

## The ENERGY-SMARTOPS project 2011-2015

### Objectives and Outcomes

WP1: New measurement approaches and algorithms have been developed in order to increase confidence levels in condition monitoring techniques, and consequently making condition-based maintenance more feasible.

Reduced energy losses through maintenance actions.

The use of the scheduling approach can achieve 10% reduction in the total costs of the operation.

#### WP1 Electromachinery

WP2: New optimization frameworks increase the system efficiency and reduce overall operational costs using monitoring information and suggestions on the best recycle configuration of compressors.

Energy and cost are saved due to reduced down-time.

#### WP2 Turbomachinery

WP3: An optimization-based approach has been developed for the joint maintenance and production scheduling of process plants, by explicitly taking into account information on system degradation coming from a predictive process monitoring system.

Control accounting for iron losses reduces power loss and increases efficiency

#### WP3 Maintenance and diagnosis;

WP4: Robust advanced control techniques for electrical drives take account of optimal efficiency with accurate models to take account of iron losses and machine saturation, variations in model parameters, and the requirements of the process.

#### WP4 Energy optimization

#### WP5 Electricity optimization

WP5: A scheduling optimisation tool has been developed to ensure seamless integration and availability of data and information across the plant, enabling user interaction and connection to optimization solutions when dealing with increasing volatility in production, energy and raw material availability.

An intelligent energy-aware scheduling of processes has been evaluated to enable a reduction of electricity costs.

### Benefits for Europe

- Impacts on efficient and sustainable operation of the installed assets of the process industries
  - New knowledge and advances in the state-of-the-art
  - Significant new insights into how energy savings can be gained in the process industries
  - Long-term collaborations between academia and industry
- Impacts on careers and skills
  - Access to high quality research facilities, laboratories and industrial case studies
  - Mobility, intersectoral secondments and developing professional networks
  - Technical and complementary skills training, and research to doctoral level

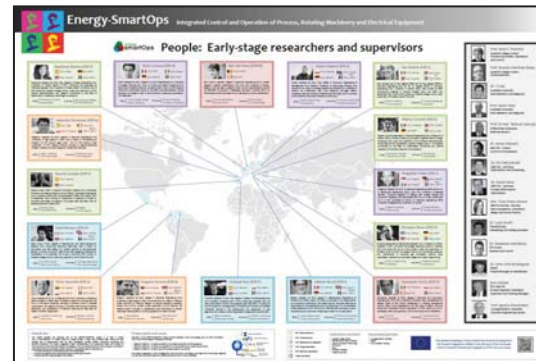
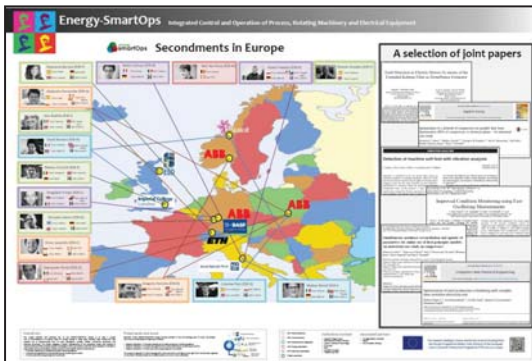
### The Future

- Energy savings in the process industries
  - Technology and product development and industrial demonstrations of new technology
- Careers for Marie Curie Fellows
  - Awards of PhD and new careers in Europe
- Lasting collaborations among partners
  - Further collaborations and more EU research projects

### Secondments and Joint Papers

### Mobility

### Training and Networking



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