# FINAL SEMINAR

## BRUSSELS – December 14th

## Resources and Needs


Michel Deflache, Tenerrdis (Grenoble)

# Main objectives

- The audit phase carried out from autumn 2009 until spring 2010 provides the partners with a huge and valuable amount of information

- A “Value Chain” approach has been used for the analysis of data, to consider how the R&D technologies available in the regions will be able to generate positive fallouts in terms of local environmental and economical development

- Three typologies of actors have been identified :
  - Institutions

  *(audits carried out by Région Rhône Alpes and Regione Piemonte)*
  - Research centers
  - Industries

  *(audits carried out by Environment Park and Tenerrdis)*



*Source : « Rhone-Alpes: a region rich in new energies » from Region Rhône-Alpes*

| Name | Region |
|---|---|
| HYSYLAB | Piemonte |
| POLITO DENER | Piemonte |
| UNITO Proteomic engineering of enzymes for biofuel | Piemonte |
| INRIM Thermodynamic division | Piemonte |
| ISMB PIERT - pervasive radiotechnologies | Piemonte |
| POLITO TEBE - BUILDING ENVIRONMENT | Piemonte |
| UNITO - DEIAFA | Piemonte |
| POLITO - MATERIALS AND COMPONENTS TEST LAB | Piemonte |
| ENI - Istituto Guido Donegani | Piemonte |
| UNITO NIS- Nanostructured Interfaces and Surfaces | Piemonte |
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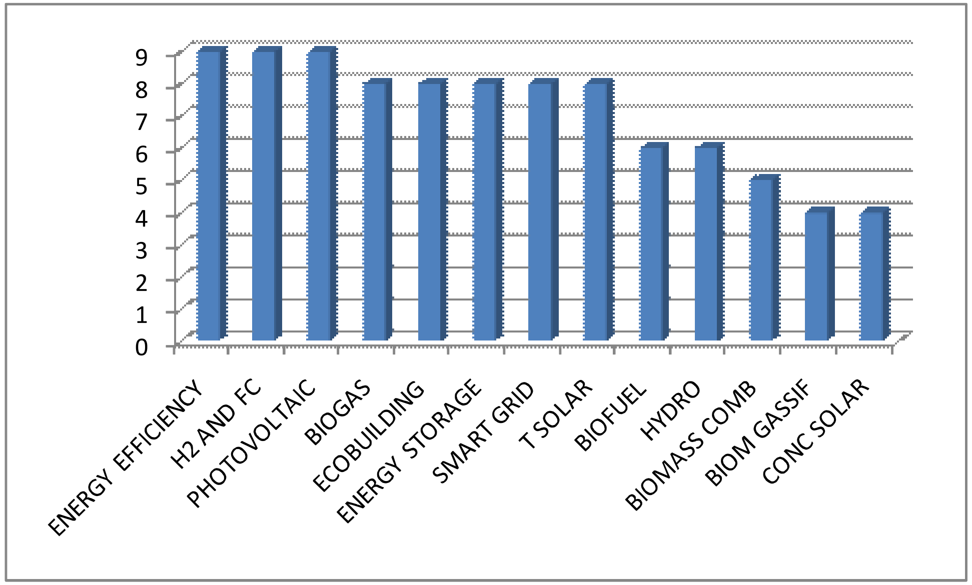
| ENEA SALUGGIA | Piemonte |
| POLITO Computational Fluidodynamics center | Piemonte |
| POLITO DIASP-Department of Aerospace Engineering | Piemonte |
| POLITO DELET - department of electrical engineering | Piemonte |
| CENTRO RICERCHE EDISON | Piemonte |
| CETHIL | Rhône Alpes |
| AMPERE LYON | Rhône Alpes |
| LEPMI (Lab d'Electrochimie et de physicochimie) | Rhône Alpes |
| Institut Néel | Rhône Alpes |
| CETIAT | Rhône Alpes |
| CSTB (centre Scientifique et Technique du Bâitment) | Rhône Alpes |
| SPIN (Centre Sciences des Processus Industriels et matériels) | Rhône Alpes |
| LITEN | Rhône Alpes |
| CREMHYG | Rhône Alpes |
| IRCE LYON | Rhône Alpes |
| LMOPS (Lab. Matériaux Organiques à Propriété Spécifiques) | Rhône Alpes |
| G2ELAB | Rhône Alpes |
| INES - National Institute for Solar Energy | Rhône Alpes |
| LOCIE | Rhône Alpes |

