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Increased profit Through behaviour change in the organisation

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What can be achieved by behavioral change ?

Together
Everyone
Achieves
More

snhu.edu



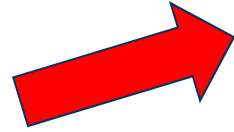


From US the superior energy performance

SEP Certified Facilities: Results

SEP provides additional value to any facility implementing ISO 50001:

- Robust energy data tracking
- Rigorous measurement & verification of energy savings
- 3rd party energy performance verification



- 28 industrial plants have completed SEP demonstration training
 - 12 sectors represented
- 14 plants SEP certified
- 25 additional plants pursuing certification
- Key SEP demonstration plant results (average)
 - Plants improving at ~4% per year
 - 77% of improvement from no/low cost operational improvement
 - 23% of improvement from capital projects

Facility Name	% Energy Performance Improvement
Volvo Trucks, NA Dublin, VA	25.8
Dow Chemical Company Texas City, TX: Manufacturing facility	17.1
3M Canada Company Brockville, Ontario, Canada	15.2
Cook Composites and Polymers Houston, TX	14.9
General Dynamics Scranton, PA	11.9
Allsteel Muscatine, IA	10.2
Cooper Tire Texarkana, AR	10.1
Olam Spices Gilroy, CA	9.8
Owens Corning Waxahachie, TX	9.6
Dow Chemical Company Texas City, TX: Energy systems facility	8.1
Nissan, NA Smyrna, TN	7.2
Freescale Semiconductor, Inc. West Austin, TX	6.5
3M Company Cordova, IL	6.2
Bridgestone Americas Tire Wilson, NC	16.8



From a petro chemical site

Changes in the first month

- Board of directors are starting to ask about information on energy consumption
- New leadership has embraced the Energy Culture concept
- Engineering department has made it mandatory to study the energy consequences on all new projects
- The safety department would like to coordinate communication on Energy Culture and Safety Culture
- Employees volunteer to help improve energy efficiency
- An operator has identify a problem of insulation in one of the building that is now being fixed
- The maintenance team has initiated an insulation campaign
- A group of operators have rerouted tracing cables to improve energy efficiency
- Maintenance has synchronized two compressors

1% energy
savings captured
after 1 month



10% energy
savings captured
after 18 month



Idle electricity

- Total electricity use reduced by 25 %
- Idle electricity use reduced by 57 %
- Total energy savings of 20.1 GWh
- Saved more than 1 260 ton of CO₂ emissions
- Energy bill in 2015 was 2.1M Euro lower compared to 2014
- Many “Non-Energy Benefits” (NEB’s)





Experience's from UNIDO EMS program in Turkey during last 9 months

Savings through improved operating parameters

- 6% saving in Natural Gas (Automotive)
- 4% saving in Electricity (Plastics)
- 4% saving in Natural Gas (Textiles)
- 5% saving in Electricity (Construction Products)
- 3.5% saving in Electricity (Packaging)



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Industrial Energy Efficiency Project

Islamic Republic of Iran



Regal Petrochemical Company (RPC) has joined hands with the United Nations Industrial Development Organization (UNIDO) and Iranian Fuel Conservation Company (IFCO) to implement a structured approach to energy management in their operations, under the Global Environment Facility (GEF) funded project, "Industrial Energy Efficiency in Key Sectors".

Through this cooperation, the RPC has already achieved significant savings through the implementation of an Energy Management System (EnMS) in alignment with ISO 50001:2011.

A Case Study of Regal Petrochemical Company



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Industrial Energy Efficiency Project

Islamic Republic of Iran


Kermanshah Petrochemical Industries Co. (KPIC) has joined hands with the United Nations Industrial Development Organization (UNIDO) and Iranian Fuel Conservation Company (IFCO) to implement a structured approach to energy management in their operations, under the Global Environment Facility (GEF) funded project, "Industrial Energy Efficiency in Key Sectors".

