

IVY – The special vessel used to immerse the elements of the Fehmarnbelt tunnel

IVY is a unique vessel, purpose-built for the tunnel elements of the Fehmarnbelt Tunnel.

About IVY

- IVY is the special-purpose vessel used to immerse the 217-metre-long tunnel elements onto the seabed with the highest level of precision.
- IVY consists of two pontoons – IVY 1 and IVY 2 – which work together to transport and immerse the tunnel elements.
- Each pontoon is approximately 105 metres long and 45 metres wide – roughly the size of a football pitch.
- The vessel holds the tunnel element at both ends and immerses it in a controlled manner using winches and steel cables.
- On board IVY are, among other things, a control room and a large number of winches of different sizes, which manage the steel cables throughout the entire immersion operation.
- IVY was built at a shipyard in Poland and has a crew capacity of 22.
- IVY is equipped with 66 winches and a total of around 23 kilometres of steel cable, enabling it to immerse tunnel elements to depths of up to approximately 40 metres.
- The immersion will be carried out a total of 89 times until the entire tunnel is in place.
- IVY has successfully passed all critical tests and has been approved by the Danish Maritime Authority.

How the immersion process works

1. **Preparation:** The tunnel element is prepared at the construction harbour, while the tunnel trench is prepared at the same time.
2. **Attachment:** IVY 1 and IVY 2 are connected to one end of the standard element each. They hold it like clamps and provide additional buoyancy.
3. **Ballast concrete:** Additional ballast concrete is added inside the element.
4. **Transport:** The element is transported to the designated immersion position above the tunnel trench.
5. **Immersion:** Using winches and steel cables, the element is immersed in a controlled manner and with high precision onto the seabed.
6. **Completion:** Once the element is correctly positioned, it is released from IVY.

Key Figures

IVY consists of	Two units: IVY 1 and IVY 2
Maximum immersion depth	Up to approx. 40 metres
Number of winches	66
Steel cables (total)	Approx. 23 kilometres
Dimensions per IVY unit	Approx. 105 metres long and 45 metres wide
Total number of immersions	89
Length of standard element	217 metres