# Research Centers

- 30 R&D centers have been audited
- All R&D centers operate in collaboration with industries
- Applied research is the main competence of the R&D centers, even if basic research is well rooted in Rhône Alpes



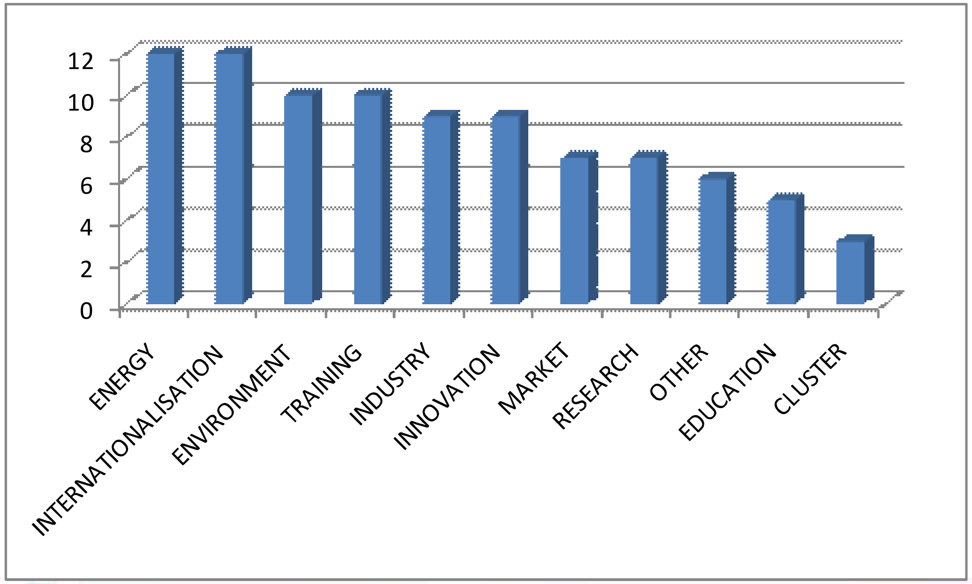

*Global completeness :*
*- capacities all along the value chain*
*- Skills and equipment available*

*(Total of 9 items)*

| PARENT INSTITUTION | REGION |
| --- | --- |
| ADEME Agence de l'Environnement et de la Maîtrise de l'Energie | Rhône Alpes |
| ADERLY Agence pour le Développement Economique de la Région Lyonnaise | Rhône Alpes |
| AEPI Agence de Développement Economique Grenoble Isère | Rhône Alpes |
| Agence Economique de Savoie | Rhône Alpes |
| AGENZIA PER L'ENERGIA DI TORINO | Piemonte |
| ARPA PIEMONTE | Piemonte |
| CEIP PIEMONTE SCPA Inward and outward investment promotion | Piemonte |
| Chambre de Commerce Italienne de Lyon | Rhône Alpes |
| COMUNE DI TORINO DIVISIONE AMBIENTE | Piemonte |
| DIRECCTE Dir Régionale des Entreprises, concurrence, consommation, travail et emploi | Rhône Alpes |
| FINPIEMONTE S.p.A. | Piemonte |
| GRAND LYON DGDEI (Délégation Générale au Développement Economique et International) | Rhône Alpes |
| Istituto per le Piante da Legno e l'Ambiente SpA (IPLA SpA) | Piemonte |
| LA METRO Communauté d'Agglomération Grenoble Alpes Métropole | Rhône Alpes |
| PROVINCIA DI Energy and Air Quality dept. | Piemonte |
| RAEE (Rhône Alpes Energie Environnement) | Rhône Alpes |
| Région Rhône Alpes D2E (Direction de l'Environnement et de l'Energie) | Rhône Alpes |
| REGIONE PIEMONTE ASSESSORATO UNIVERSITA', RICERCA.....ENERGIA | Piemonte |
| UNCEM | Piemonte |
| UNIONCAMERE PIEMONTE Settore Innovazione e trasferimento tecnologico | Piemonte |

