

**All Energy Conference
Fossil Fuels – Combating Climate Change Session
Aberdeen
25th May 2005**

UK Action on Carbon Abatement in an International Context

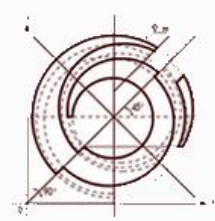
Nick Otter

Director of Technology and External Affairs, ALSTOM Power Ltd

ALSTOM

- **Energy Equipment/Systems Supply Company**
 - ALSTOM Power Ltd, a strong technology presence in the UK
 - world-wide supplier of power generation plant, components and services
- **UK Advanced Power Generation Sector**
 - UK Advanced Power Generation Technology Forum (APGTF)
 - UK DTI Advisory Committee on Carbon Abatement Technologies
- **European and International Context**
 - European Industry : EPPSA/ EUnitedTurbines
 - Advisor to EC : DG Research/Energy
 - EC Thematic networks : CO2NET, CAME-GT, POWERCLEAN, INCA-CO2
 - UK representative on Carbon Sequestration Leadership Forum

- **UK NATIONAL/INTERNATIONAL POSITION**
- **EUROPEAN ACTIONS AND OPPORTUNITIES**
- **INTERNATIONAL ISSUES**
- **SOME CONCLUSIONS FOR THE UK**



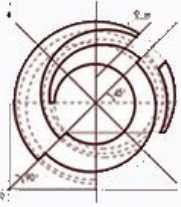
UK NATIONAL/INTERNATIONAL POSITION

- **Year of Opportunity**
 - UK will have leadership of G8 and the EU
 - real chance to influence on the European and world arena
 - importance of Global Climate Change
- **Environment and Global Climate Change**
 - very high on the political agenda
 - essential to engage Emerging Market Economies (China, India,)
 - fossil fuels will continue to play a major role for decades yet
 - impact of a real value for CO₂ - Emission Trading/Tax implications; market could change dramatically

Clean use of fossil fuels : a critical transition for decades yet in getting to a sustainable energy future

- **Clean Fossil Fuel Technologies firmly established as key component of carbon reduction strategy**
 - 18% reduction in Carbon Intensity by 2012, backed by RTD and D initiatives in fossil fuels
 - Clean Coal Plant Improvement programme : 2b US\$ over next decade
 - `Futuregen` Project launched with 1b US\$, 80% from USDOE : electricity and hydrogen plant with CO₂ sequestration
 - CO₂ Capture and Storage budget for 2004 requested at ~60m US\$ from a `zero` position less than 5 years ago with US regional networks established
- **US Co-operative Initiatives**
 - **Carbon Sequestration Leadership Forum [CSLF]** : started in June/03 involving now 17 countries plus EC
 - complementary to **International Partnership for an Hydrogen Economy [IPHE]**

A strong position being taken by USA internationally

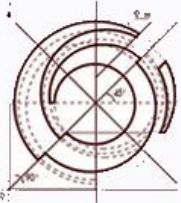


- **Some other Country Actions outside Europe**

- **Australia** : CO₂ Capture and Storage TRM, COAL21
- **Canada** : Canadian Clean Power Coalition, Coal TRM

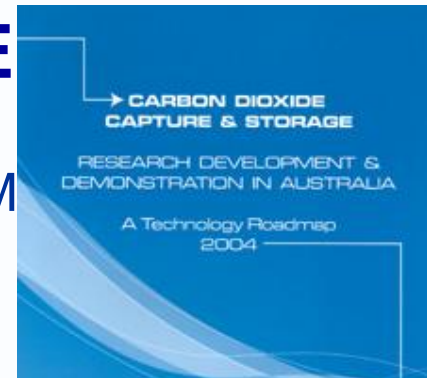
- **Other relevant International Initiatives**

- **IEA** : GHG RTD and Clean Coal Centre
- **IEA** : Working Party on Fossil Fuels
- **CCP** : Carbon Capture Project of `Oil Majors`; continuation phase into most likely cost-effective capture technologies



