

THE VOICE OF RENEWABLE ENERGY RESEARCH IN EUROPE

EUREC Agency is the only representative of research centres covering the full range of renewable energy technologies.

Founded in 1991 and having the status of European Economic Interest Grouping (EEIG), its goal is to improve the quality and scope of European research and development in renewable energy technologies. EUREC Agency's 48 members are prominent research and development (R&D) groups spread across Europe, operating in all renewable energy technologies. Our members also conduct research in supporting technologies such as energy efficiency, storage, distribution and system integration, while others conduct social and economic studies in renewable energy.



EUREC AGENCY'S ACTIONS:

Innovative education

Our European Master in Renewable Energy is the only international postgraduate programme in renewable energy, taught in 5 EU countries by 8 universities. Our members provide one-day professional courses on specific subjects.

Defining research priorities for renewable energy

EUREC Agency organises consultations of researchers and industry representatives to define common positions between all actors in the sector. We collect input for the EU decision-taking process on renewable energy research priorities and the sector's infrastructure requirements.

Promoting technology transfer

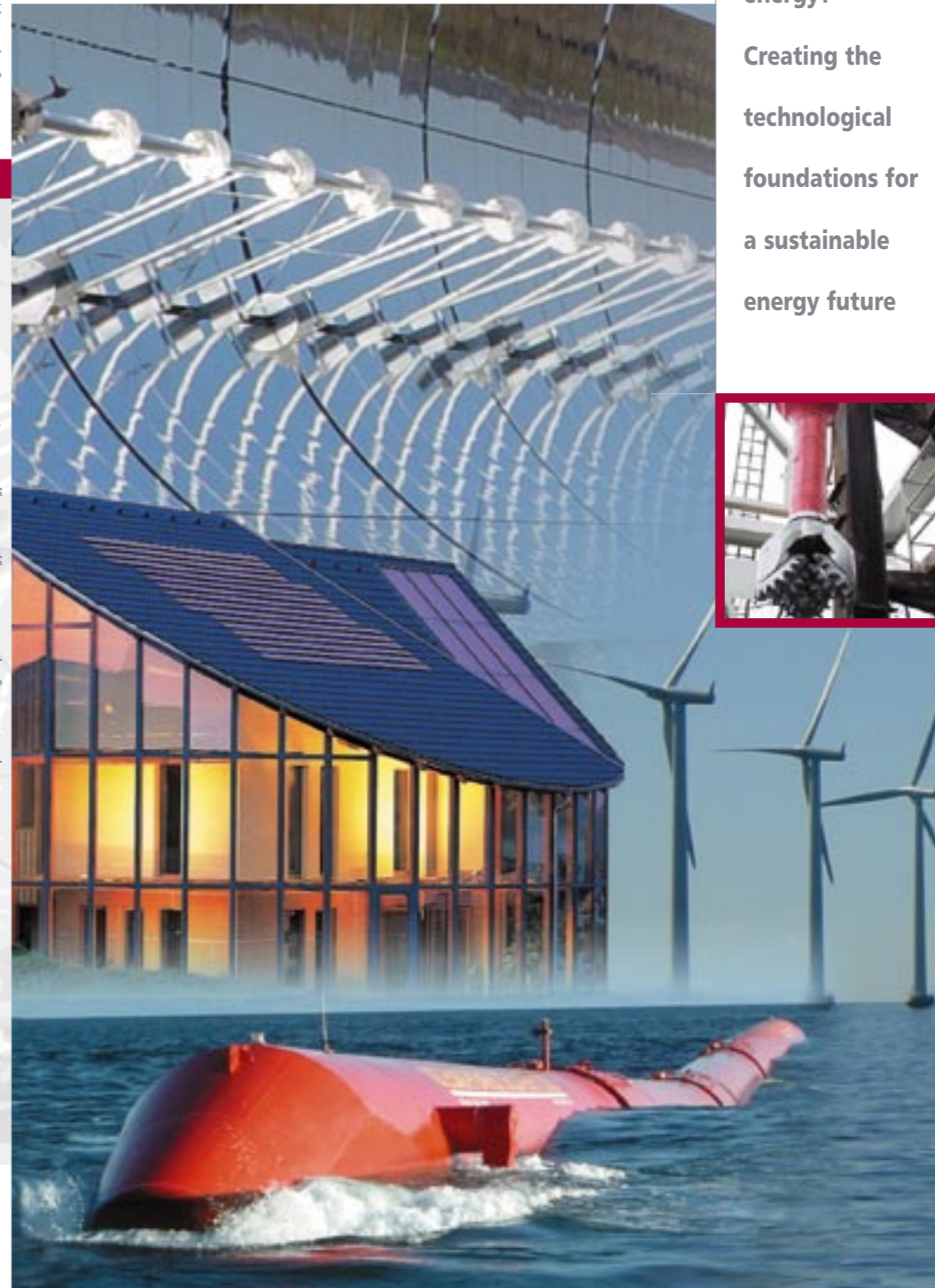
To improve the market commercial uptake of scientific research results, EUREC has established an innovative platform for technology transfer. A network of entrepreneurs, technology transfer professionals, financiers and scientists "pull" and "push" the end-products of publicly funded research from the laboratory to the market.