## Institutions

- 20 institutions have been audited
- Most of them are involved in elaboration of local policies to drive market demands and support innovative actions
- Their actions range from RE promotion measures to regulation actions
- Solar energies (incl. PV) and energy efficiency in buildings are the priority targets of institutions of both regions, followed by biomass and hydroelectricity



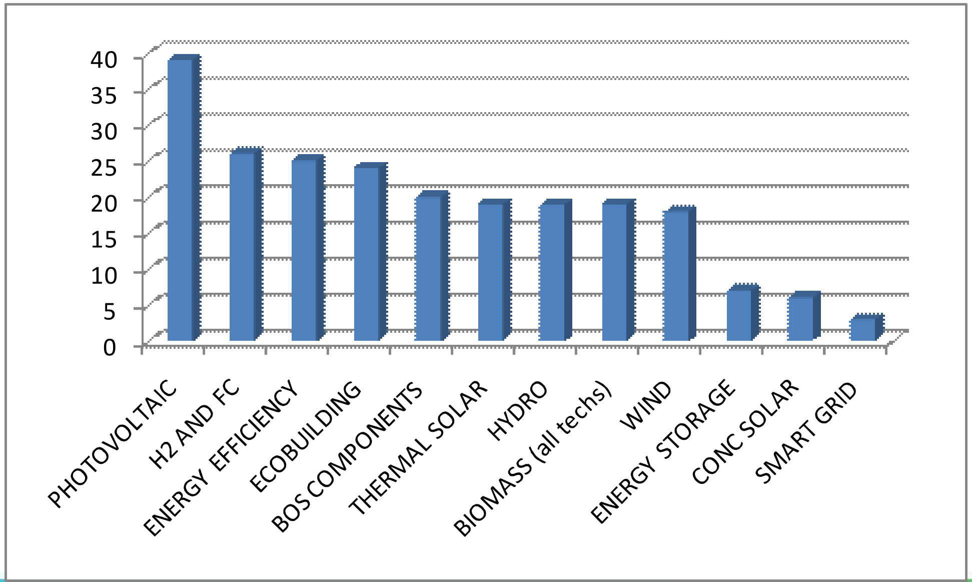

*Number of institutions vs domains of intervention (ie 12 institutions are relevant to Energy matters)*

| COMPANIES AUDITED BASED IN REGIONE PIEMONTE | | |
|---|---|---|
| ECOJOULE SRL | BIOSEARCH AMBIENTE SRL | M.EN.T.SRL |
| GIACOMINI S.P.A. | BIOSOLAR FLENCO GROUP SRL | TECNODELTA SRL |
| B.C.E. SRL | FRESIA ALLUMINIO | HYSYTECH S.R.L. |
| THESAN | VIMARK SRL | RIGAMONTI GHISA S.R.L. |
| ECOREL POWER SRL | AT MARMO SERVICE SRL | PROMEC ELETTRONICA SRL |
| SER PIEMONTE S.R.L. | SASSO SRL | ENTECH SRL |
| SUNENERGYSOL | INGENIA SRL | SIPEA SRL |
| SFERASOL | ENERCONV SRL | CYANINE TECHNOLOGIES SPA |
| FEA SRL | TECNOMECCANICA S.P.A. | ENERGICA S.R.L. |
| BONGIOANNI CALDAIE SRL | AMET SRL | V-ENERGY |
| GECO TERMIA SRL | OPEN SRL UNIPERSONALE | DANFOSS ITALIA |
| BRV S.R.L. | PRIMA ELECTRONICS S.P.A. | ENECOM |
| BAVA SRL | SPESSO GASKETS SRL | LUX SRL |
| SOLESA SRL | CRIOTEC IMPIANTI SRL | SITAV ENGINEERING |
| CHEMTEX SPA | ANSALDO FUEL CELL SPA | ENVICONS |
| ACEA PINEROLESE SPA | ELECTRO POWER SYSTEMS SPA | E++ SRL |
| ME MAKING ENERGY | EOLICAR SRL | COMAI |