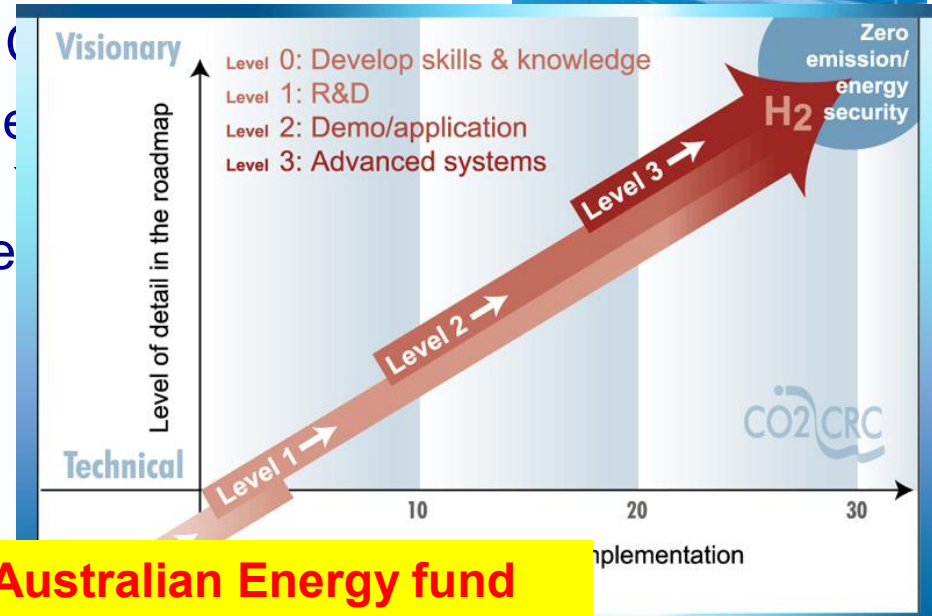
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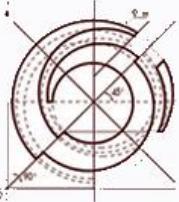


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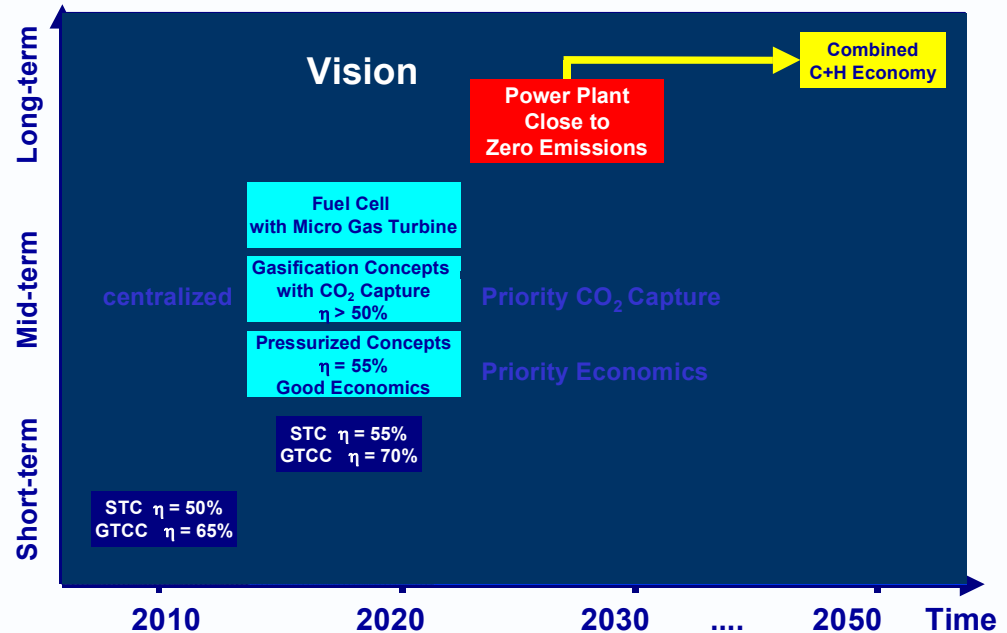
**Backed by new Australian Energy fund
~500m A\$ launched in Jun/04 out to 2020**



