

# a total solution for installation

## 5. DIRECTIONAL DRILLING



Cables may have to be taken ashore by directional drilling. Hydro Soil Services (HSS) is also an expert in this area. Horizontal directional drilling is an environmentally



benign, effective solution for installing cables, pipelines and other services in port, river, airport and offshore contexts. It permits traffic to continue without disruption. HSS specialises in two advanced fields of directional drilling: long-distance and large-diameter. During the construction of offshore windfarms these techniques may be applied from the shore-side, or from a jack-up platform offshore for cable landing. Modular equipment facilitates rapid deployment anywhere in the world.

## 7. EROSION PROTECTION



Once installed, turbines and cables need to be protected against erosion. DEC NV, another DEME subsidiary, is a market leader in the development and application of bituminous

materials for erosion control purposes. Meanwhile, Dredging International, one of DEME's principal operating companies, operates specialised vessels for rock and gravel dumping. The Rollingstone, for example, is a fully-certified Class II D.P. Fall Pipe Vessel with a 13,000-tonne loading capacity. It can dump accurately to depths of 600 metres. This vessel can operate safely in close proximity to subsea structures.

## 6. TRANSPORT AND PLACEMENT



The installation of turbines onto foundations may be undertaken by a floating sheerlegs crane or by hydraulic jacking systems. In the former case, Scaldis Salvage & Marine Contractors NV (in which DEME is the major shareholder) has the resources to perform complex heavy lift operations. Its fleet includes the 4,000-tonne capacity catamaran crane vessel Rambiz and the 440-tonne lift capacity sheerlegs Norma. The second option consists of pontoon mounted jack-up systems which can be used for installation (or dismounting) of the turbines onto the foundations.

## 8. FINANCING

The many technical challenges of offshore wind farm installation must be overcome. Another critically important factor, however, is to ensure that the financial engineering for the project is of equal quality. Risk allocation may be divided between public and private sectors. Such approaches require in-depth studies to identify and analyse these risks. The Financial Engineering Department of DEME specialises in such work. It can assemble the optimal financial package, customised to meet the client's needs, and then negotiate the package with potential investors and financial institutions.