| COMPANIES AUDITED BASED IN REGION RHÔNE ALPES | | |
|---|---|---|
| KAPLAN ENERGY | DALKIA | COMPAGNIE NATIONALE DU RHÔNE |
| IDI COMPOSITES | H3C | SOREA |
| SETARAM | AUTOMATIQUE ET INDUSTRIE | SOGREAH |
| CLIPSOL | MAÏA POWER | SCREEN SOLAR |
| TECNISUN | LISA AIRPLANES | LUXOL |
| DOMUSCAN | MCPHY | SOLAR FORCE |
| ALPES BIO-TECH | PAXITECH | GREENERCOS |
| ATANOR | GP MATERIALS | PHOTOWATT |
| LCRB DEVELOPMENT | VOLIRIS | A. RAYMOND |
| LABARONNE CITAF | BOXAL | RECUPYL |
| ALDES | BIOLOGIC | MICEL FILMS |
| GFC CONSTRUCTION | HEXCEL | CYTHELIA |
| INDDIGO | NIEF PLASTIC | 2ES |
| CIAT | ACTEMIUM | SCHNEIDER ELECTRIC |
| CANEVAFLOR | C2EI | NEXANS |
| DE PROFUNDIS | ALSTOM HYDRO POWER | ELENA ENERGY |
| GEG | BERNARD & BONNEFOND | |

# Companies

- 101 companies have been audited
- 55  SMEs, 18 Start Ups, 28 large companies
- 53,5% are already on export markets
- 30,6% have an ongoing collaboration between Italy and France
- 71,3 % show an interest to develop franco-italian relationships
- 75% base their development and market strategies on innovation of processes and products
- 74,3% have R&D capacities (88% of the companies in RRA vs 50% in RP)

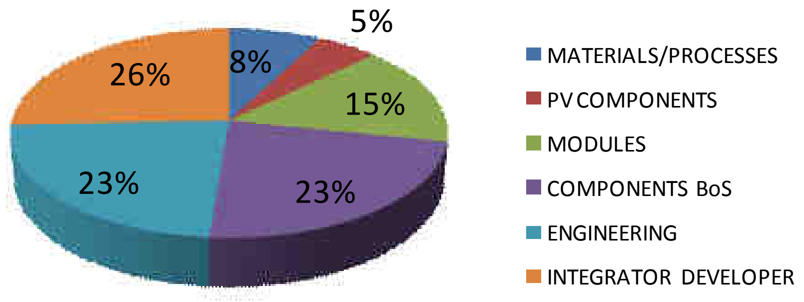



*Domains of activity :*
*ie : 39 companies are involved into photovoltaïcs*

# Photovoltaics

- **Technology** : most of companies are interested in all kind of PV systems, above all silicon based technologies. One is operating on thin film, one on organic technologies

- **Value Chain**:
  Strengths : very good overage
  A gap in production of PV components in Piedmont
  Strong capacity of materials, modules, modules components, BoS components