“Snap shot” of European Position **ALSTOM**

● European Countries

- Germany : new COORETEC action addressing fossil fuels
- UK : CAT strategy for fossil fuels planned for 2005
- Other Member States addressing CAT issues

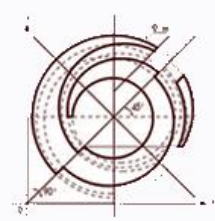


● European Commission/EU

- EC Framework 6 (2003-2006) Theme of “CO₂ Capture and Storage associated with Clean Power Generation from Fossil Fuels”

..... **FP7 now being addressed**

Increasingly strong EU interest in Carbon Abatement



EUROPEAN ACTIONS AND OPPORTUNITIES

- **Industry Action - Trade Groupings**



A Siemens - Alstom Initiative supported by
European Electrical Utility Companies
and
European Power Plant Suppliers Association

POWER 21 – an Industries Initiative for Low
Emission Power Plant targeting a Carbon Management
Strategy for Fossil Power Generation

- **Government Action - with EC support**



Clean Power Generation Technology for Europe

FENCO
ossil Energy Coalition

Specific Supporting Action
Preparing an EC ERA-NET Proposal
Co-ordinated by
Forschungszentrum Jülich GmbH / Projektträger Jülich
Hubert H. Höwener

- **Stakeholder Action - developed with EC**

- EC Thematic Networks of CAME-GT,
POWERCLEAN, CO2NET2 ; separate strategy
documents plus combined document



All led by UK

- **Industry Action - Trade Groupings**



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- German/UK governments lead a FP6 ERANET `Clean Fossil Initiative` : FENCO
- EC Co-ordinating Action for 2005-08
- seeking a synergistic approach across EU



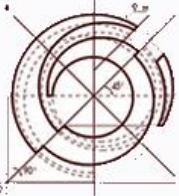
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FENCO Work Packages www.FENCO-ERA.net

- Systematic Exchange of Information and Best Practices
- Common Strategic Issues in relation to Clean Fossil Fuels
- Implementation of Joint Activities
- Trans-national R&D Activities
- Interfaces with Member States Policy and Technical Groups

Germany(lead)
Austria
Denmark
Greece
The Netherlands
Norway
Portugal
Spain
UK
plus
Estonia
Latvia
Poland

UK will lead the Strategy theme

**Proposal accepted by EC – involvement of 12 of 25
Member States : start 1/June/05**

● 9 Major Themes in FP7

- Health
- Food, Agriculture and Fisheries
- Information and Communication Technologies
- Nanosciences/technologies, Materials and New Production
- **Energy**
- **Environment and Climate Change**
- Transport
- Socio-economic Sciences and the Humanities
- Space and Security Technologies

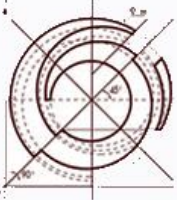
7 year Energy programme of ~3b euro over 2007-2013 being sought

9 Key Topics

- Hydrogen and Fuels Cells
- Renewable Electricity Generation
- Renewable Fuel Production
- Renewables for Heating and Cooling
- CO2 Capture and Storage for ZEPG
- Clean Coal Technologies
- Smart Energy Networks
- Energy Savings and Efficiency
- Knowledge for Energy Policy Making

