Thermochemical Power Group

Master Degree in InnovativeTechnologies in Energy Efficient Buildings for Russian & Armenian Universities and Stakeholders

Prof. Mario L. Ferrari

Thermochemical Power Group (TPG) - DIME – University of Genoa, Italy

Co-funded by the Erasmus+ Programme of the European Union

MARUEEB

Contact details

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- Research group
  - ✓Name: Thermochemical Power Group (TPG)
  - ✓Department: DIME (Genoa Office)
  - ✓Tel. number: 0103532443
  - ✓Permanent staff: Prof. Massardo, Prof. Di Felice, Prof. Costamagna, Prof. Magistri, Prof. Traverso, Prof. Ferrari, Dr. Sorce
  - ✓Website: www.tpg.unige.it
  - ✓ Research topics: advanced energy systems (fuel cells, renewable energy)

Thermochemical Power Group

TPG overall data (established in 1998)

People: 25 (staff, post doc, ph.d. students)

(6 permanent staff; 4 chairs sponsored by Rolls-Royce UK)

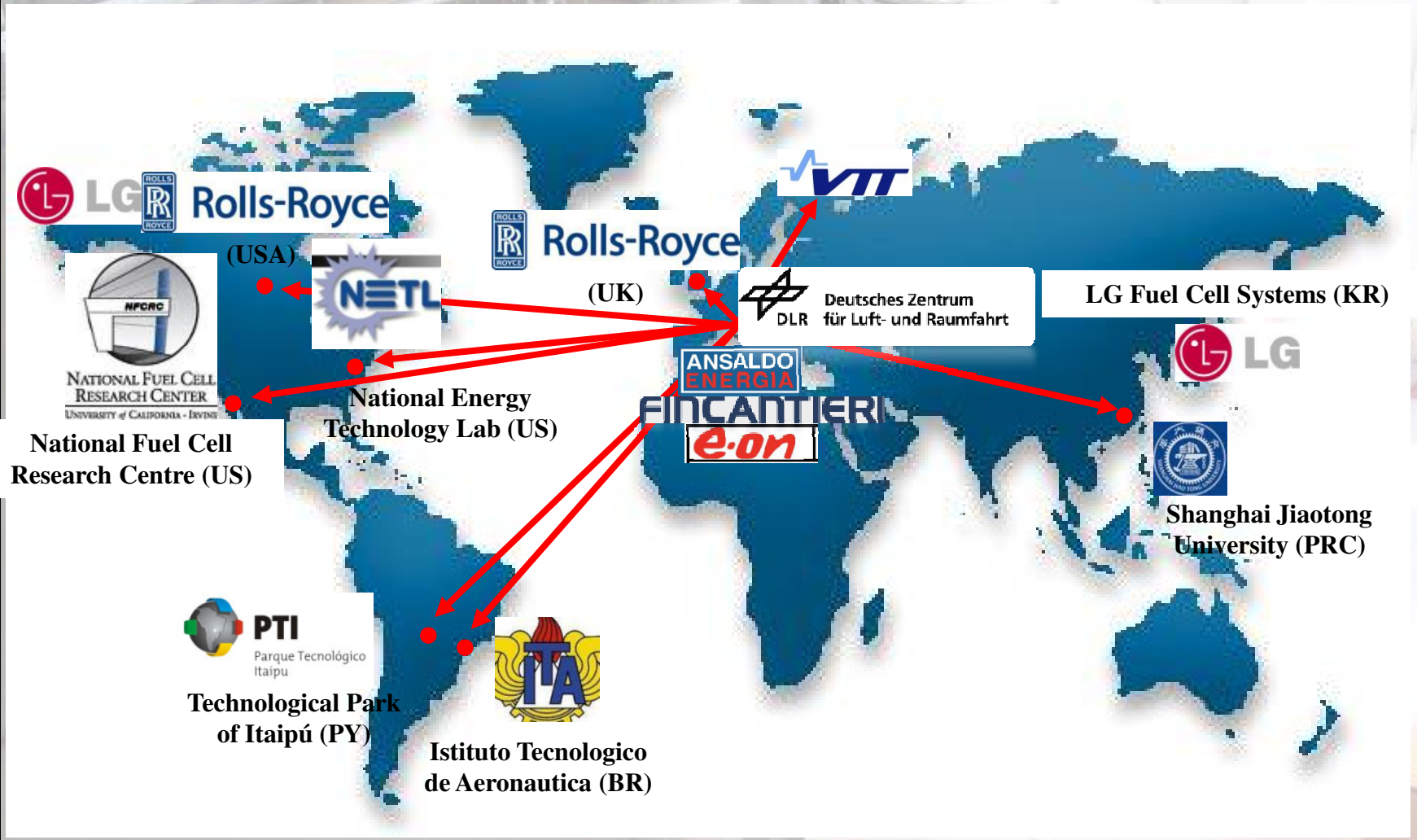
Publications, awards, patents

- 230 International Papers (160 Journals 1998-2015)
- 16 International Awards (1998-2015)
- 10 patents (2000-2014);
- 1 spin off (H2boat)

