9 November 2001

RAMBØLL raises the stakes with offshore wind turbine foundations

Establishes a new division in Esbjerg, to be Denmark's leader

All over the world the need for alternative energy is gaining momentum. RAMBØLL aims to capitalise on this fact in establishing, as Denmark's first consulting company, a completely new division for Offshore Wind Turbine Foundations. Everyone knows about wind turbines at sea. But there is a difference between wind turbines sited in shallow water of depths from 4 to 8 metres and those in deep water of 20-25 metres or more. The division's area of expertise is precisely in large constructions for offshore use and derives from RAMBØLL's 25 years of experience in platform construction for the oil and gas industries.

"Accomplishing wind turbine construction in such great depths of water calls for very special techniques, and it is now apparent that RAMBØLL is one of the few North European consulting companies with the expertise which the industry requires," explains Kai B. Olsen, RAMBØLL's head of division. RAMBØLL's experience covers, amongst other areas, offshore development, planning, transport and installation analyses of the large steel structures, which constitute the foundations for wind turbines. RAMBØLL started undertaking projects of this kind in the late 1970s, and its expertise and experience are still very much in demand.

"We're recruiting at least 5 highly experienced employees from our old offshore platform construction division. Furthermore, we'll be hiring as many engineers as it takes over the next year, and we expect to get them from the Technical University of Denmark or the University of Aalborg," says Kai B. Olsen.

Cheaper and more consistent
In order to make electricity production cheaper and more consistent, the trend is now for offshore solutions, since the wind blows longer and stronger at sea. At the same time, the size of wind turbines can be increased dramatically, without causing visual and noise distress to neighbours.

Some countries, including Denmark, have more or less fully developed their capacity in terms of viable land-based wind parks. Continuing development offshore affords obvious and very significant potentials, which we are now ready to exploit.

Programs for calculating dynamic effects
Before erecting offshore wind turbines, many advanced calculations have to be performed to make sure that the wind turbine can stand for at least 20-25 years. RAMBØLL was one of the first consulting companies to develop a program for analysing the combined effects of wind and waves. This allows the wind turbine's dynamics to be scrutinised and its lifetime to be calculated.

The need for such analyses is dictated by the fact that wind turbines are now sited in much deeper water than previously. In Germany, many mega-projects comprising many hundreds of wind turbines are being contemplated, with wind turbines sited beyond the 12 nautical mile limit. Here the depth of water will typically be at least 30-35 metres. Thus, the power of the sea becomes a very significant factor in the design of the wind turbine foundations. It is at precisely these depths of water that RAMBØLL has such great experience and expertise.

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