EUREC AGENCY'S MISSION:

- ❑ To improve the quality and scope of European R&D in renewable energy technologies
- ❑ To bring together the leading European Renewable Energy research centres.
- ❑ To act as a communication hub that assists members in quick and efficient information transfer to and from the European Institutions.
- ❑ To foster contact and cooperation between EUREC Agency's members and their counterparts in industry to define comprehensive R&D strategies, and to facilitate innovation and technology transfer through the promotion of R&D results.
- ❑ To provide expert R&D input and guidance to EU decision-takers in order to help shape the EU's renewable energy research agenda and improve its effectiveness.
- ❑ To support the expansion of Europe's workforce of qualified renewable energy engineers by promoting education and postgraduate training in this area.



Research in renewable energy: Creating the technological foundations for a sustainable energy future



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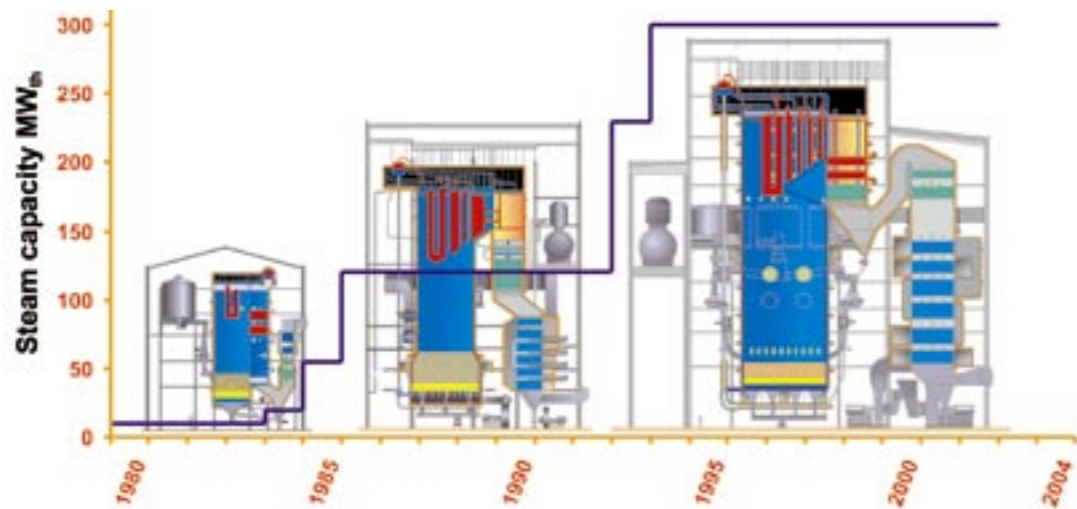
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BIOMASS:

Specialised technology for combusting biomass has become more efficient, larger, and more sophisticated.



Graphics by Kvaerner Power

HIGH-TEMPERATURE SOLAR ENERGY :

The technology developed by the Eurotrough II project has delivered an efficiency improvement of 10% compared to existing parabolic trough technologies and has resulted in the creation of a consortium of European companies and research centres now bidding to install the technology in commercial plants in Spain. [ERK6-CT-1999-00018]



MARINE ENERGY :

The European teams developing tidal current devices are the only groups in the world so far to have built prototypes, now generating electricity. Europe also leads the world in wave energy. The prototype developed for the EU research project *Wave Dragon* is Denmark's first offshore wave energy converter producing power for the grid. This technology has the potential to produce electricity at some of the lowest costs on the market today. [ENK5-CT-2002-00603]

PHOTOVOLTAICS :

The European project "Fullspectrum" realised a record-breaking efficiency of 35.2% at 600 suns on a lattice-mismatched triple-junction concentrator PV cell. A German company was set up in early 2005 to commercialise concentrator cells using this and similar technologies. [FULLSPECTRUM 502-620]