Funding (period 2000 – 2015)

•International 65 % (35% EU); National 35 %

Some TPG International partners (2015)



Fuel Cell Systems University Technology Centre

Since 2004

Università degli Studi di Genova

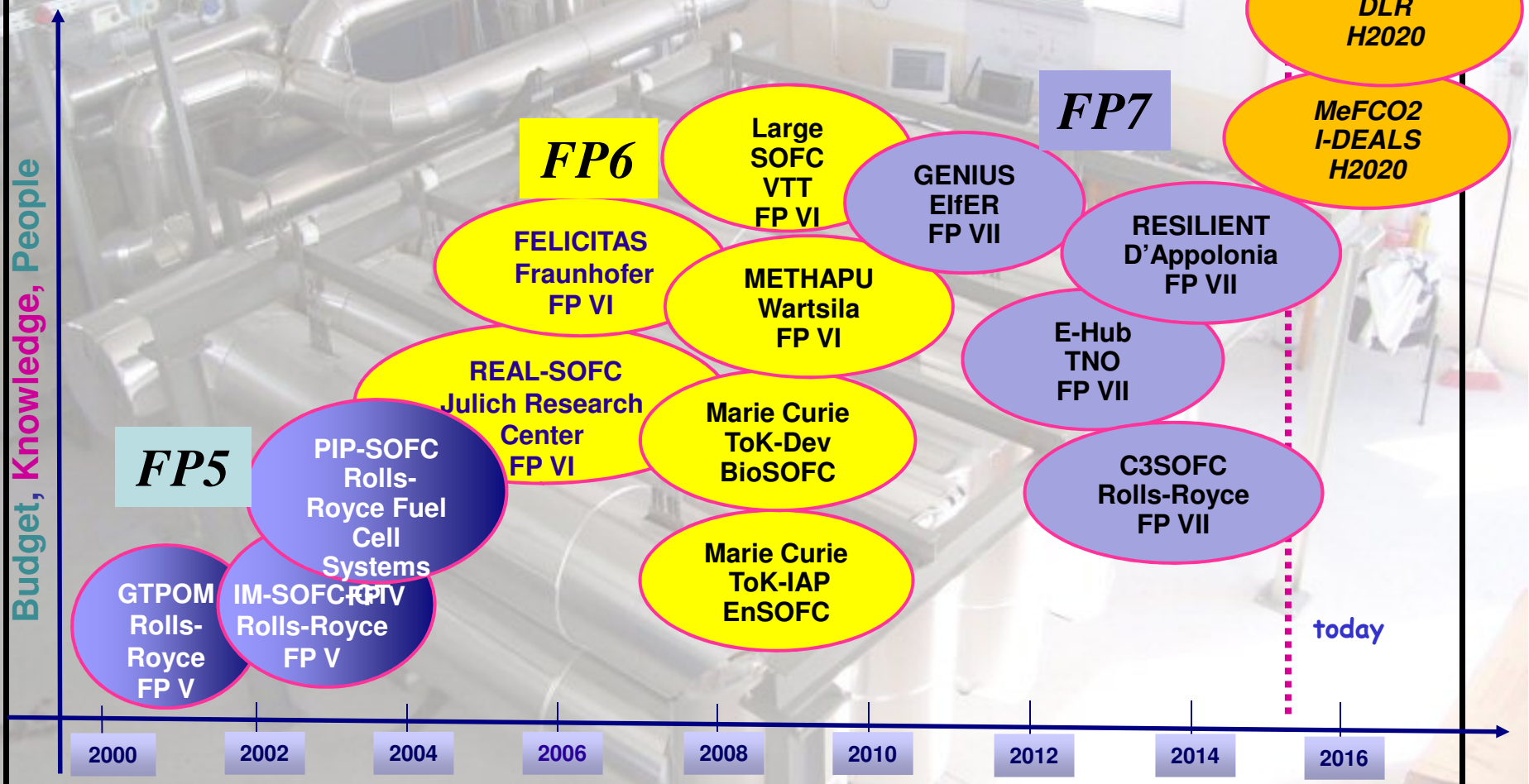
Thermochemical Power Group

Rolls-Royce

Rolls-Royce is a global provider of power systems and funds research at the University of Genoa

European Projects involving TPG

2000-2018 (about 10M€)



TPG: is one of the "best six research groups" at University of Genoa (external independent evaluation carried out in 2014)

