

# MOORINGS

## Catenary mooring

The restoring force is provided by the suspended weight. This requires a long length of heavy line (steel), suitable for great depths.

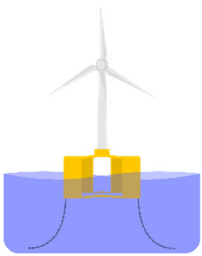
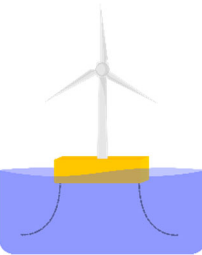
## Tension-leg mooring

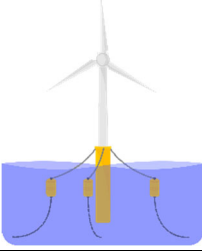
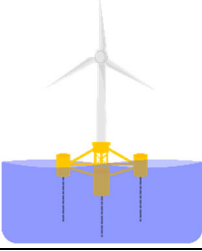
It comes closest to a fixed platform by using very stiff (no creep) and extremely taut materials (steel cable/tube or synthetic line without creep). It is suitable for intermediate depths (100 m - 500 m), expensive installation, risk of complete loss of the system in case of a line break.

## Semi-taut mooring

This is the composite solution that is increasingly used in shallow waters, allowing the system to operate in both a taut and a soft phase (system damping) by using a section of synthetic line tensioned by the suspended weight of another heavier section (chain), which can temporarily reduce/cancel the tensioning in swell movements. Its dimensioning is delicate and requires numerous adjustments and a detailed knowledge of the meteorological and oceanic data as well as the dynamic response of the whole system.

## Technologies comparison

Technology	Advantages	Limits
<b>Semi-submersible</b> 	<ul style="list-style-type: none"> <li>• Simple installation and maintenance by towing</li> <li>• Any anchor technology possible</li> <li>• Standard means of installation</li> <li>• Majority of the float submerged</li> <li>• <b>Standard construction technique</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Large swell movements</b></li> <li>• Footprint of the mooring</li> </ul>
<b>Barge</b> 	<ul style="list-style-type: none"> <li>• Simple installation and maintenance by towing</li> <li>• Any anchor technology possible</li> <li>• Standard means of installation</li> <li>• Lower wave frequency movements</li> <li>• <b>Standard construction technique</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>High maximum offset</b></li> <li>• Higher float mass than semi-submersible technology</li> <li>• High visual impact of the emerged part</li> <li>• Footprint of the anchor</li> </ul>

<p style="text-align: center;"><b>SPAR</b></p> 	<ul style="list-style-type: none"> <li>• Little movement</li> <li>• Standard mooring components</li> <li>• Small footprint of the semi-taut mooring</li> <li>• Standard construction technique</li> </ul>	<ul style="list-style-type: none"> <li>• Dedicated to very deep sites</li> <li>• Size of the float requiring the development of port infrastructures</li> <li>• Turbine/float assembly at sea requiring ad hoc means and a favourable weather window</li> <li>• Delicate towing</li> </ul>
<p style="text-align: center;"><b>TLP</b></p> 	<ul style="list-style-type: none"> <li>• Very little movement in the swell</li> <li>• Little effort in the swell</li> <li>• Lightweight and less expensive float structure</li> <li>• Small footprint and line length</li> </ul>	<ul style="list-style-type: none"> <li>• All lines necessary for the stability of the float</li> <li>• Specific installation means</li> <li>• Complex mooring replacement</li> <li>• Risk of high frequency fatigue</li> <li>• ONLY gravity and suction anchors</li> </ul>