

THE SWEDISH GAS TURBINE RESEARCH PROGRAM 2001

**CAME-GT WORKSHOP
BRUSSELS, 2001-02-16**

Swedish Energy Related R&D Programs

- **Co-operation government - industry**
- **Government (STEM - Swedish National Energy Administration)**
 - funding university projects (cash)
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- **Industry** (cash to universities, own resources)
 - manufacturing industry (e.g. ALSTOM Power Sweden, Volvo Aero Corporation)
 - utility industry

GT Related R&D Programs

- **Five programs with focus (30 - 100%) on GTs**
 - GTC (Swedish Gas Turbine Centre)
 - EvGT (Evaporative Gas Turbine)
 - TPE (Thermal Processes for Electric Power Production)
 - KCFP (Competence Centre for Combustion Processes)
 - KME (Consortium for Material Technology for Thermal Processes)
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- **Total cost of GT related projects M€ 4.4 in 2001 (60% paid by STEM)**



- **Overall goal**

- To build up know-how at Swedish universities to support industrial development of GTs of the future (special focus on environment, efficiency, low cost)

- **Research program**

- Started 1996. Consortium between three universities (KTH, LTH, Chalmers) and industry (ALSTOM Power, VAC). Ten PhD students. STEM funding 50%.
- Focus on high temperature components (cooling, life prediction, combustion), aero dynamics and aeroelasticity
- Goal: to develop design tools, and calculation and verification methods in these fields

EvGT

(Evaporative Gas Turbine)

- **Overall goal**
 - To demonstrate the HAT cycle concept
- **Research program**
 - Started 1995. Two universities (KTH, Lund), industry (ALSTOM Power, utilities). Two PhD students at present. STEM funding 50%.
 - Demo plant in Lund (600 kW)
 - Thermo-economic plant studies (5 - 10 MW, 70 - 80 MW), studies of alternative wet cycle concepts



TPE

(Thermal Processes for Electric Power Production)

- **Overall goal**
 - To build up know-how at Swedish universities to support industrial development within the field of thermodynamic processes for electric power production (special focus on efficiency, environment (CO₂), sustainable energy systems)
- **Research program**
 - Started 1996. Three universities (KTH, Luleå, Lund), industry (e.g. ALSTOM Power, VAC, Kvaerner). Ten PhD students. Only university projects. STEM funding 100%.
 - Focus on heat and power production processes with biofuel/natural gas
 - Goal: to develop thermodynamic processes incl components, design tools and methods in these fields

KCFP

(Competence Centre for Combustion Processes)

- **Overall goal**
 - To be a top world organisation on the combined use of laser diagnostics and modelling of combustion processes in flames, gas turbines and combustion engines
- **Research program**
 - Started 1995. Competence centre in Lund. Industry (e.g. ALSTOM Power, VAC, utilities). Ten PhD students. STEM funding 30%.
 - Focus on laser diagnostics, flow and kinetics modelling, gas turbine and burner technology, combustion engine technology
 - Goal: to develop tools and methods in these fields

KME

(Consortium for Material Technology for Thermal Processes)

- **Overall goal**
 - To strengthen R&D in the area of materials for high temperatures and stress levels
- **Research program**
 - Started 1997. Consortium between universities (Chalmers, KTH, Luleå) and industry (e.g. ALSTOM Power, Kvaerner, utilities). Ten PhD students. STEM funding 50%.
 - Focus on GTs, steam systems, boilers and heat exchangers
 - Goal: to support improvements of efficiency, emissions and low cost by development of materials in thermal power plants