LIBRO BIANCO DELLE ECCELLENZE			
Giudizi di eccellenza 3 su 3			
COORDINATORI	SSD	AREA	TITOLO LINEA DI RICERCA
Ferrando Riccardo Sassetti Maura Zanghì Pierantonio	FIS/03 FIS/03 FIS/02	02	Sistemi quantistici alle scale microscopiche, nanoscopiche e macroscopiche: aspetti fondamentali e applicativi
Ottonello Giulio Armando	GEO/08	04	Reattività dei materiali geologici
Piccardo G. Battista Rampone Elisabetta Scambelluri Marco	GEO/07	04	Petrologia e dinamica terrestre: markers mineralogici, chimici e isotopici
Blondeaux Paolo Seminara Giovanni	ICAR/01	08	Applicazioni idrodinamiche, geofisiche e biologiche della meccanica dei fluidi
Massardo Aristide	ING-IND/09	09	Analisi e ottimizzazione termoeconomica di sistemi e tecnologie innovative per la conversione di energia da fonti tradizionali e rinnovabili
Montanari Franco	L-FIL-LET/02	10	Filologia, interpretazione dei testi, erudizione, grammatica e lessicografia nella civiltà letteraria della Grecia antica

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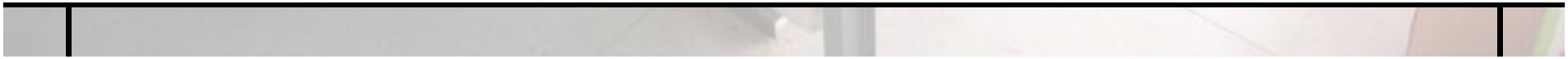
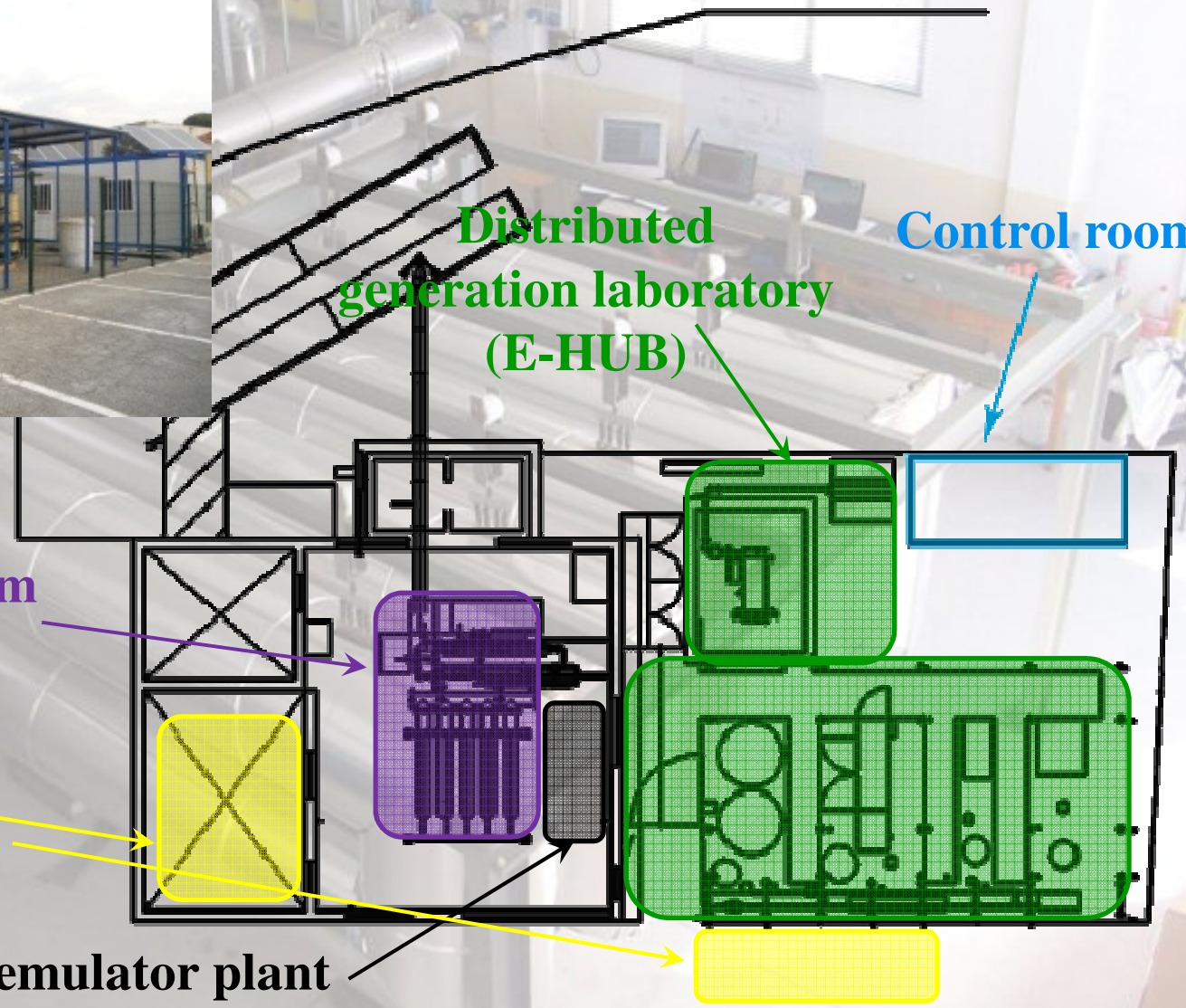
TPG e RR UTC laboratory - Genova and Savona