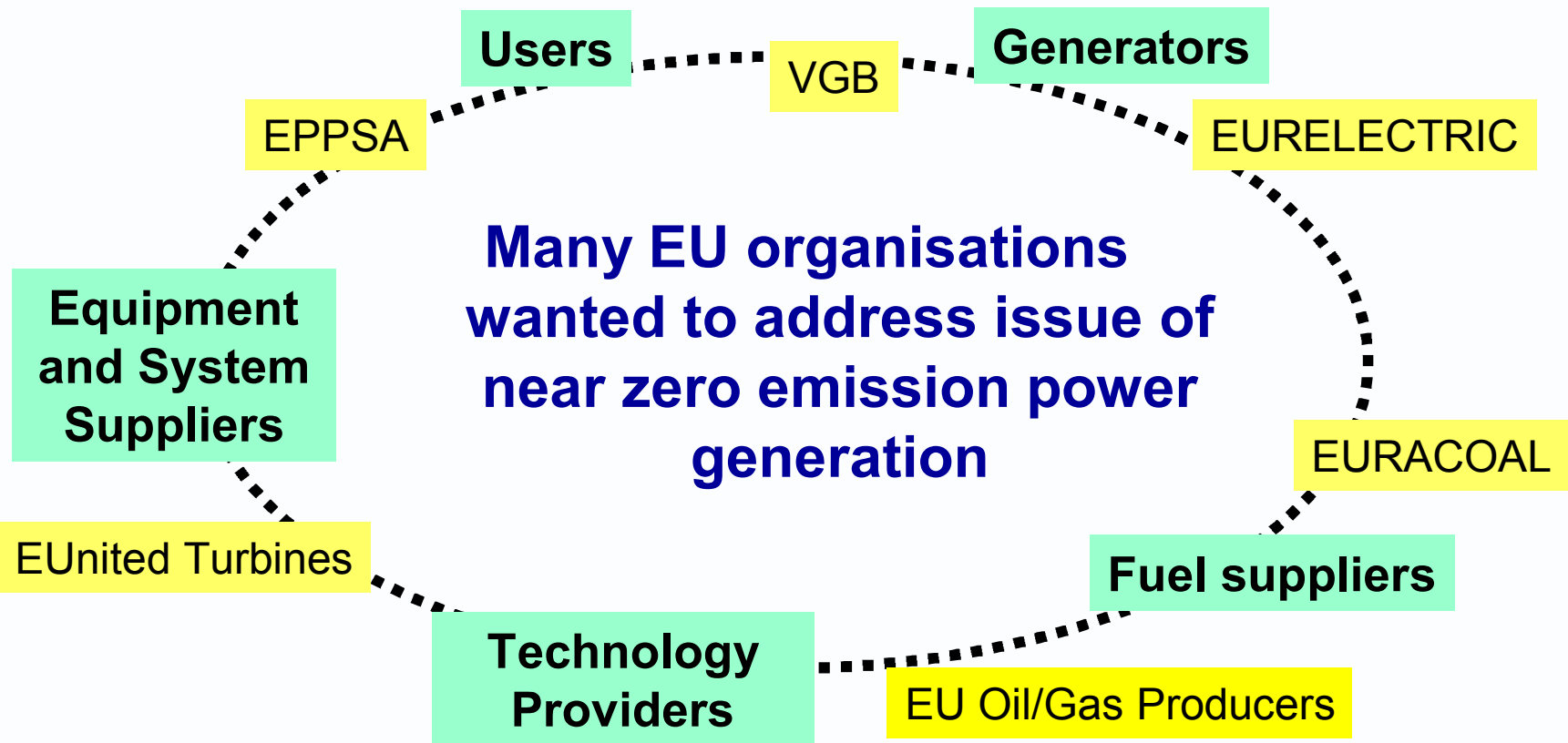
- **EC wish to align Themes with European Technology Platform approach**
- **ZEPG Scope proposed by EC**

To drastically reduce the environmental impact of fossil fuel use, particularly coal , aiming at highly efficient power generation plants with near zero emissions. This will include CO2 capture and storage, as well as clean conversion technologies leading to substantial improvement in plant efficiency, reliability and costs. .

