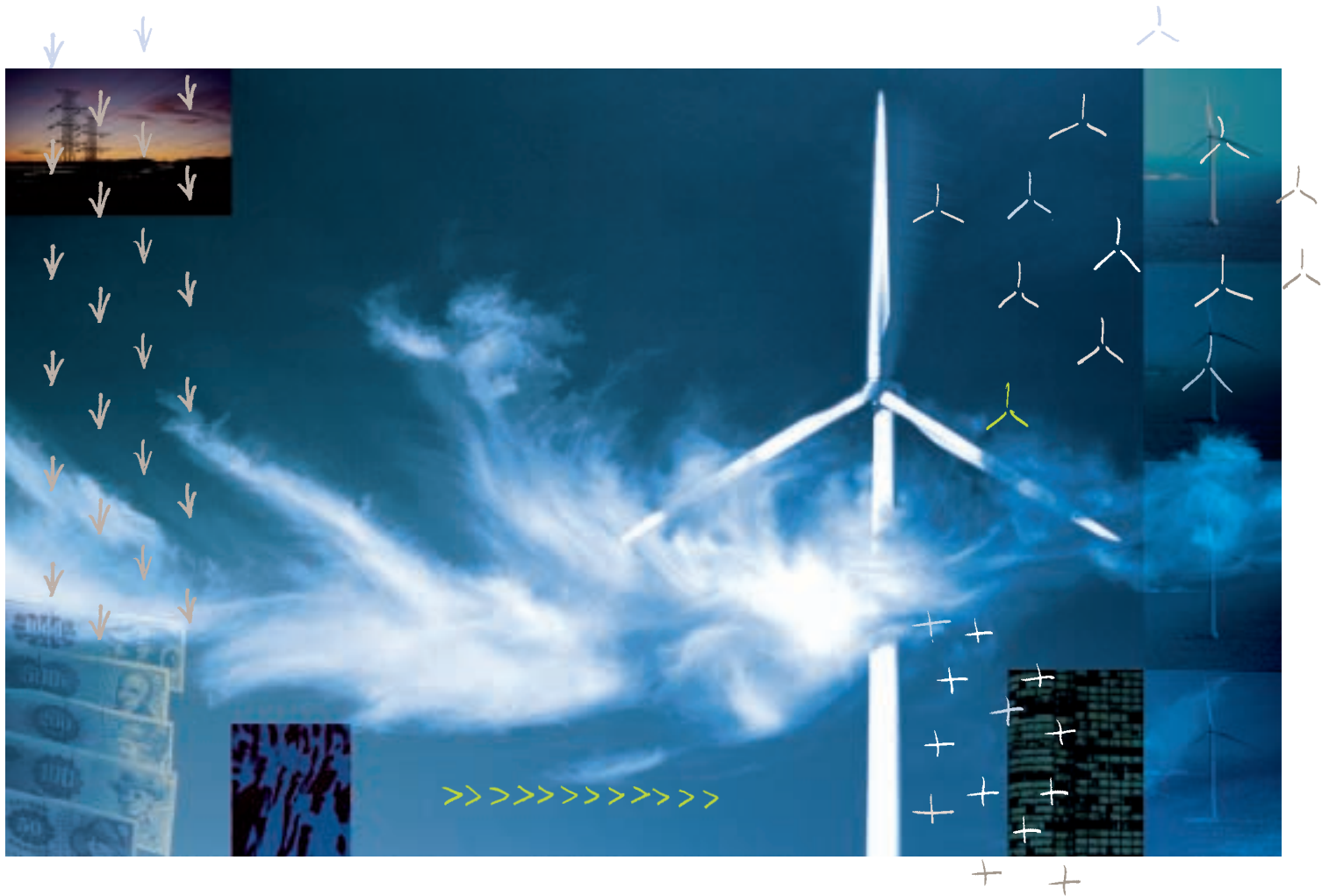




# DENMARK – WIND POWER HUB



DANISH WIND INDUSTRY ASSOCIATION

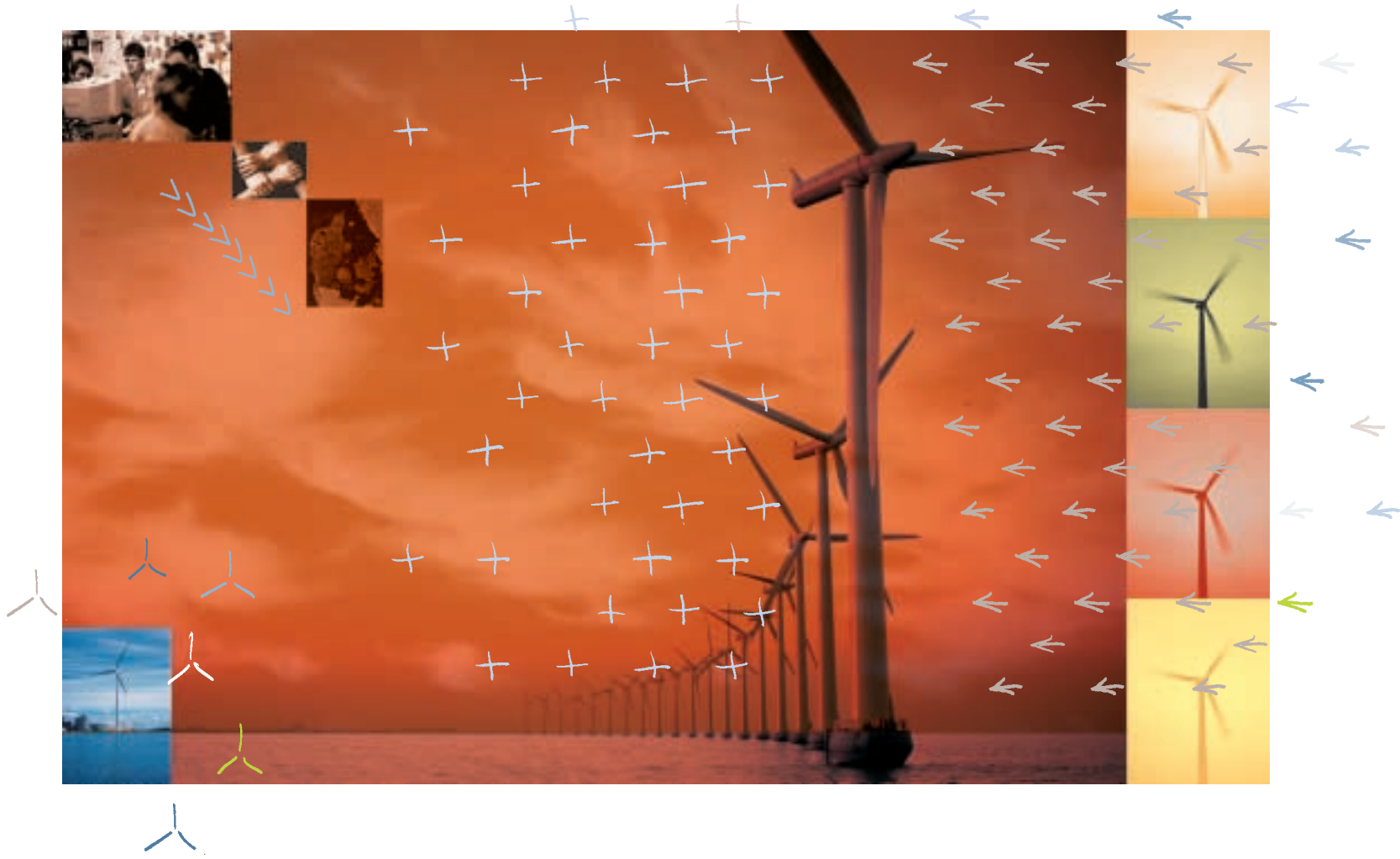


## WIND POWER VISIONS

Wind power has become a key technology in the global energy market. In 2004, wind power accounts for 20% of the Danish electricity consumption compared to 2.4% in Europe. A national energy agreement from March 2004 plans for another 400 MW offshore and 350 MW onshore.