Through this cooperation, the KPIC has already achieved significant savings through the implementation of an Energy Management System (EnMS) in alignment with ISO 50001:2011.

A Case Study of Kermanshah Petrochemical Industries Co.

EnMS background in KPIC

Before starting EnMS in KPIC although they done some activities for energy conservation, there was no systematic approach to this issue. In fact, the main problem was that there was no proper structure and communication between the energy department and main affective users. After implementing EnMS, the level of communication between key personnel have been improved and energy analysis become a day to day function.



Kermanshah Ammonia and Urea manufacturing complex has been founded to provide chemical fertilizers. The complex, with the total area of 293 hectares including 62 hectares industrial

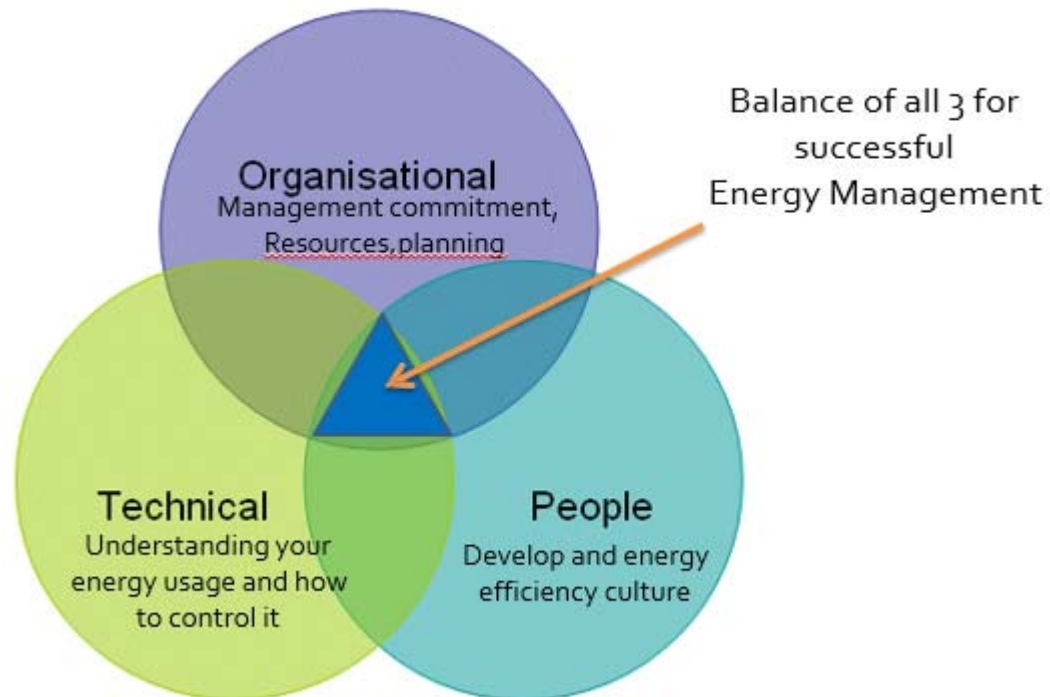


Discussion what did companies do to save energy ?





What makes energy management deliver savings ?





How can an energy efficient culture be created ?

Assign someone to be responsible, then ..

Step 1 – Get top management commitment

- Get the management commitment
- Asses the company culture
- Establish an agreed common understanding of what shall “our energy culture” be
- Pave the road for the implantation

BUT!!!!