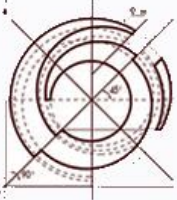


ETP : CleanPower – towards zero emission power generation

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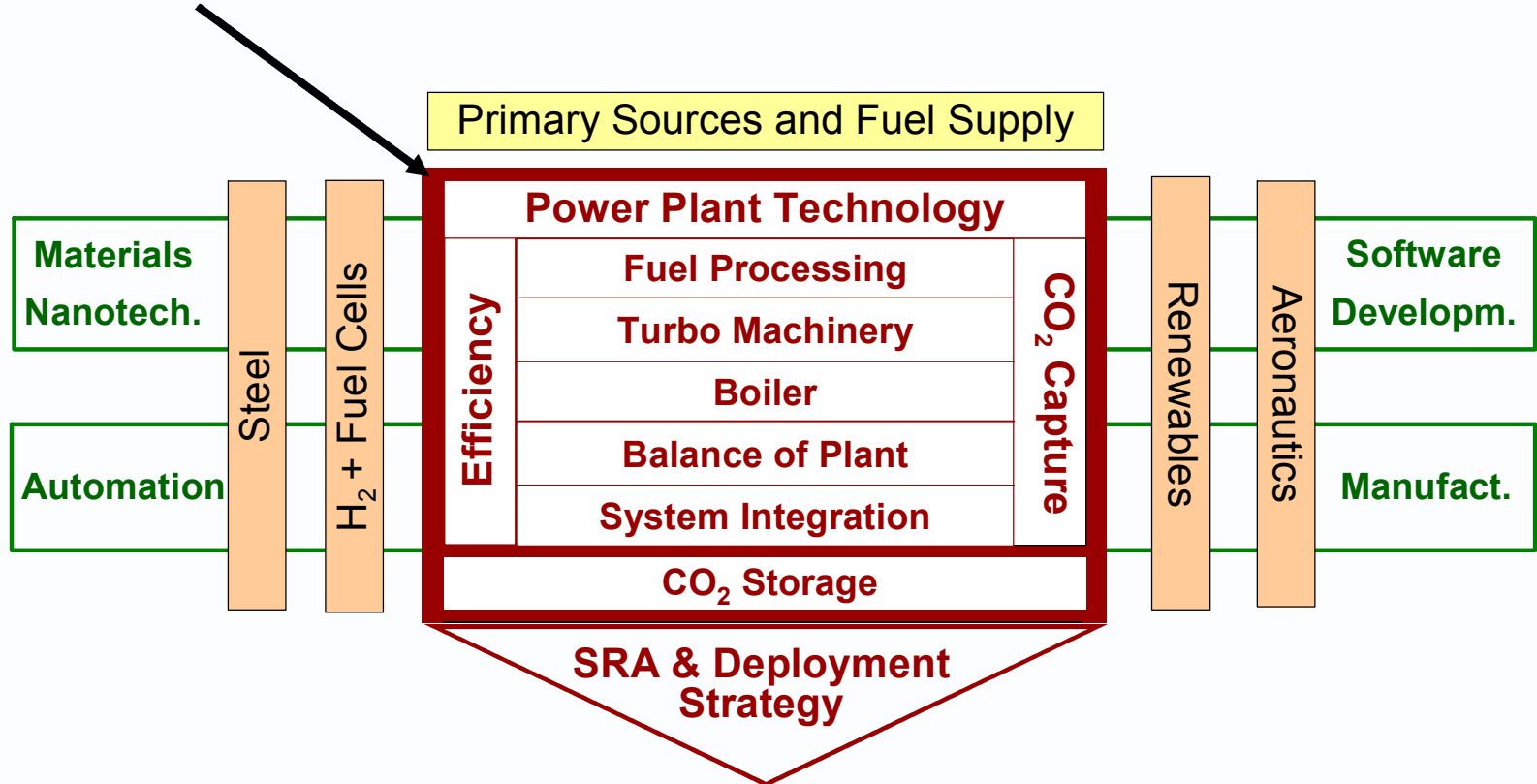
EU Trade Groupings used as facilitating vehicle



