

GasTurbineTechnologies SpA

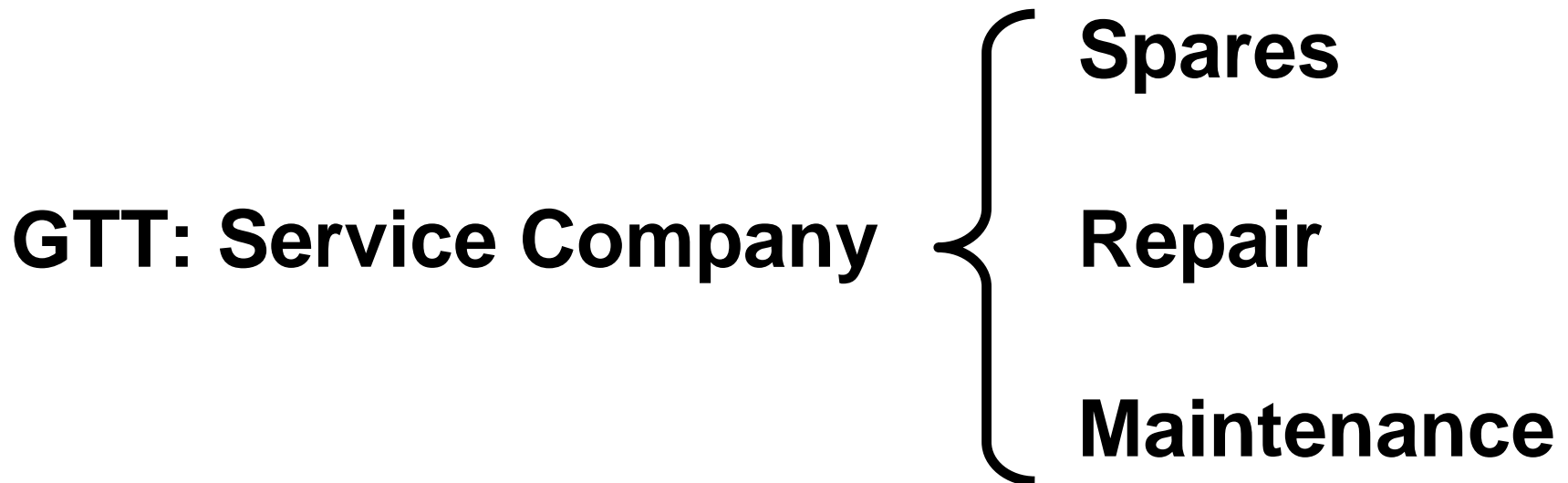
**GTT, experience on distributed power  
generation with fuel cells**



