UPSWING Unification of Power Plant and Solid Waste Incineration on the Grate

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BIO-ENERGY
ENLARGED PERSPECTIVES

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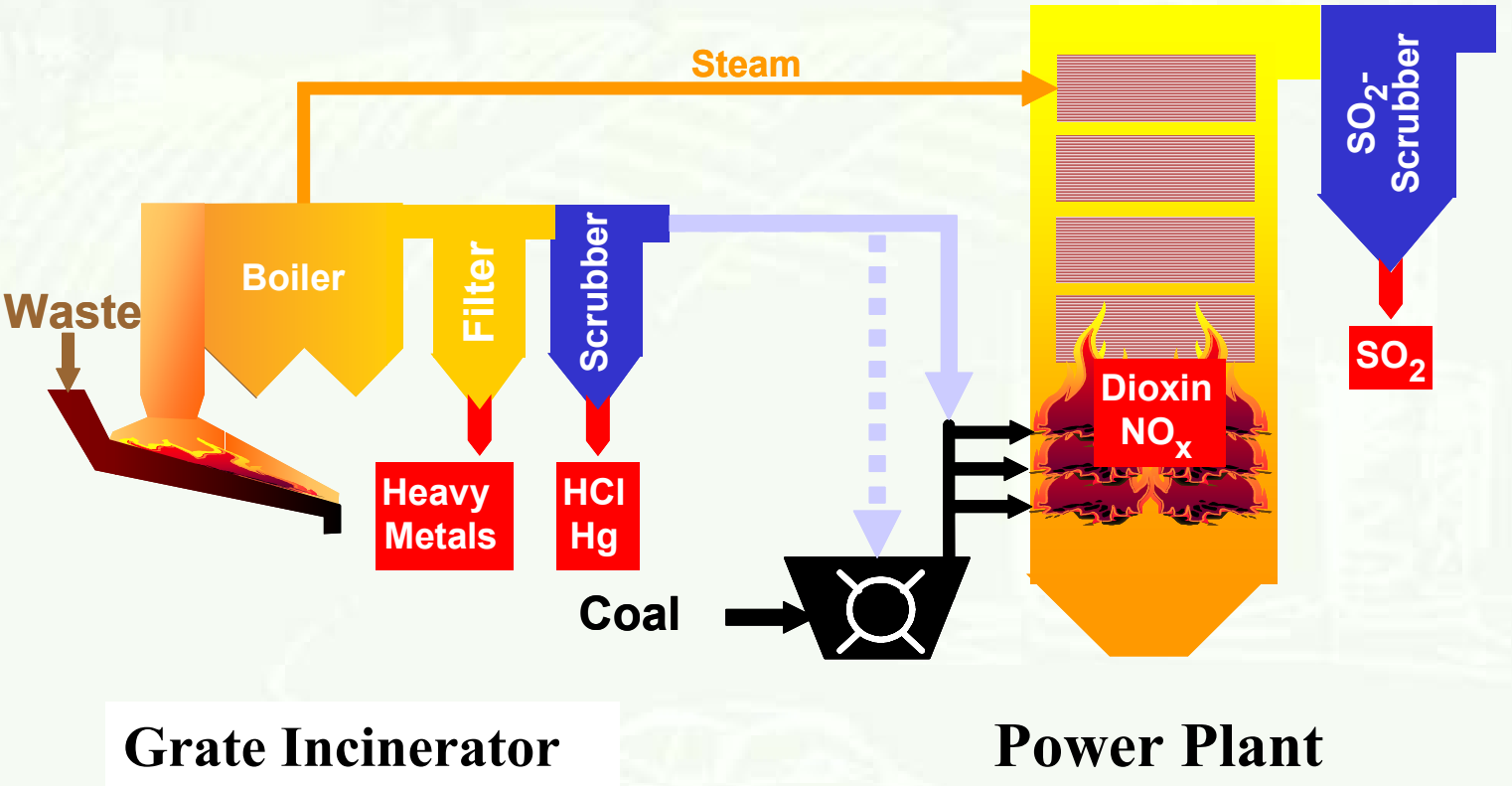
Motivation

- Development of an Competitive, Sustainable and Environmentally Friendly Thermal Waste Treatment Process
- Improved Technology applicable for States with Landfill as Major Waste Treatment Technology