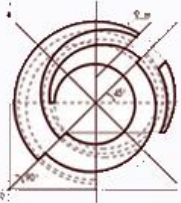
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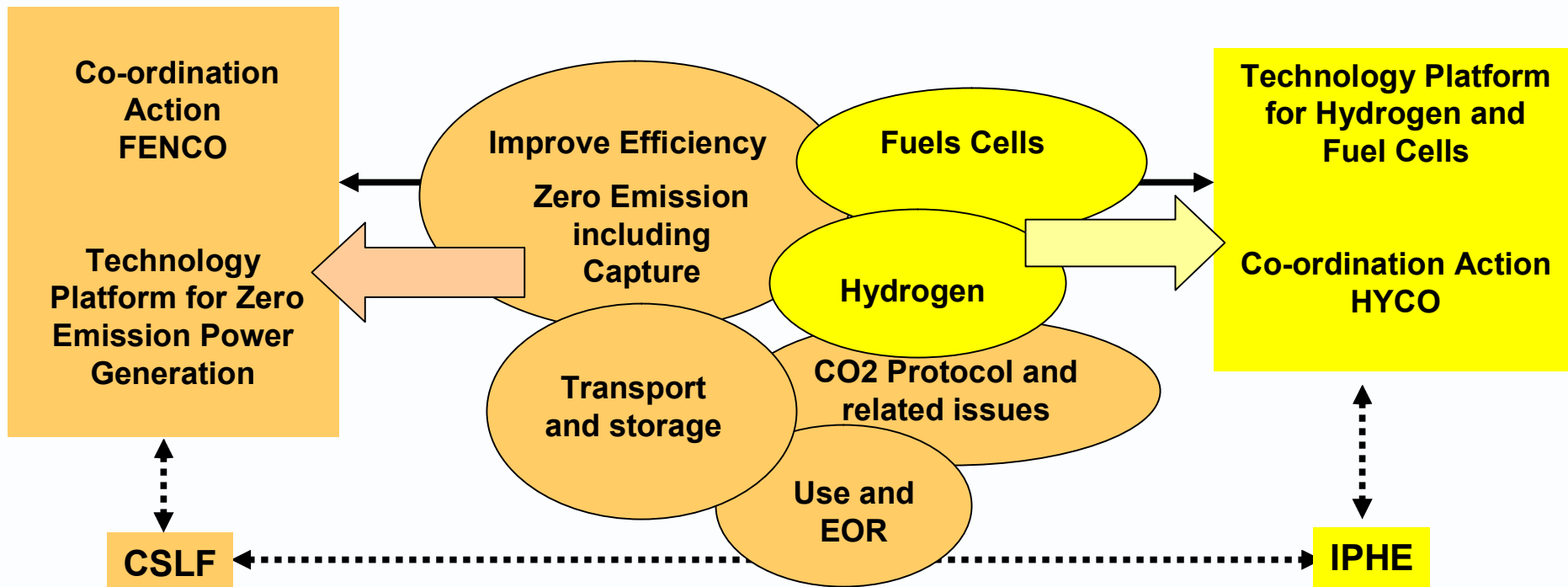
Scope and Interfaces

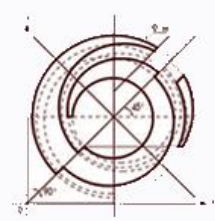


Aim is to establish a critical mass programme for Europe



- Needs to be part of an overall strategic framework addressing clean fossil fuels as a key element of a sustainable energy portfolio





INTERNATIONAL ISSUES

- **Active role in pan-nation CSLF action**

- Technology Route Map definition and Gap Analysis
- Promoting CSLF projects : BP led/Carbon Capture Project
- Regulatory and legal issues : OSPAR, London Convention
- Public Perception and Stakeholder engagement
- Complementary action to IPHE initiative

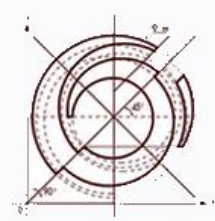
- **Bilateral actions with key countries**

- Germany and within Europe
- Australia, Canada, US
- China, India,

- **Participative in IEA work**

- IEA GHG R&D, IEA CCC, IEA Working Party on Fossil Fuels

A robust national UK initiative required for UK to play a major role



SOME CONCLUSIONS FOR THE UK

- **UK in a strong position to take a lead role in Carbon Abatement Technology for fossil fuels, especially in the context of Global Climate Change**
- **UK is well positioned internationally, both in Europe and worldwide**
- **UK needs a robust Carbon Abatement Technology Programme commensurate with a well articulated strategy**

..... **now is the time!!!!**

The ALSTOM logo is centered on a white semi-circular background. The letters 'ALSTOM' are in a bold, sans-serif font. 'ALST' and 'M' are dark blue, while the 'O' is red and stylized as a circle with a gap and a small tail on the right side. A thick red curved bar arches over the top of the white semi-circle. The background of the entire image consists of vertical blue stripes of varying shades and some faint white curved lines.

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