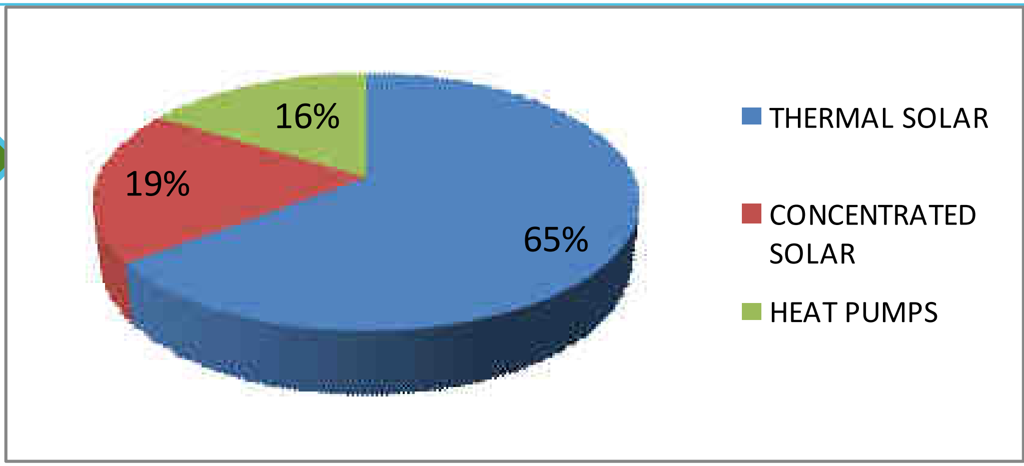



- Potential collaboration
  - General demand on smart grid application (Batteries, power storage system)
  - Integration of plastic films, frames, clips systems within the manufacturing phases
  - Embedded control and management systems (power control, microelectronics, micro inverters, anti theft devices…)
  - Test and development of innovative PV materials : organic dyes, CIGS, close to Research
  - Innovative processes for purification of silicon
  - Power production monitoring system and prediction software tools
  - Industrialized solutions for integration of PV in buildings components
  - Product distribution and collaborative business inside and outside the two regions

# Thermal and concentrated solar

- **Technology** : Low thermal application (HSW), but also high temperature solar application , coupled with other technologies (ie : cooling, thermodynamic applications)

- **Value Chain**:
  Strengths in RP in Thermal Solar, hydraulic systems
  Completeness of the Value chain in Piedmont
  Strengths in RRA in heat pumps and thermodynamics
  60% of the audited companies are manufacturers

