
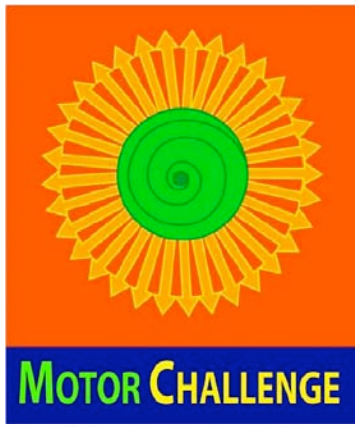


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# Austrian Energy Agency

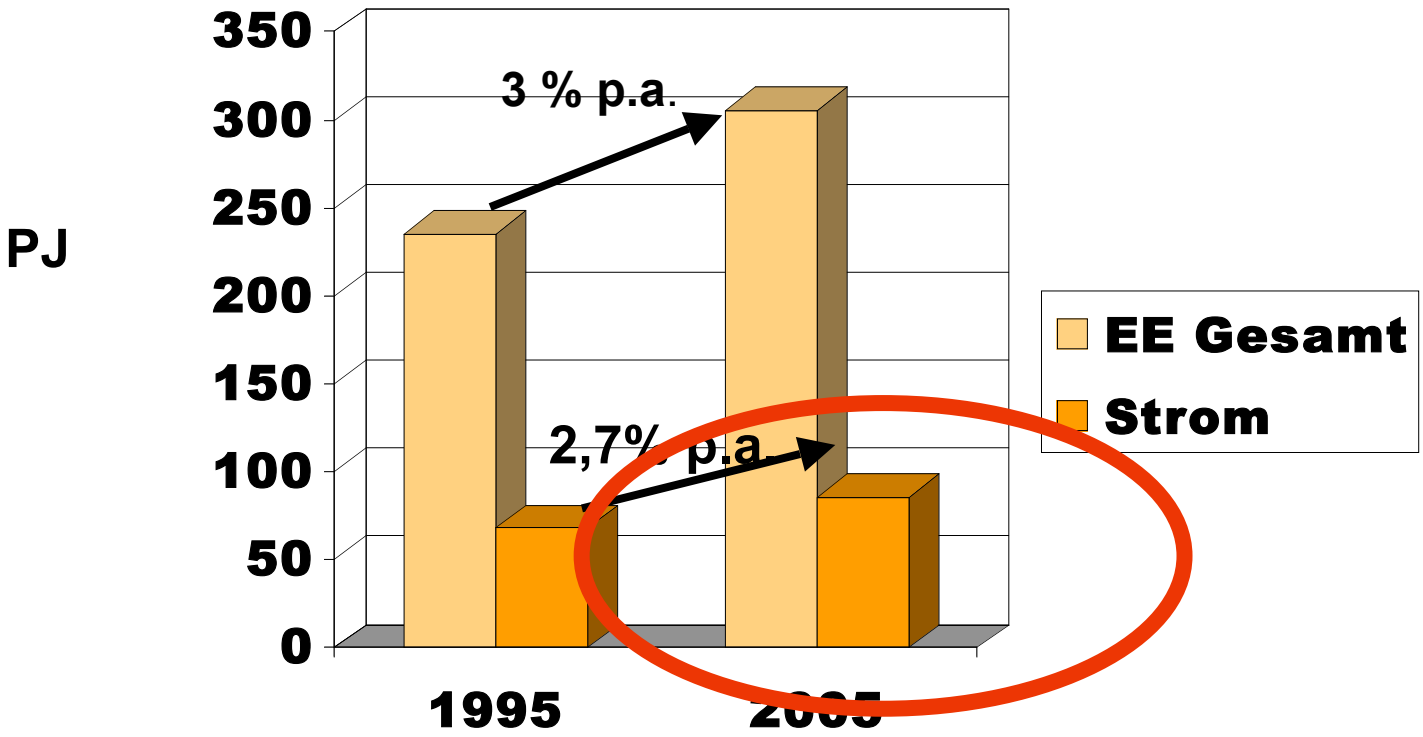
## eceee Summerstudy

**Motor Challenge Programms in Austria**
**Improving Industrial Energy Efficieny**
**Konstantin Kulterer, AEA & Claus Weberstorfer, sattler energie consulting**