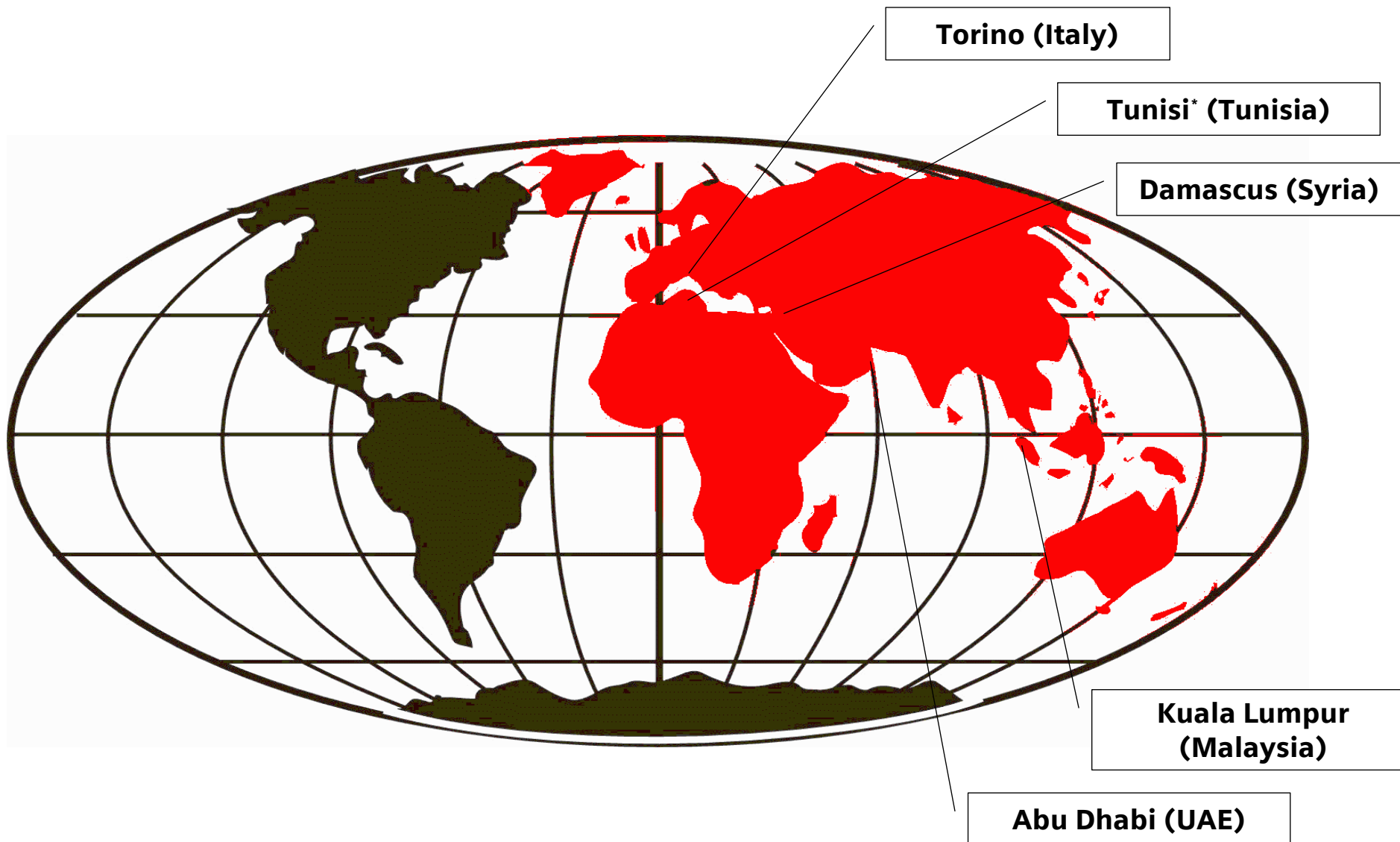
Gas Turbine Technologies,  
former Power Division of Fiat Group,  
is now a Subsidiary of Siemens  
acting in Power Generation business  
as Gas Turbines Service Provider