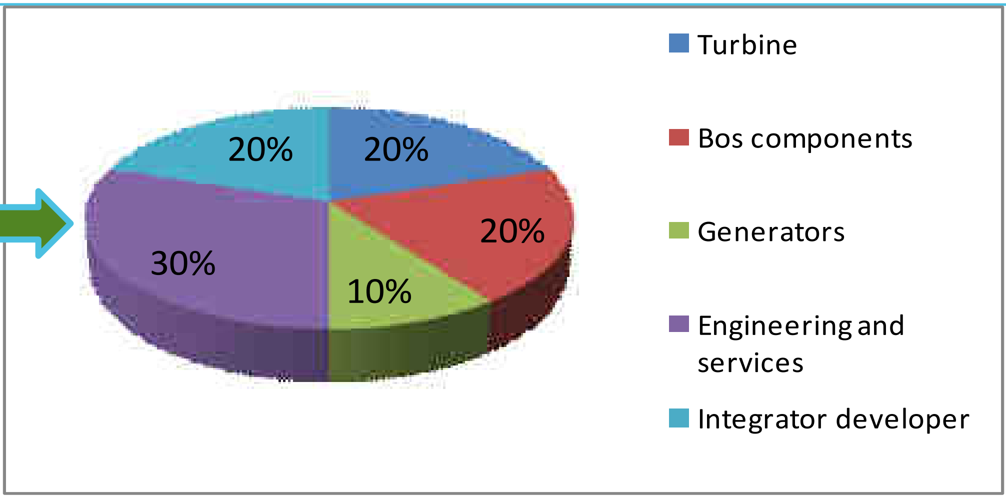



- Potential collaboration
  - Development of heating storage system (eg Phase Change Materials)
  - Thermodynamic/Solar coupling to develop solar cooling application, realization of low enthalpy heat pumps/compressors (<8kw), heating exchangers and high temp. collectors
  - New materials for solar collectors and BoS, in particular polymers (connection with companies within the plastic and chemistry industry)
  - Product distribution and collaborative business inside and outside the two regions

# Hydroelectric Power

- **Technology** : consolidated and mature technology, provides the highest % of RE inside regional balances. Revitalization for mini and micro hydro (>500 KW).

- **Value Chain** :
  19 companies, without any start up.
  Strong position of RRA
  Developer and manufacturer are the most representative
  Except Turbines, mostly in RP, the other capacities are horizontal to other REs activities

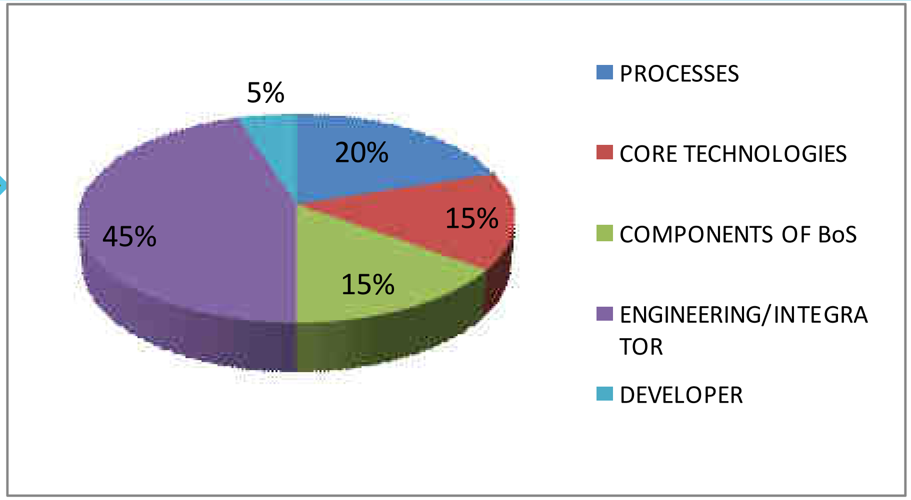



- Potential collaboration
  - Tidal turbines and plants, interest from a majority of majors companies to collaborate with SMEs (components and solutions)
  - Not much relevant BoS innovative products reported
  - Common interest to develop technologies dedicated to harness residual Hydro power potential of small streams, channels, small water jumps, wind mills…
  - Innovative solutions such as Hydrolienne, Archimede screw technologies to be developed (looking for pilots sites)
  - Major need for energy storage , linked to hydrogen production and storage system (flywheels, compressed air, high t°thermal storage, redox batteri es, LI-Air batteries…)

# Biomass

- **Technology** : Domination of northern European countries, under development in RP and RA . Ongoing interesting initiatives to develop specific technologies to harness the resource potential of the 2 regions

- **Value Chain** :
  Manufacturers more present in RP
  RRA more dedicated to services
  No single technology chain value is covered by industries audited