# Content

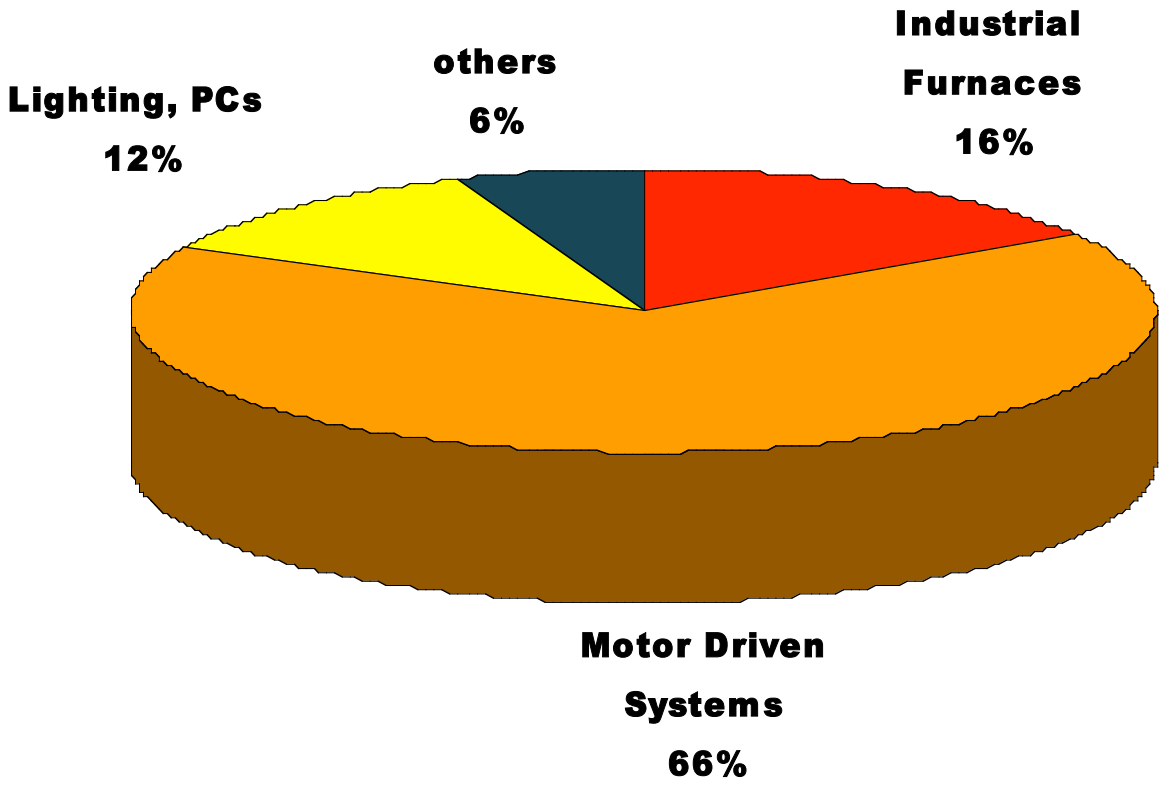
- Significance of Energy Efficiency in Drive Systems
- Barriers and some Instruments for Implementing Energy Saving Measures
- Motor Challenge Programm in Austria
- Results of 10 Energy Audits
- Case-Studies
- Conclusions

# Energy Consumption in Austria Manufacturing Sector 1995-2005




Quelle: ÖSTAT Energiebilanz, 2005

# Electricity Consumption in Manufacturing Sector, NEA 2004



# Energy Efficieny is most important Measure for CO2 reduction

- **Energyefficiency in end use sector accounts for 45% of CO2 reduction until 2050**
- others:
  - CO2 sequestration
  - fuel switch in power plants
  - Biofuels
  - renewables

  (Quelle: IEA Technology perspectives 2006)

