- Strengthening national capacity to improve industrial energy efficiency and energy management
- Facilitate the implementation of the supporting policy framework for energy efficiency
- Supporting the introduction and implementation of the Energy Management Standard (**SANS/ISO 50001**) and the national Standard on the Measurement and Verification of Energy Savings (SANS 50010)
- Building capacity to accredit and certify compliance with **SANS/ISO 50001** and SANS 50010, and supporting industry in using these standards and systems optimisation techniques to achieve greater energy efficiency
- Demonstrating and showcasing the impact of energy management systems (EnMS) and energy systems optimisation (ESO) in local industry, in collaboration with participating companies.

The Project also undertakes initiatives to create awareness of the potential impact of energy efficiency improvements on the profitability and competitiveness of SMEs in the manufacturing sector.



Components and main achievements

Providing the framework

In order to create an enabling environment for industry to implement energy efficiency measures and for government to monitor the impact, a comprehensive policy framework is needed.

The Project is assisting the South African Department of Energy in the review of the National Energy Efficiency Strategy, which will guide energy efficiency practices in the country. As part of the review process, workshops were held with stakeholders from government, the private sector and industry. The final draft strategy is currently with the DoE for internal review and submission to Parliament.

The IEE Project's close collaboration with industry partners also provides **the dti** with up-to-date information on market needs to ensure the introduction of effective incentive schemes to promote greater energy efficiency.

Introducing and implementing the standards

The IEE Project supports the objectives of the South African Bureau of Standards (SABS) by facilitating the application of standards in industry as tools to achieve greater energy efficiency. South Africa has adopted the international Energy Management Standard as **SANS/ISO 50001**, which aims to enable companies to:

- Develop policies for more efficient energy usage;
- Set targets and objectives to give effect to the policies;
- Use relevant data to enhance the understanding of and improve decision-making about energy use and consumption;
- Measure results;
- Review the effectiveness of policies; and
- Continually improve energy management.

In addition to the adoption of **SANS/ISO 50001**, the SABS has also released SANS 50010 as the national standard for the measurement and verification of energy savings. This standard will enable companies to provide proof of energy savings in order to qualify for government's energy efficiency financial incentives. South Africa is the first country in the world to release a standard for the measurement and verification of energy savings.

Building capacity

The availability of suitably skilled manpower is key to the sustainability of energy efficiency initiatives in industry. Capacity building is therefore a critical component of the activities of the Project. Training workshops on **energy management systems** (EnMS) and **energy systems optimisation** (ESO) are presented countrywide by UNIDO-appointed international experts at three levels; firstly, Introductory Level; secondly, Technical User Level; and finally, Expert Level. EnMS training ensures a holistic approach, while ESO workshops focus on steam, compressed air, pumps, motors, process heating and fans. The workshops have been attended by some 900 consultants as well as delegates from industry and all levels of government since being first introduced in August 2010. The first four expert-level training groups have already been enrolled, focusing on the areas of energy management systems, steam systems, compressed air systems, and pumping systems respectively. Suitably skilled and experienced graduates from these groups are being earmarked to take over from the international trainers in due course as part of the objective to build the required capacities locally.

Demonstrating the impact

To demonstrate the impact of energy management best practices in local industry, a number of opportunities are available for companies to become involved in the Project. Seven leading medium to large companies are currently pioneering the implementation of energy management systems within their operations. Further participation options range from three-day audits serving as a starting block towards improved energy efficiency, to becoming demonstration plants where the measurable and verifiable impact of energy systems optimisation interventions recommended by the Project can be showcased.

In the case of the **SMEs in the manufacturing sector**, opportunities for energy efficiency improvements are identified by means of fully subsidized three-day energy audits, and recommendations are provided based on a review of plant layout and configuration, the identification of energy-intensive assets, and the analysis of energy consumption data. The objective is to raise awareness of the potential impact of energy management systems and enable the implementation of “quick wins”. SMEs are also encouraged to make use of government incentives for capital investments to enhance energy efficiency.

The sharing of results obtained through these initiatives are expected to stimulate the demand for industrial energy efficiency services in the country.

Benefits of participation

Work at participating plants is done under guidance of the international trainers, and energy management systems are aligned with **SANS/ISO 50001**. Plants also benefit from the transfer of essential skills to their staff and the accommodation of a number of delegates on EnMS and ESO training workshops.