Many barriers to energy efficiency

- Low awareness
- Lack of knowledge
- Resource constraints (time, money)
- Fragmented energy saving potential
- Lack of management commitment
- Inadequate energy data
- Resistance to change
- Perceived risk of production/operation disruption
- Measurement & verification uncertainty
- **Insufficient focus on non-technical solutions such as Training , communication, change management etc**

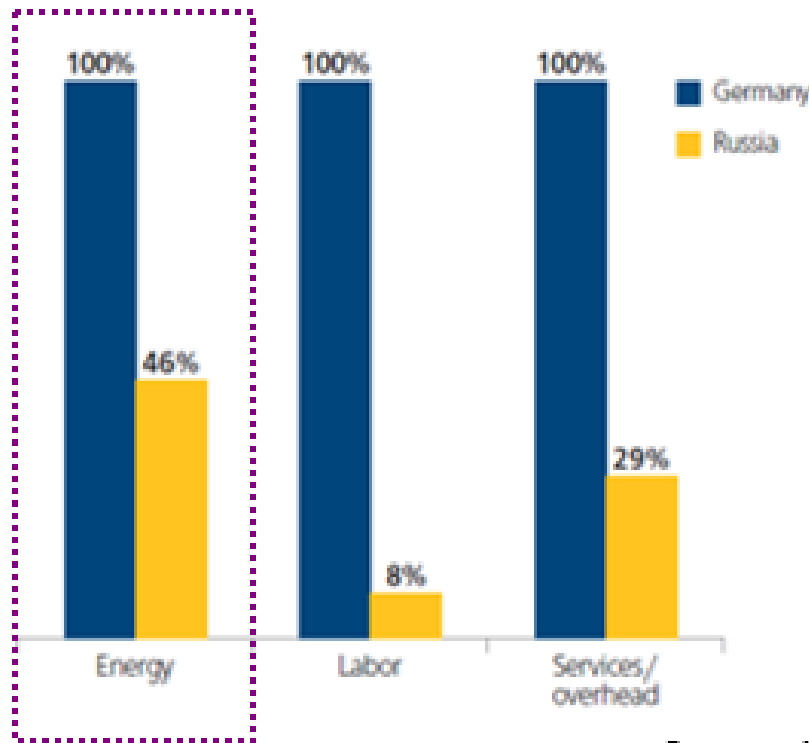




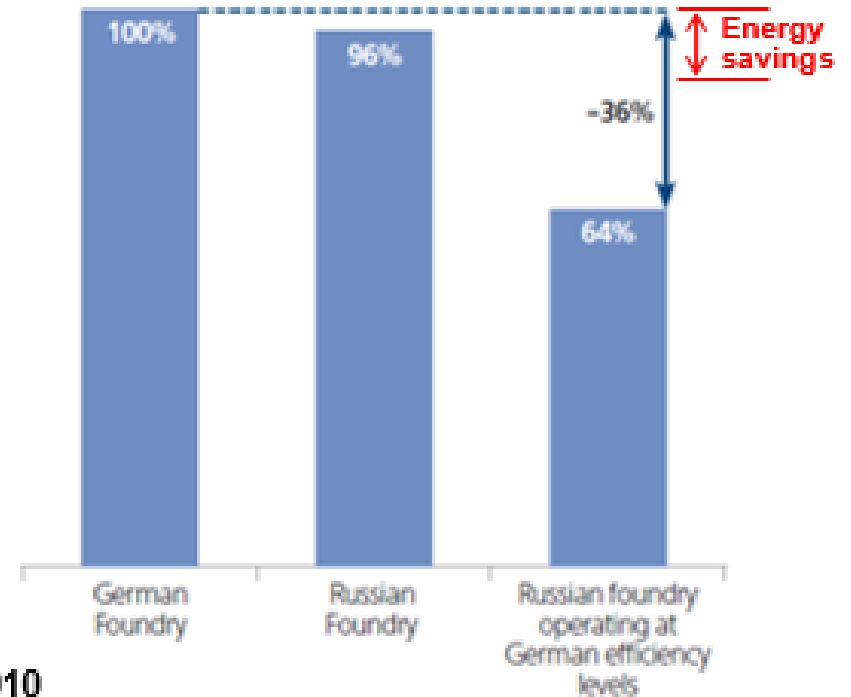
Company Competitiveness

Benchmarking study in Russian Foundry sector

PRICES



COSTS



Source: IFC, 2010



Environment competitiveness

WWF-IKEA Partnership



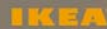
Hongwei Glassware Company

- Produce drinking glasses, vases, candleholders etc. for IKEA
- 1500 employees



Hongwei

Map Reference: <http://red4-luxury.com/wp-content/uploads/2010/09/L-China-map1.gif>





How can an energy Efficient culture be implemented ?