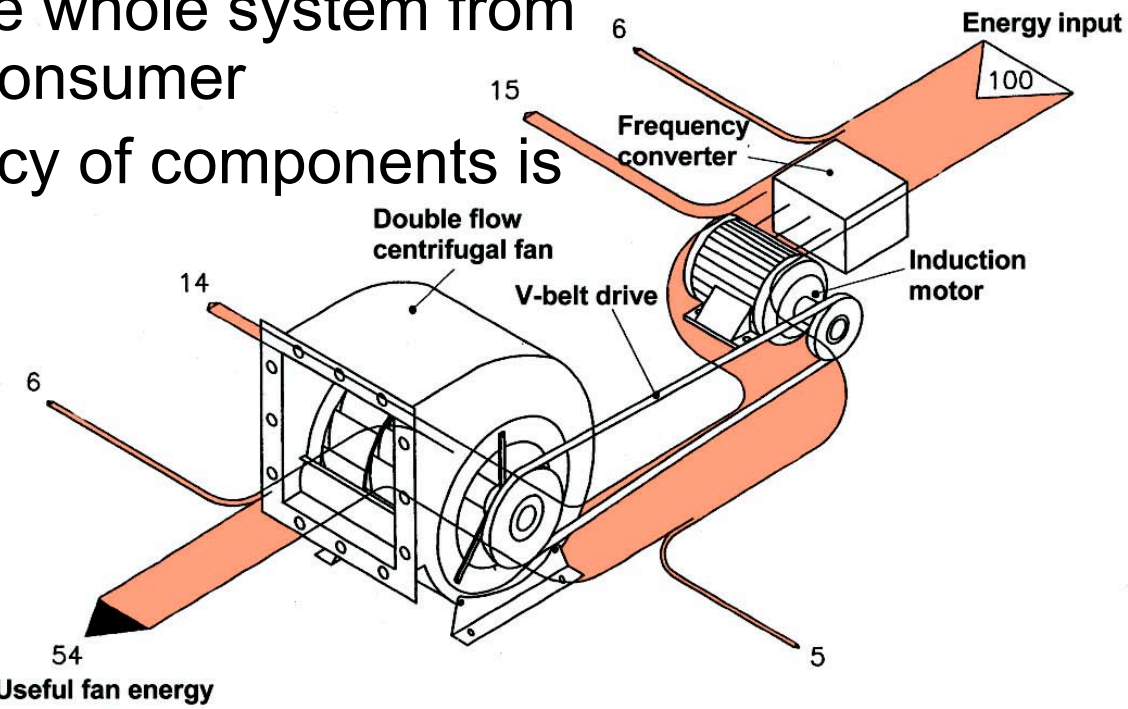
# Energyefficiency in Motor Driven Systems is important

- **Top technologies for CO2 reduction** until **2050 in industry IEA, 2006**:

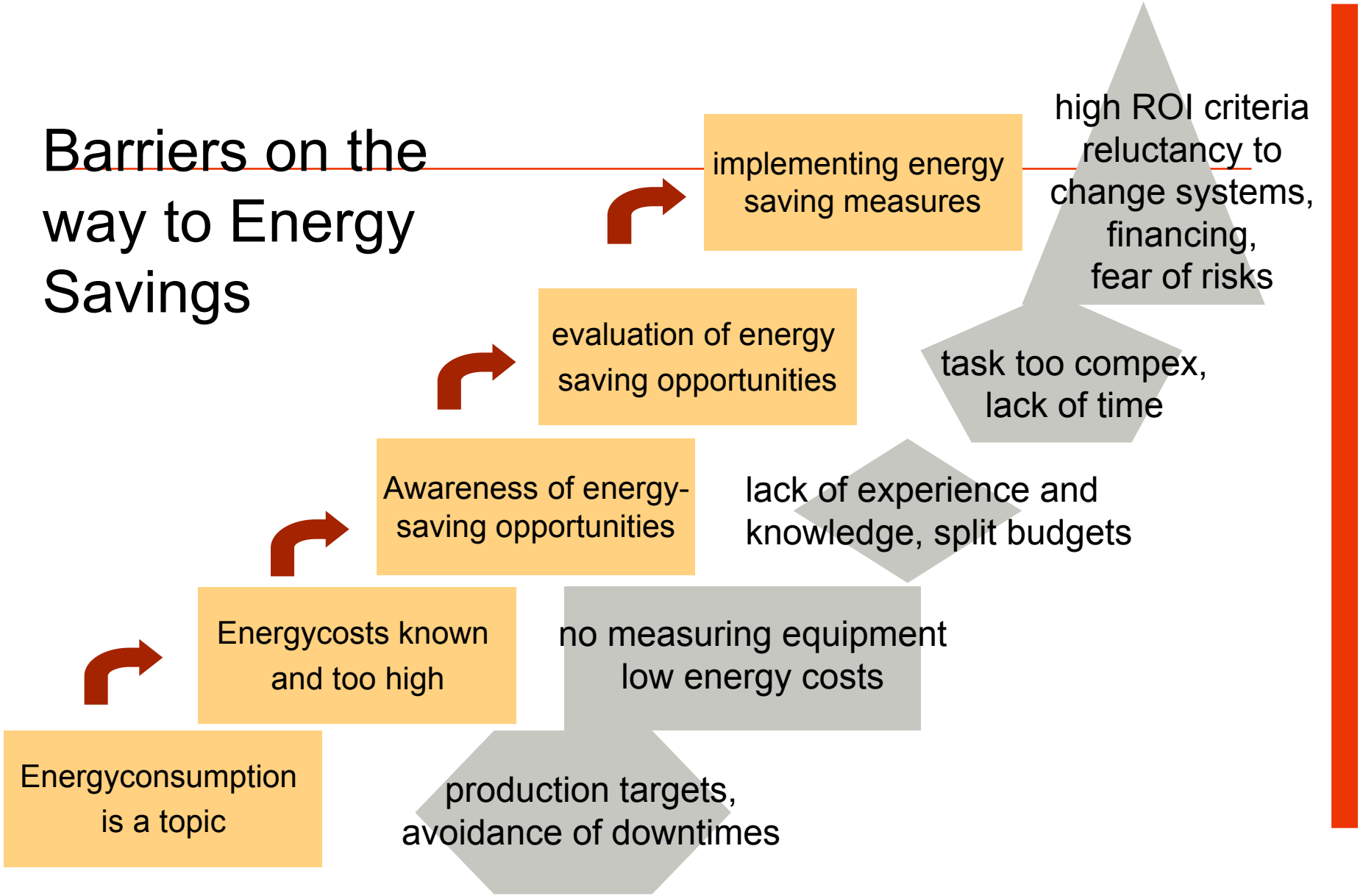
| Technologies | CO 2 Saving potential |
|---|---|
| **Motor Systems** | **1,5 Gt** |
| CO2 capture and storage | 1,5 Gt |
| Fuel substitution in basic materials production processes | 0,5 Gt |
| Energy Efficiency in existing basic materials production processes | 0,4 Gt |