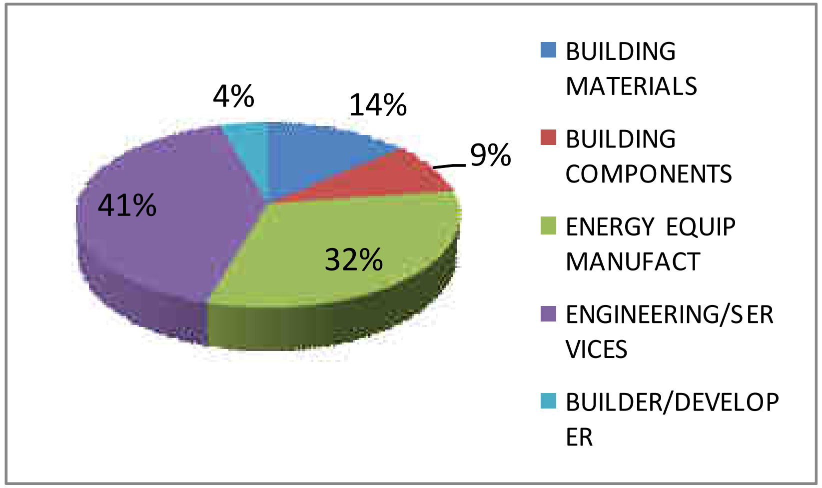



- Potential collaboration
  - Good interest of developing demonstrative plants on innovative technology (Clean combustion, gasification..)
  - Biogas sector : common competences inside processes to test grid injection (purification+ compression challenges) and use of biomethane as vehicle fuel
  - New technologies on bio-ethanol production from lingo-cellulose materials
  - Product distribution and collaborative business inside and outside the two regions

# Ecobuilding

- **Technology** : Energy efficiency in buildings accounts for the major challenge inside EU. This wide sector involves any industrial competences and capacities

- **Value Chain**:
  All the position of the VC covered
  Relatively easy to integrate new competences from other REs technology sectors

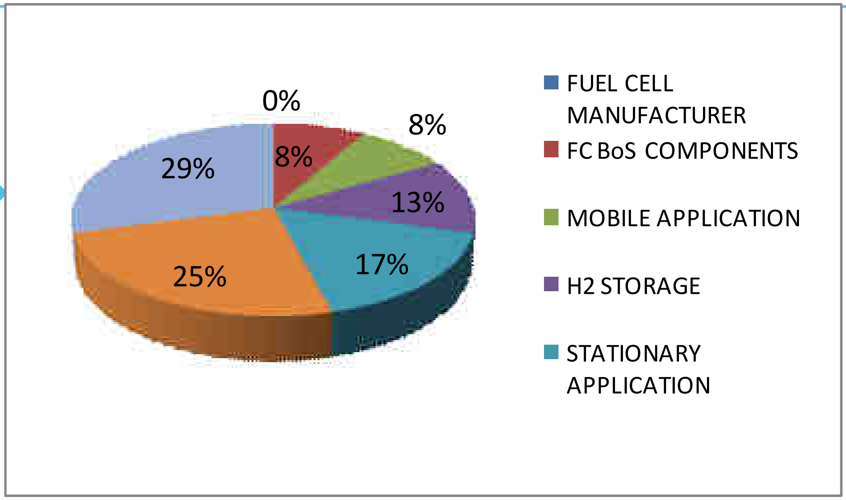



- Potential collaboration
  - Integration of REs is the major issue emerged from audits, in particular BIPV (integration of large competences from PV sector)
  - investment of companies into Insulation materials with the use of new components, such as nanomaterials
  - Energy management systems: software solutions for building management systems (including energy and smart grids)
  - CHP (co-generation) power device, with focus on innovative methane micro fuel cells
  - Product distribution and collaborative business inside and outside the two regions

# Hydrogen and Fuel cells

- **Technology** : technology not close to market, but major ongoing R&D and new applications to be implemented

- **Value Chain** :
  26 companies involved !
  Lack of manufacturer able to integrate components and competences
  Large spectrum of FC technologies (PEM, SOFC….)




- Potential collaboration
  - Storage is a major interest, demand towards both stationary and mobile applications, offer made by material producers (metal hybrids) and vessel components
  - Test products for mobility purposes (need for leader)
  - Storage : needs to benchmark experiences of the two regions
  - Product distribution and collaborative business inside and outside the two regions

Thank you for your attention

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