DENMARK WILL BE POWERED BY  
25% WIND GENERATED ELECTRICITY IN 2008

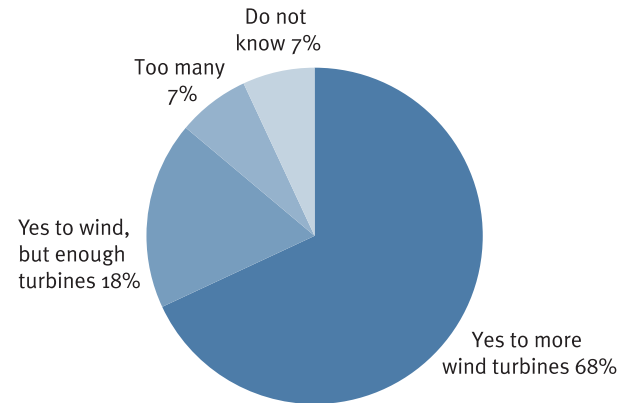
THE DANISH WIND INDUSTRY ASSOCIATION  
WORKS FOR A TARGET OF 35% BY 2015



## DENMARK TODAY

Being the cradle of modern wind turbine industry in 1976, Denmark ranks among the top 5 markets in the world today. It is the centre of wind technology – the global wind power hub.

- Denmark has 5,500 wind turbines with a total capacity of 3,100 MW
- 75% are privately owned and more than 100,000 Danes have invested in wind power
- 86% Danes support wind energy and 68% favour further development



Source: Sonar & Jyllands-Posten 2001



## FIRST MOVER INDUSTRY

Denmark's wind industry is a first mover, and the sector continues to achieve remarkable results.

- The Danish wind turbine manufacturers hold a world market share of approx. 40%
- The industry employs 20,000 in Denmark alone
- The manufacturers have a combined turnover of almost 3 billion euro

The Danish industry leads a new challenging market – wind turbines at sea. By 2003, global offshore installations had reached 530 MW – 492 MW were of Danish origin.

The offshore market involves many different sectors from consulting engineers to companies with special vessels designed to transport, install and maintain the turbines. Danish companies have developed skills that give them a leading competitive edge.