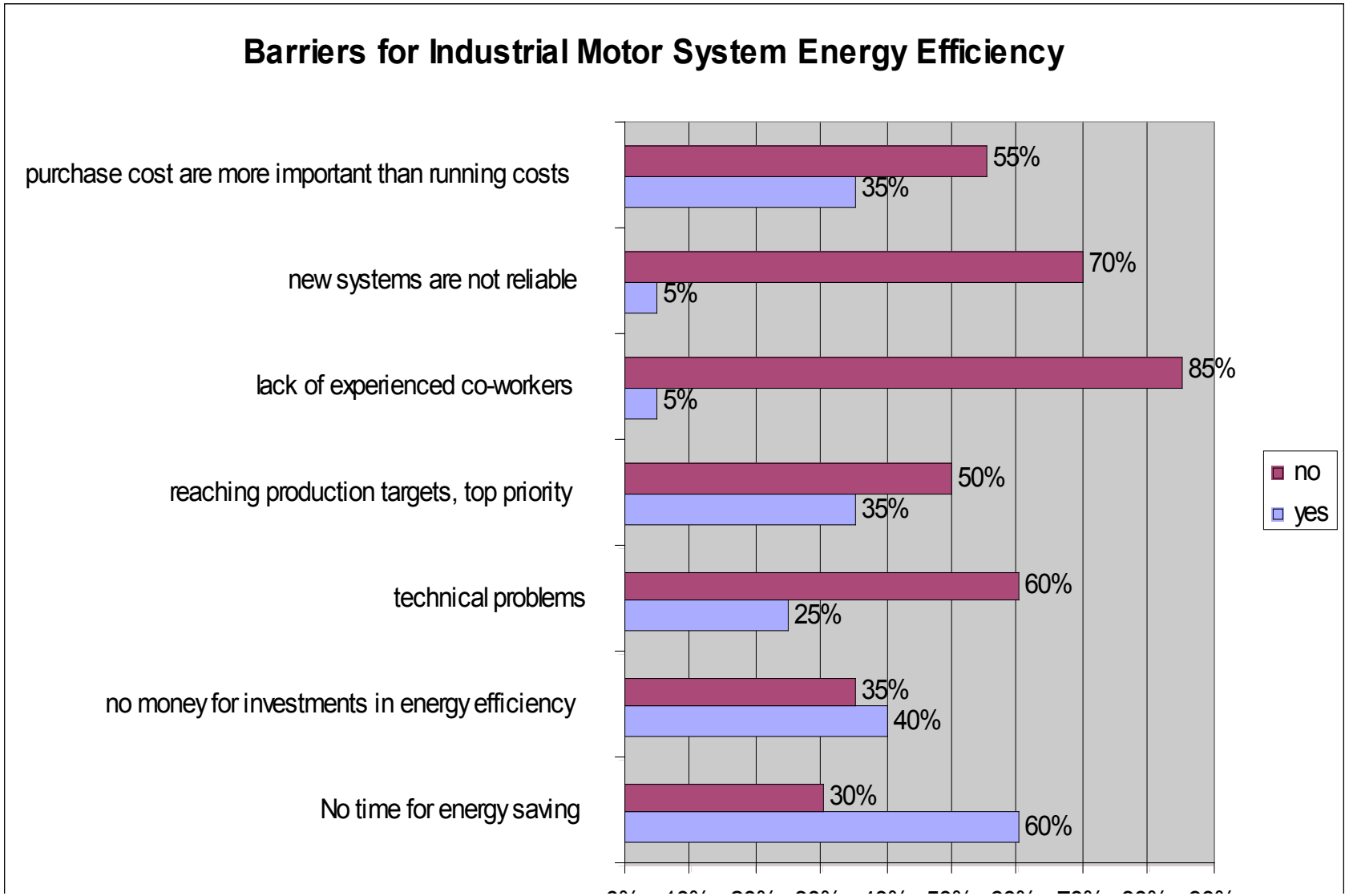
# Motorsystems

- **compressed air, pumps, fans, chillers, drives: 70% of electricity demand**
- economic saving potential: 20 - 30%
- Optimization of the whole system from electric motor to consumer
- product of efficiency of components is important



# Barriers on the way to Energy Savings




Barriers for Industrial Motor System Energy Efficiency
purchase cost are more important than running costs
55%
35%
new systems are not reliable
70%
5%
lack of experienced co-workers
85%
5%
reaching production targets, top priority
50%
35%
technical problems
60%
25%
no money for investments in energy efficiency
35%
40%
No time for energy saving
30%
60%
no
yes

# Instruments for Implementing Energy Efficiency measures

- Information of the key users, to raise awareness of the saving potential
- Develop best case studies and conduct pilot audits
- Education of key users and energy auditors
- Assistance via partly financed energy audits
- Assistance for financing of resulting investments
- Work with suppliers, as ideal partners to distribute information and specific know-how

# Motor Challenge Programm

- Target: support of industrial companies in improving the energy efficiency of their Motor Driven Systems
- Any enterprise or organisation planning to contribute to the Motor Challenge Programme objectives can participate.
- 5 step process to become partner
  - Inventory and evaluation of motor system in company
  - Formulation of an Action Plan, defining measures, savings, in form of a voluntary agreement
  - Approval of the Action plan by Commssions, granting partner status
  - Execution of Action Plan
  - Annual reports