Step 2 – Introduction

- Inform and engage employees
- Address obstacles and difficulties

Step 3 – Implementation

- Integrate into all elements of the business such as procurement, design, maintenance procedures and ENPI's

Agenda kickoff meeting

- What are we doing?
- Why are we doing it?
- How will a behavior change help us?
- Who is leading the effort?
- Who else is involved?
- What key information do you need?
- What energy commitments have we made?
- What are our significant energy uses?
- Why are significant energy uses important?
- Why do your actions matter?
- What are the benefits of improved energy performance?
- Awareness is key to our success!
- Whats next ?

Examples of material ?

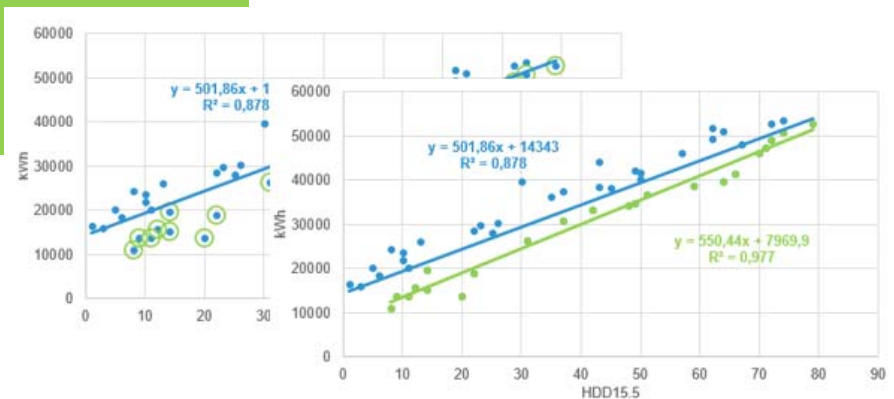




How can an energy Efficient culture be created ?

Step 4 – Evaluation and monitoring

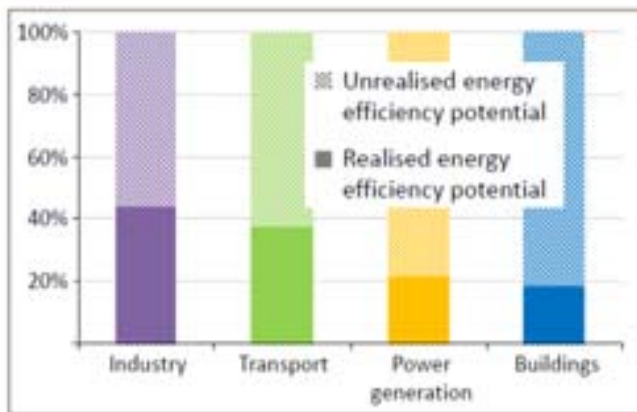
- Evaluate and monitor
- Communicate results
- Celebrate and reward successes
- Extend or modify activities





From DNV in the Netherlands

Energy Culture Can Unlock Energy Savings Potential



"Two-thirds of the economic potential to improve energy efficiency remains untapped in the period to 2035"

IEA, WEO 2012

European Environment Agency



*Up to 20% of the energy we currently consume can be saved through **changing behavior**"*

Energy efficiency has been on the agenda for years but **significant saving potential remains.**



*One of the factors that contributed, in part, to the downward trend of our energy consumption was the **engagement of the workforce.***