Schema of UPSWING Process



General Project Information

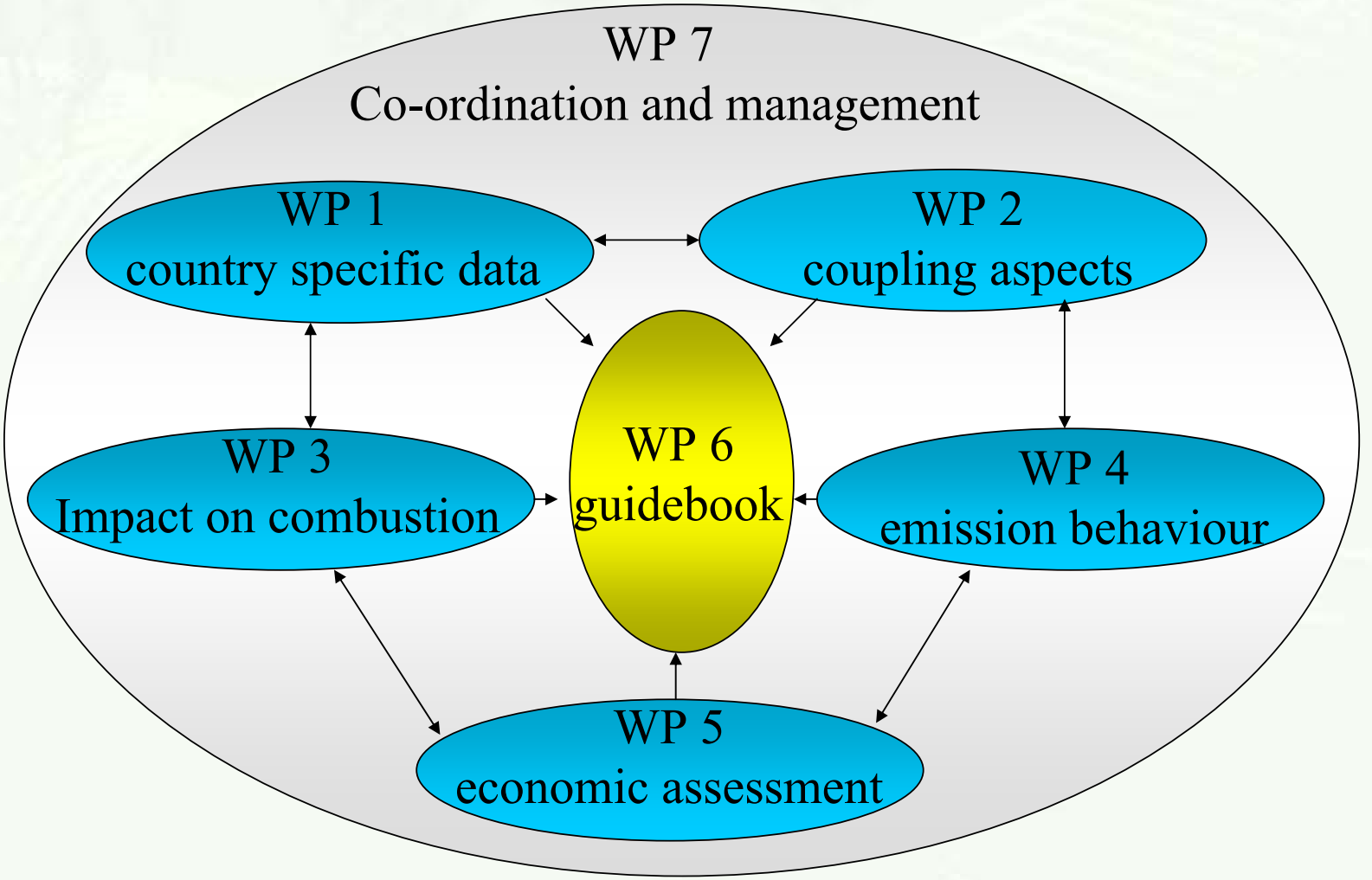
Contract no. ENK5-CT-2002-00697
Starting date: 01-01-2003
Duration: 3 years

11 Partners, 3 EU, 4 NAS

7 Universities and Research Centres
USTUTT, FZK, TU-Wroclaw, CTU-Prague, UP-Timisoara, ISPE of Bucharest, TU-Sofia

4 Industrial Partner
Mitsui Babcock, KEMA, Elektrownia Turów, Sokolovska Uhelna

Project Structure



WP 1: Country specific Data

Waste:

- Potential of fuel sources
- Current waste management strategies and utilisation systems
- Origin and composition of waste

Power Plants:

- Power plants (location, design, operation)
- Flue gas treatment devices
- National regulations
- Available fuel qualities

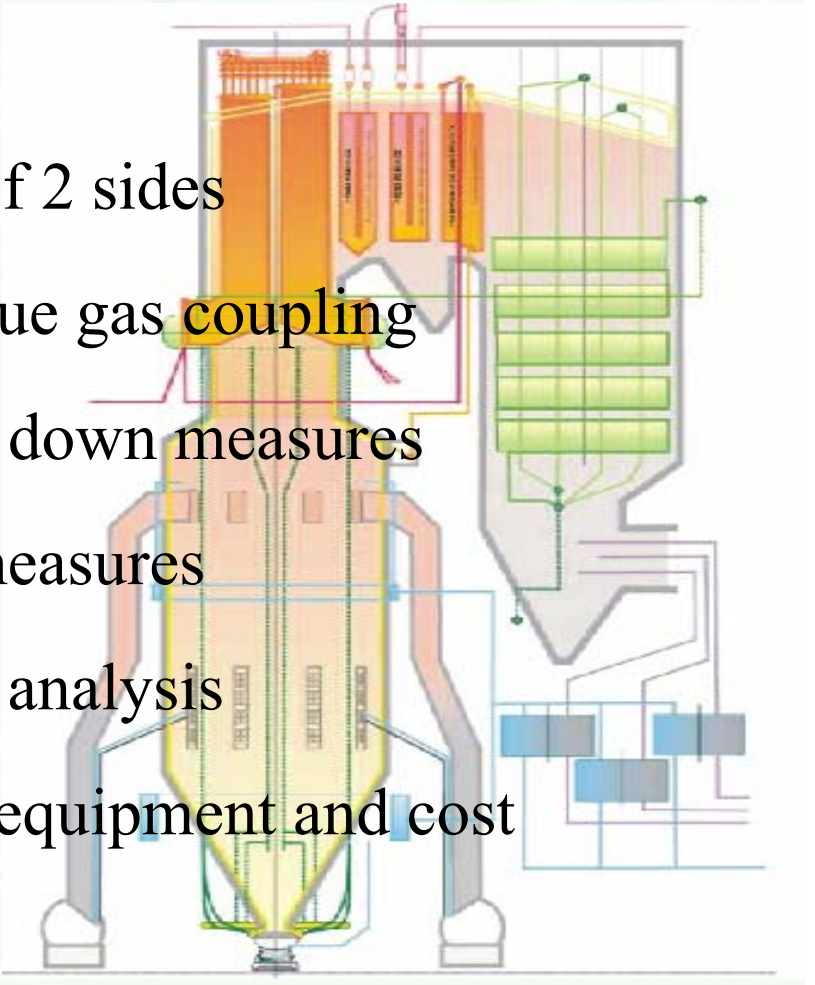
Country Specific Data (Poland)

Distribution of Power Stations

Amount of municipal waste, $10xm^3$

landfill-%	95,7
landfill-number	1036
recycling-%	1,37
composting-%	2,8
incineration-%	0,13
incineration-plants number	1

WP 2: Theoretical aspects of coupling



- Thermodynamic analyses of 2 sides
- Evaluation of options for flue gas coupling
- Evaluation of start up/ shut down measures
- Evaluation of emergency measures
- Sensitivity and redundance analysis
- Identification of necessary equipment and cost

(8 Partner)

WP 3: Impact on power plant combustion

- Impact on Milling System
- Ignition, Flame Stability
- Best flue gas injection mode
- Combustion and burnout

(TU-Sofia, USTUTT)

WP 4: Emission behaviour

- Impact of coupling on emissions (NO_X, SO_2, CO)
- Adsorption of pollutants (PCDD/F, Hg) on coal particle (bituminous coal, lignite)
- Destruction of pollutants (PCDD/F) at high temperatures
- Chemistry of a acid scrubber (fine particles, HCl, Hg)
- Impact on solid power residues by coupling

(Partners: USTUTT, FZK, UP-Timisoara, TU-Wroclaw)

WP 5: Economic assessment

- Economical assessment of UPSWING at two sides
- Comparison between UPSWING and stand-alone process
- Determination of market potential

Expected Results and Exploitation

- Formulation of a guidebook

(technical, environmental and economical issues)

- Public reports of specific topics
- Papers and presentations
- Partners will act as experts and consultancies at a future large scale demonstration plant
- Project homepage: www.eu-projects.de

Acknowledgement

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