# Motor Challenge Programm in Austria

klima:aktiv

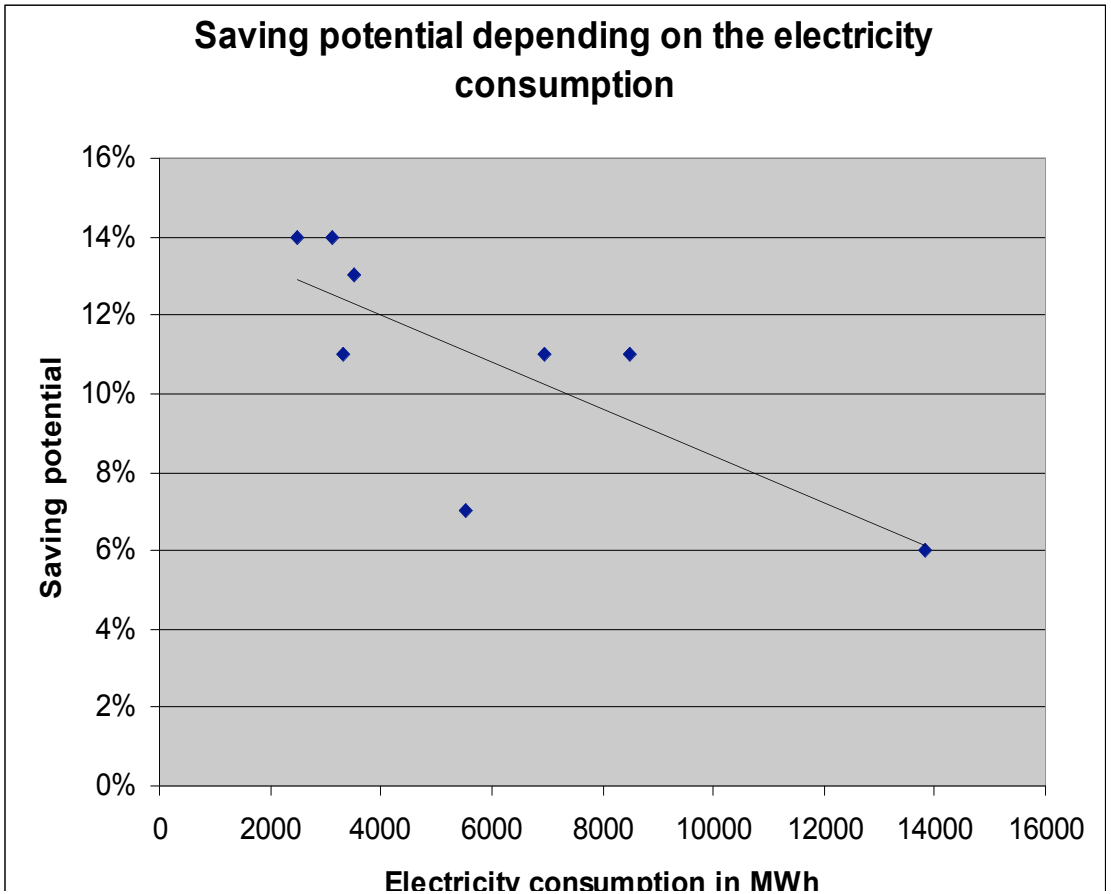
- First focus motorsystems in national klima:aktiv programme energyefficient companies;
- Workshops, Tools for consultants;
- Organisation, financial support of 10 pilotaudits;
- dissemination of results;