1. Fuel Cells and Renewables Energy Storage (FCH2) lab.
2. Energy HUB and Smart Polygeneration lab.
3. Hybrid system Emulator lab. including Cathodic and Anodic sides.
4. Direct contact Condenser test rig.
5. Micro Gas Turbine (100 kW) rig for Distributed generation.
6. Hybrid System Start-up test rig.
7. Saturator test rig for Humid Air Turbine applications (HAT)
8. Wave flume for Seaspoon patent validation lab.
9. On site TPG lab. At Valle Stura Biomass District Heating plants.
10. On site TPG lab. At Agrienergia Valle Pesio (Cn) Biogas plant.



Innovative Energy Systems Laboratory



Since 2004….

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http://www.tpg.unige.it

Rolls-Royce

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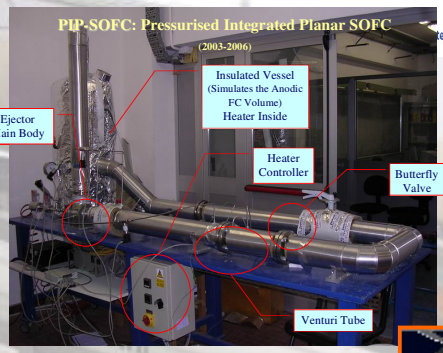
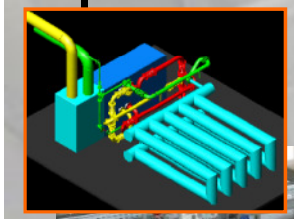
PIP-SOFC Rolls-Royce Fuel Cell Systems FP V

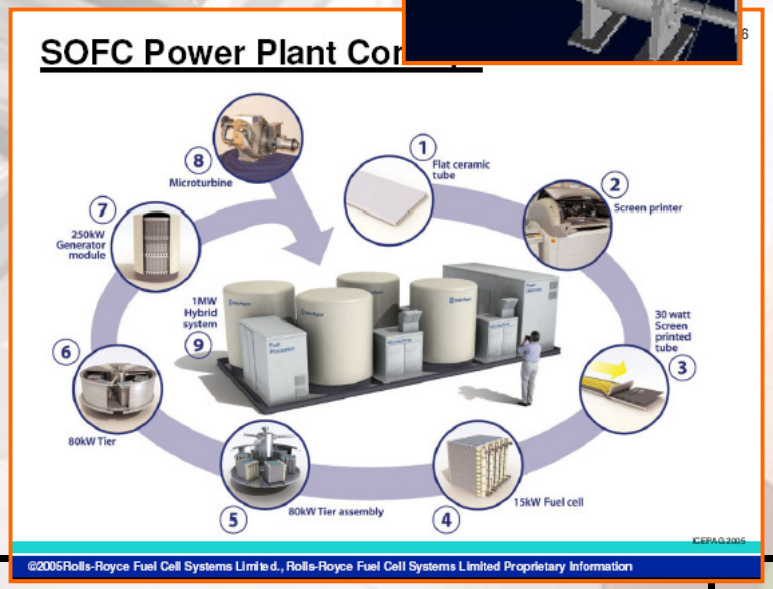
Pressurised Integrated Planar SOFC





Component and System Modelling

Test Rigs



Innovative Energy Systems

Fossil fuel based plants

- Advanced systems based on gas turbines
  - ✓Advanced layout systems based on one-fluid
  - ✓Humid gas turbines (STIG, RWI, HAT)
- Ultrasupercritical steam plants
- Integrated Gasification Combined Cycles (IGCCs)
- Generation IV nuclear systems
- Stirling engines
- Fuel cell based systems
  - ✓Stand-alone fuel cells
  - ✓Hybrid systems

Renewable source based plants

- Solar plants
  - ✓Photovoltaic systems
  - ✓Concentrated solar power plants
- Wind plants
- Biomass fueled systems
- Geothermal systems
- Plants based on sea energy
  - ✓Tide energy converters
  - ✓Wave energy converters
- Plants based on energy gradients
- Other