The Training Workshops

More about the Training Workshops

Internationally acknowledged experts with extensive practical experience are contracted by UNIDO to present regular training workshops on energy management systems and energy systems optimisation in Gauteng, Kwazulu-Natal and the Western Cape on a regular basis. The Project will also soon introduce training for auditors to certify companies to **SANS/ISO 50001** as well as SANS 50010.

Visit www.iee-sa.co.za for information on the trainers and the latest training dates and venues.

Focus of Training Programme

Energy Management Systems

A methodological, organised approach to managing energy usage, based on the recently released **SANS/ISO 50001**

Energy Systems Optimisation

Individual courses on the following:

- Compressed Air Systems
- Motor Systems
- Pump Systems
- Fan Systems
- Steam Systems
- Process Heating Systems

Training Course Levels

Workshops are presented at three levels, and are still heavily subsidized at this stage:

Introductory workshops

- *Duration:* One day
- *Cost:* Free

Technical workshops for users

- *Duration:* Two days
- *Cost:* R900 per person

Expert-level training

- *Duration:* Theoretical and in-company practical modules spread over a number of months
- *Cost:* R9 000 per person

Who should attend

- Energy managers
- Plant and facility engineers
- Maintenance staff
- Engineering consultants
- Service providers to industry
- Suitably qualified candidates interested in training-the-trainer opportunities

Feedback from delegates

"A good balance of examples, science and practical ways to improve systems and reduce loss."

"Very practical, and excellent lecturers!"

"Anecdotes from the presenters assisted in bringing in real-life experiences and what can happen in the field."

"Very informative. Highly recommended!"

Project funders and key stakeholders

The IEE Project is a collaborative effort spearheaded by the following role players:



the dti
Department:
Trade and Industry
REPUBLIC OF SOUTH AFRICA

The Department of Trade and Industry is mandated to ensure a healthy work environment for the growth of a productive industrial

sector. It has a keen interest in building capacity to formulate and manage effective best practice support structures and incentives that encourage the use of industrial energy management. In order to maintain growth, jobs and export markets, South African industry needs to optimise its energy consumption. The dti therefore plays an essential role in the implementation of the IEE Project to facilitate investment support for industry and the removal of communication and trade barriers. (www.thedti.gov.za)



energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

The Department of Energy has the mandate to promote energy efficiency and energy planning in South Africa. Its

function is to formulate and manage the achievement of energy policies, including the National Energy Efficiency Strategy. The DoE took the lead in requesting UNIDO to assist in the development of a special project to promote industrial energy efficiency, and is responsible for preparing and implementing relevant policies and regulations supportive of the implementation of the IEE Project.

(www.energy.gov.za)



The United Nations Industrial Development Organisation is entrusted by the South African Government with the implementation of the IEE Project by ensuring effective, timely and

supportive technical and financial monitoring of the Project.

(www.unido.org)



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs FDEA
State Secretariat for Economic Affairs SECO

The Swiss State Secretariat for Economic Affairs (SECO) and the **United Kingdom Department of International Development (DFID)**

provide international funding, which is channeled to the IEE Project through UNIDO.

(www.dfid.gov.uk,
www.seco.admin.ch)



The IEE Project is facilitated by the **National Cleaner Production Centre of South Africa (NCPC-SA)** at the CSIR. The NCPC-SA is the dti's key industrial sustainability

programme established to enhance the sustainability and competitiveness of South African industry, and to contribute to economic growth and job creation. The IEE Project will be integrated into the activities of NCPC-SA after completion of its four-year lifespan. (www.ncpc.co.za)



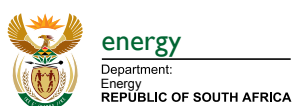
our future through science

The **Council for Scientific and Industrial Research (CSIR)** is one of the leading scientific and technology research, development

and implementation organisations in Africa. It provides the infrastructure and legal framework within which the NCPC-SA and the IEE Project operate. (www.csir.co.za)

A steering committee consisting of senior representatives of the DoE, the DEA, the dti, UNIDO, Business Unity South Africa (BUSA), the National Business Initiative (NBI), SECO and DFID provides strategic guidance to the IEE Project.





Enquiries



For more information about the training workshops and participation opportunities:

www.iee-sa.co.za • Tel.: 012 841 2768 (Pretoria) 021 658 3983 (Cape Town)
or 031 242 2365 (Durban)

For more information about partnership opportunities:

www.unido.org • Tel.: 012 394 1567 (Pretoria)