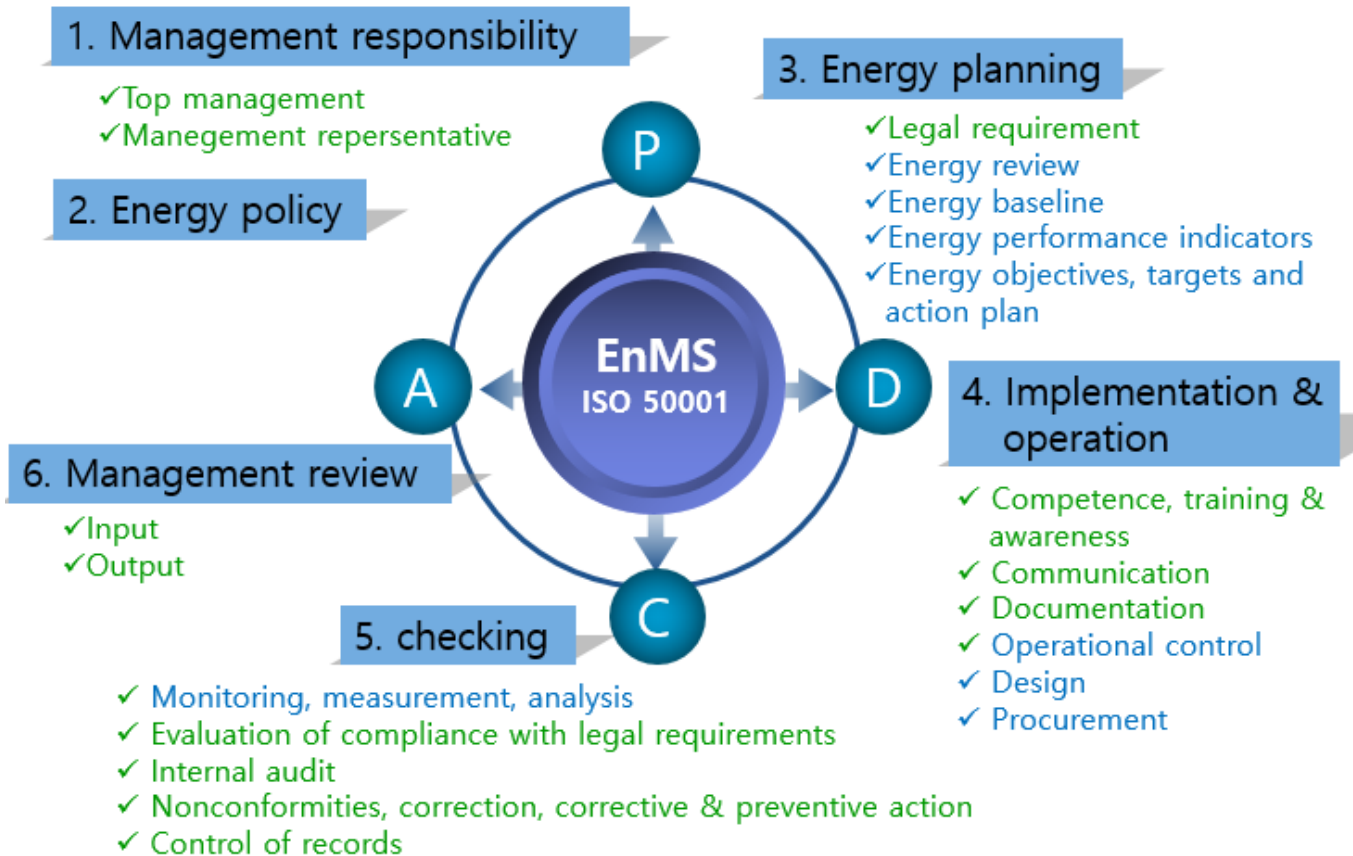
*Roughly 50% of the savings were achieved by **engaging the workforce** to improve existing assets.*





ISO 50001 ex-planned on one slide☺

ISO 50001 : Energy Management Standard





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