# Our History





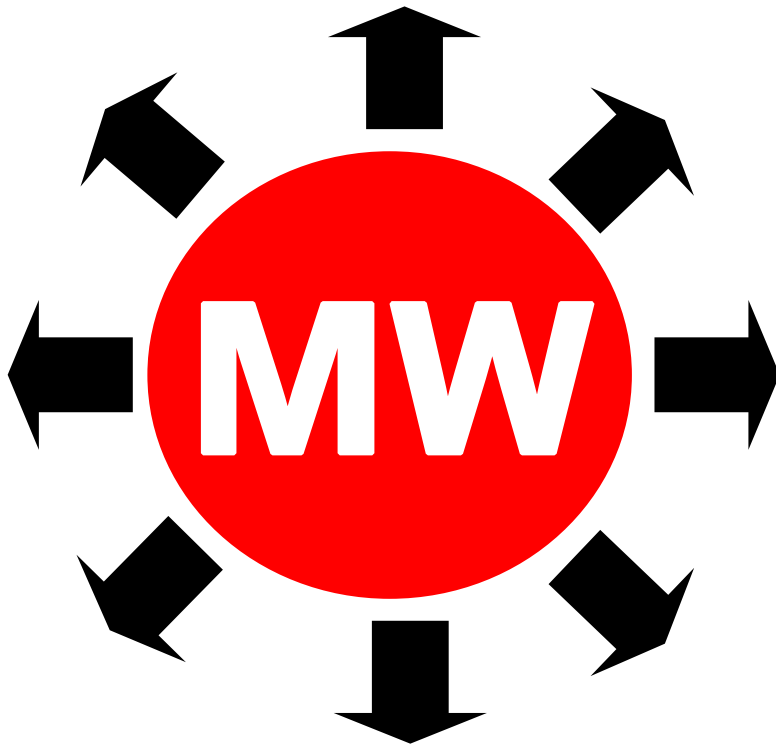
# Our Market



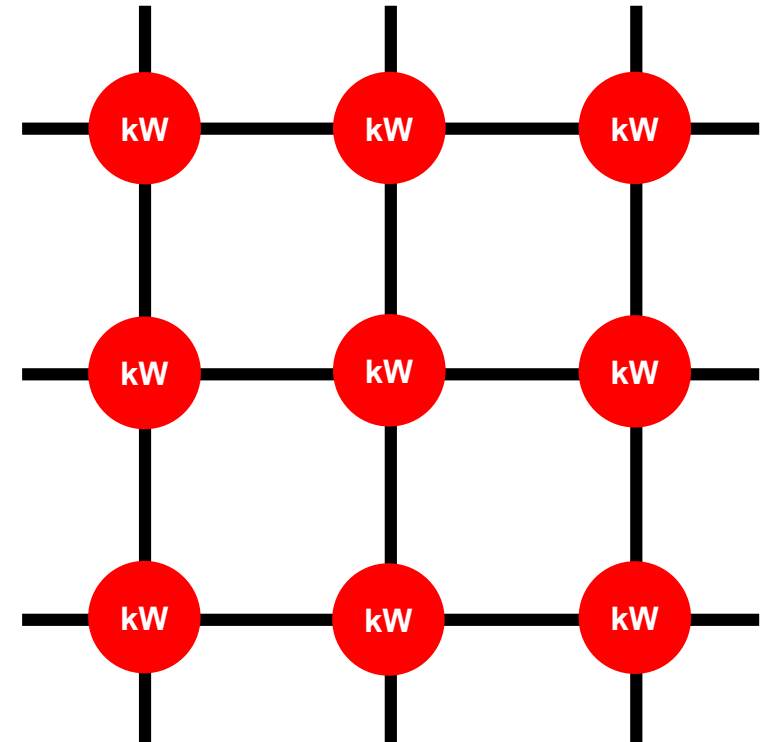
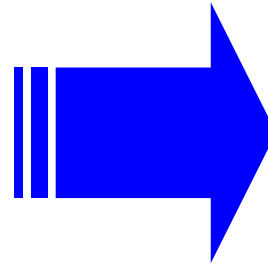
# Our Product



# Power Generation Trend



Centralized



Distributed

# Logistic & Industrial Impacts

- Power transmission lines less loaded
- Power generation tailored on customer needs
- Local decision making



# GTT Strategy

- The market is willing to accept micro-generation plants (<1MW) in cogeneration configuration (power + heat)
- In order to be ready for this new challenge, GTT decided to test this concept inside its own factory.

# GTT Projects

- EOS: Energia da Ossidi Solidi (energy from solid oxides)
- EBE: Energia a Bassa Emissione (low emission energy)

# EOS H2O2



## Partners



Politecnico di Torino

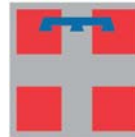


Gas Turbine Technologies SpA



HySy\_Lab

## Sponsor



Regione Piemonte

**Endurance testing of  
a Solid Oxide Fuel Cells (SOFC) plant  
in cogeneration configuration**



Ἑως δ' ἠριγένεια φάνη ῥοδοδάκτυλος Ἥλιος  
Pink fingers Eos leads the way to her brother Sun

# EOS Plant



# EOS Data

- Siemens SOFC Technology
- Electric Power: 100 kW (20% of factory need)
- Thermal Power: 60 kW
- Electrical Efficiency: 45%
- Overall Efficiency: 75%

## EOS Results @ today

- Commissioning date: 19 June 2005
- Running hours: 3750
- Produced Energy: 446 MWh
- CO<sub>2</sub> saving: 272 t/year
- NO<sub>x</sub> pollution saving: 1035 kg/year
- Equivalent oil saving: 121 t/year
- Availability: 99.8% (actual)

# EBE

## Partners



Politecnico di Torino

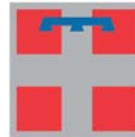


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## Sponsor



Regione Piemonte

**Cogenerative SOFC Plant operating  
in the new GTT canteen**



# EBE



## **EBE Data** (expected)

- Siemens SOFC Technology
- Commissioning date: March 2006
- Electric Power: 5 kW
- Thermal Power: 6 kW
- Electrical Efficiency: 42%
- Overall Efficiency: 80%

# Conclusions

- The growth of Distributed Power Generation is foreseen.
- The future electrical power generation spread on the field will require a different logistic approach on local basis:
  - Warehouses for spares supply
  - O&M services companies
  - Light transportation network