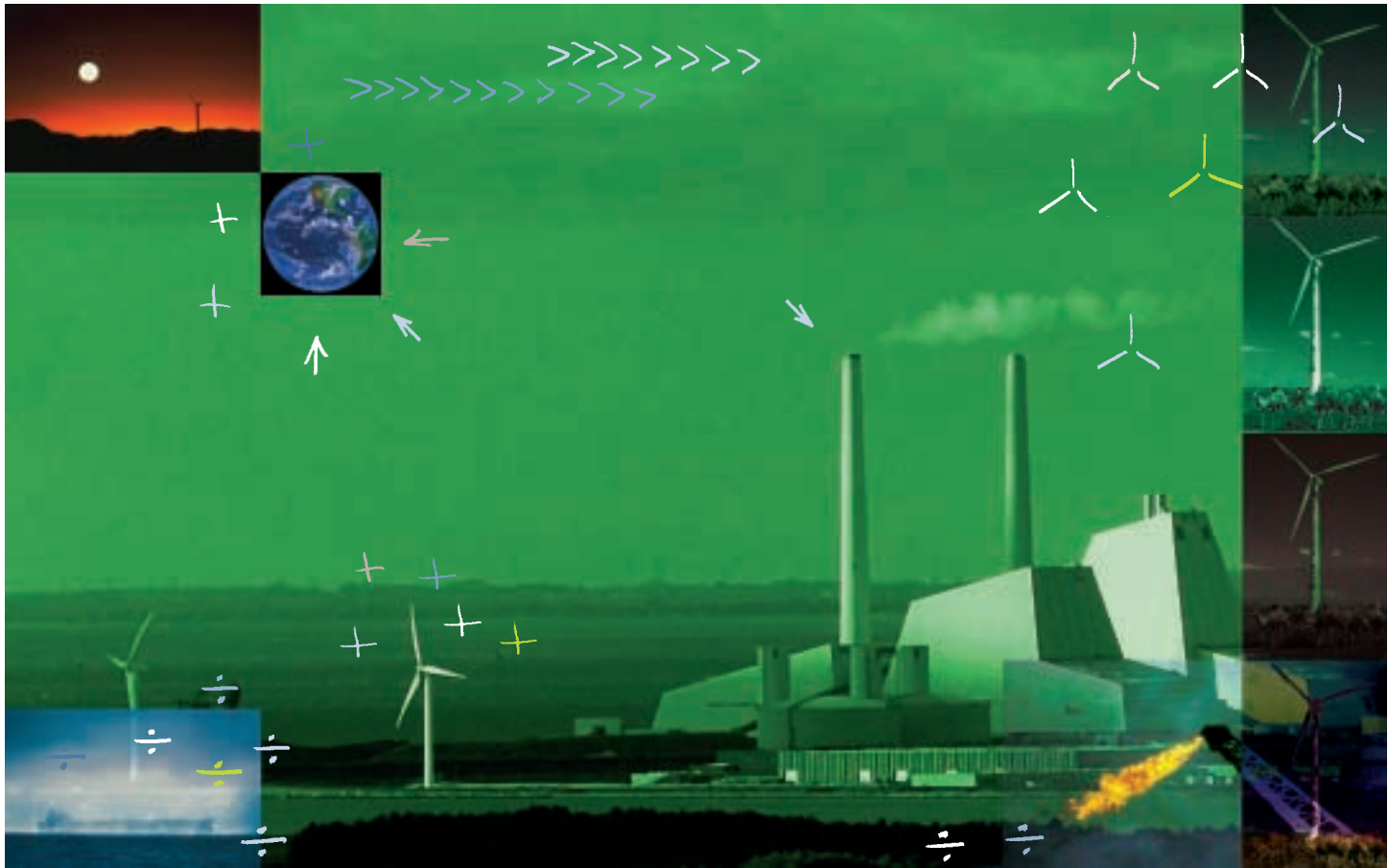
## STATE OF THE ART TECHNOLOGY

In Denmark, the industry benefits from the proximity and close cooperation with world-class researchers. Danish research institutions established the Danish Research Consortium for Wind Energy in 2002.

The consortium comprises approx. 150 researchers working with meteorology, fatigue loads, aero- and structural dynamics, grid interaction etc. The research and business sectors have cooperated closely for 25 years creating an unrivalled cluster of knowledge.

Integrating still larger amounts of wind energy in the grid is a major future challenge. Danish system operators are becoming experts in handling very high wind penetration levels. The proportion is 100% in West Denmark on windy days with low consumption.

In cooperation with Danish researchers, system operators are developing flexible system solutions that will make wind power even more attractive.



$\frac{1}{2}$

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## TOWARDS THE MARKET

Wind is a sensible choice from an economic perspective. Utility companies have discovered that wind is a safe investment. The fuel used in wind power production is free, whereas fossil fuel prices are volatile.

Over the last 25 years, the cost of producing one kWh from wind has been reduced by 80%, and cost reductions continue.

WIND TURBINES ON VERY GOOD SITES CAN ALREADY  
COMPETE WITH NEW COAL OR GAS FIRED POWER  
PLANTS

ESTIMATIONS SHOW THAT WIND TURBINES CAN COM-  
PETE ON MARKET TERMS IN 7 - 10 YEARS

THE DANISH WIND INDUSTRY ASSOCIATION represents the Danish wind turbine manufacturers and their suppliers. Further information can be found on:

WINDPOWER.ORG



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