# Scope of 10 MCP energy-audits in Austria

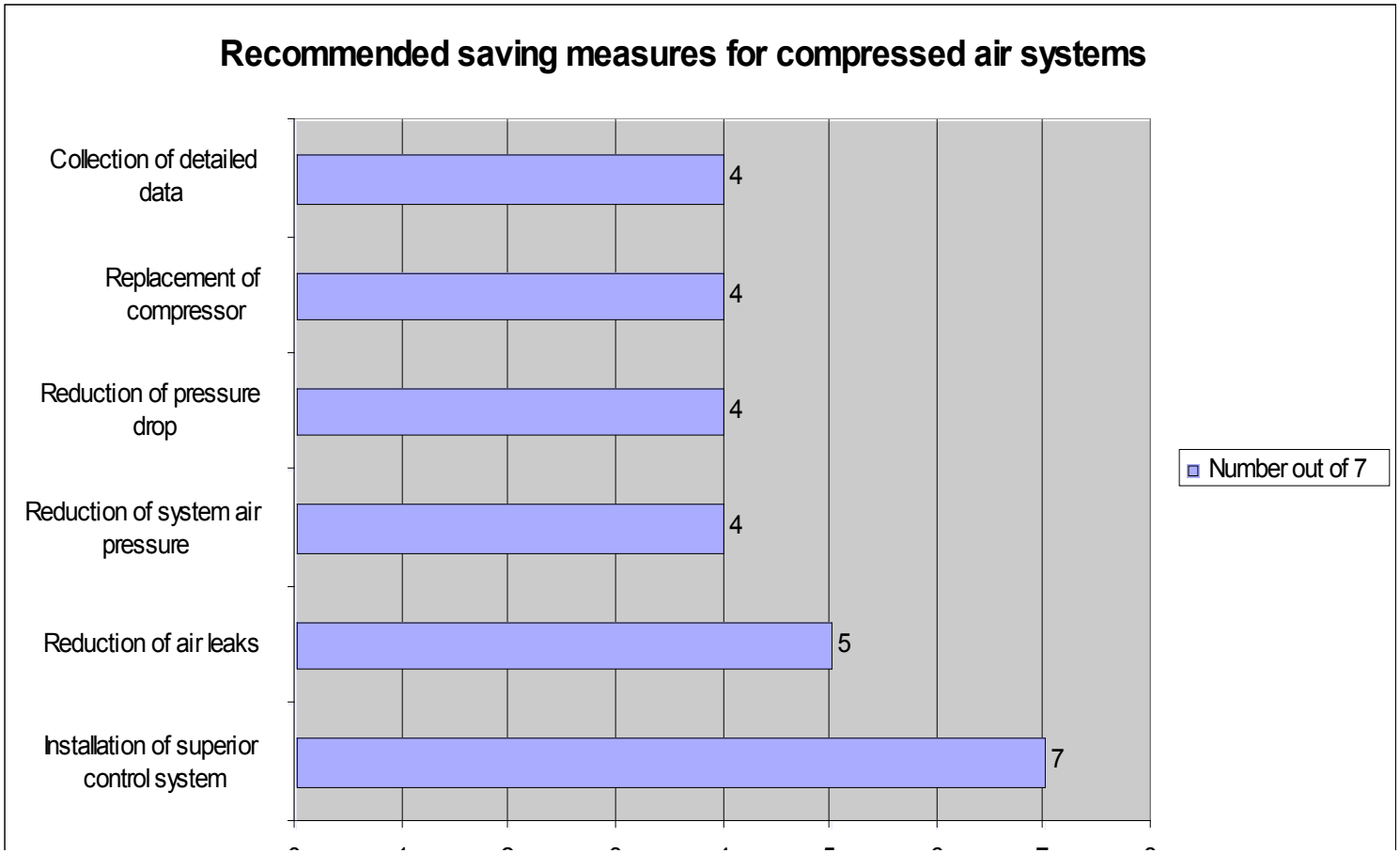
- Formulation of an MCP Action Plan (clear defined goal)
- Technologies: Fans, Pumps, Compressed Air, Drives
- 5 audit days
- 3 days supported
- limited to 10 energy audits

continuing within klima:aktiv programme, regional programmes of federal provinces (regions)

# Identified Saving Potential



# Recommended Top - Saving Measures



# Example Knauf Control of Fans

- Drying of building-plates by ventilation of hot air
- Delivered amount of air is reduced to ~40% of the maximum power through a inappropriate vane control
- Direct control of fan velocity by different pulley sizes
- Reduction of performance of 63 kW
- Cost reduction: 24.000 EUR
- Energy saving: 340.000 kWh; (assuming that electrical energy costs 7 cent/kWh)
- Costs: 3.500 EUR for the change of the pulley

# best case example
# Obersteirische Molkerei VSD

- combustion air fan – 30 kW (5000 operating hours); energy consumption:152.400 kWh
- Adaption to the actual air flow through variable speed control
- Energy consumption after installation: 21.900 kWh
- Cost reduction: about 11.000 EUR (**assuming that electrical energy costs 8,5 cent/kWh**)
- Investment: 3000 EUR (VSD) and 5000 EUR (Installation)

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# Best Practice- Compressed Air

## Alpenmilch Salzburg

- Reduction of leakage losses (35 %)
- Reduction of pressure level
- Replacement of Compressors, additional small Compressor
- Overall Control unit, Reduced losses due to Unloaded operation
- Heat Recovery from Compressor for preheating of Boiler-Feeding Water
- Energy Savings

  ca. 135.000 kWh (electrical),

  ca. 370.000 kWh (heat)

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# Conclusions for consultancy programmes

- Industry is interested in specific energy audits
- concentraion on some parts of energy system useful
- consultancy services should be at least 5 days
- Payment of at least 40% of consultancy costs
- consultancy services help to overcome especially the following barriers:
  - lack of time of technicians
  - lack of awareness of actual costs
  - lack of willingness to invest
- standardized procedures, tools for energy audits are very useful.

# Save Energy for the Future and developing countries!



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