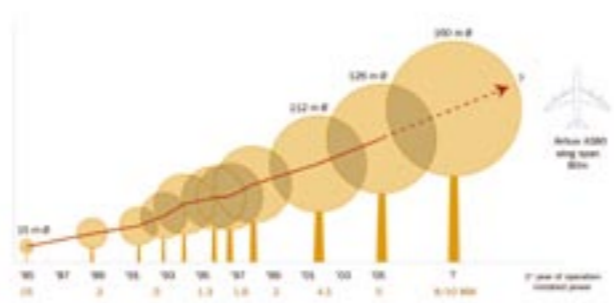
SOLAR THERMAL HEATING AND COOLING:

In several projects (such as ASODECO) the use of solar heat of thermally-driven cooling has been successfully demonstrated. It is reasonable to suggest that by 2030 the energy needed for heating and cooling in the EU can be reduced by at least 50% through a mix of energy savings, energy efficiency and the use of solar heat to drive cooling processes. [ASODECO NNE5/531/1999]

WIND:

A combination of taller turbines, improved components and better siting has resulted in an overall efficiency increase of 2-3% annually over the last 15 years. As a rule of thumb, manufacturers expect the cost of wind power to decline by 3-5% with each new generation of turbine.

Development of Wind Turbine Rotor Diameter (m)



Source: Jos Beurskens, ECN

STATE OF THE ART OF RENEWABLE ENERGY RESEARCH

Research in renewable energy covers a **wide variety of technologies**: wind, biomass, marine, geothermal, photovoltaic, solar thermal electricity, solar thermal heating and cooling, solar buildings and small hydro. It is also closely linked to research into supporting technologies such as energy efficiency, storage, distribution and integration.

Today, around a hundred government-funded research centres operate throughout the EU-25, with a total staff of between 3000-4000 specialised researchers (full time equivalent).

MULTIPLE APPLICATIONS OF RENEWABLE RESEARCH

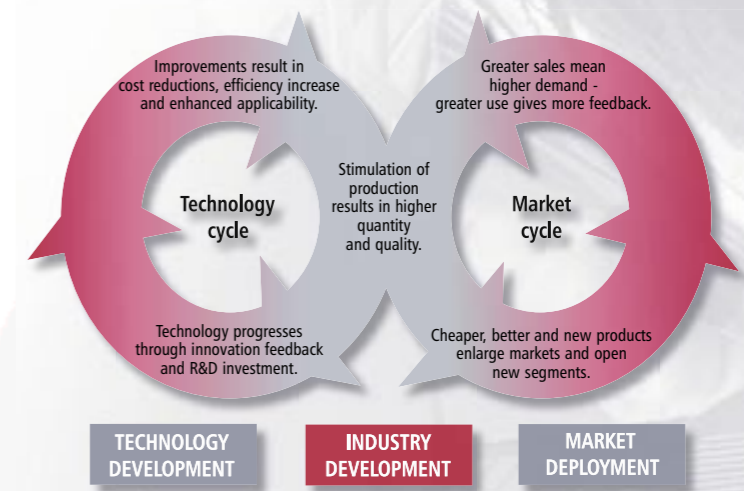
Research at all stages of the value chain has yielded clean and sustainable energy generation technologies for Europe. Today, renewable energy can cover all kinds of energy demand:

- Renewable **electricity** derived from wind, hydropower, concentrated solar power, geothermal and biomass
- Renewable **heating and cooling** typically from solar thermal, geothermal, biomass
- Renewable **transport fuels** typically from biomass

THE INNOVATION POTENTIAL OF RENEWABLE ENERGY RESEARCH

New ideas, scientific discoveries and engineering advances have a direct impact on the development of the industry to which they relate and are at the root of the dramatic reduction in cost of all renewable technologies recorded in recent years.

Virtuous Cycle in a Supportive Policy Environment



Source: NET Ltd. Switzerland based on IEA/OECD (2000)

An investment in renewable energy research is an investment in technological innovation that boosts the competitiveness of European industry.

The renewable energy industry is one of the fastest growing industries in Europe thanks to two factors:

- supportive political and legal frameworks
- the region's top rank in the world in terms of per capita and per unit GDP spending on renewable energy research.

Both have created a positive self-reinforcing virtuous innovation-growth cycle.

The EU has an important role in maintaining the cycle, supplying approximately a quarter of the public money spent on renewables research.