



Subsea Engineering Competency Profile



RENEWABLE ENERGY ELECTIVE

DE-001

This competency demonstrates a subsea engineer has expert knowledge of the design, construction, installation and operation of renewable energy devices.

ELEMENT OF COMPETENCE	WHAT THIS COMPETENCE MEANS IN PRACTICE	INDICATORS OF ATTAINMENT
<p>Expert Knowledge of the design, construction, installation and operation of renewable energy devices including:</p> <ul style="list-style-type: none"> • Metocean Hydrodynamics • Mechanical, Geotechnical and Structural Design • Energy Capture, Storage and Offtake • Electrical Design, Cable Design • Maintenance and Repair • Marine and Seabed Environments 	<p>Can predict the physical limits of a device, determine power output, develop interconnected arrays and understands how devices are installed.</p> <p>Understands the requirements for stability of seabed structural foundations.</p> <p>Understands the implications of different electrical design parameters including: AC vs DC equipment, balancing intermittent generation, cable operational limit states and energy export.</p> <p>Designs and installs renewable energy infrastructure with due regard for other stakeholders, third party interaction and the marine environment.</p>	<p>Refer to only as many Indicators of Attainment as you need to demonstrate the Element of Competence</p> <p>Has worked on at least one field-deployed demonstration or commercial-scale renewable energy capture device.</p> <p>Has worked on the design of, or the installation and shore connection or operation of a renewable energy project.</p> <p>Can describe in detail the maintenance and operation of particular renewable energy devices including their characteristic failure modes.</p>
<p>Expert Knowledge of how arrays of renewable devices are designed, constructed, and connected.</p>	<p>Can size and layout arrays, integrating wake recovery and downstream turbulence, for optimal power capture and efficiency.</p>	<p>Has worked on the design of, or the installation and shore connection of, a renewable energy project with arrays of devices.</p>
<p>Knowledge of the business case for the application of particular types of renewable energy devices.</p>	<p>Can select between deployment options, advantages and disadvantages and selection criteria.</p>	<p>Has performed at least two renewable energy resource assessments including seasonal and inter-annual variability.</p>