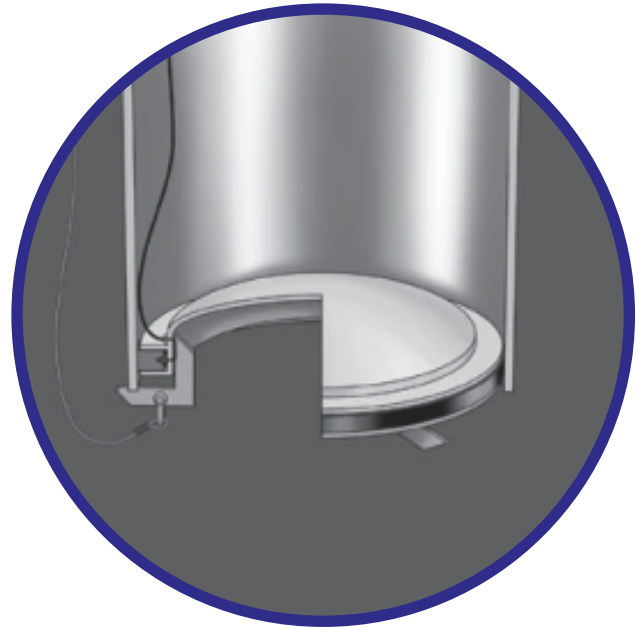




CRUX Reusable End Closures

The Reusable End Closure is used to close ends of tubulars for buoyancy purposes. One or more radially expanding seals are seated within a core element and are activated by hydraulic or pneumatic pressure which closes the annulus

The system was originated as a means of limiting the impact of 'damage condition design' for large compartments of a jacket, such as legs, where the compartments are to be kept open for post-installation purposes.



There are many applications for a Reusable End Closure including the following:

- To give buoyancy to piles to enable long piles to be lifted horizontally and placed in the water or launched before being upended by controlled flooding. This method of pile handling can eliminate the need to splice the piles offshore with consequent saving in costly offshore time and will be a necessity in relation to compliant tower design.
- To provide buoyancy in structure members (legs, pile sleeves etc) for installation purposes. Auxiliary buoyancy may be required in respect of jackets which are designed for launched installation or for jackets which are lift installed before being set on the seabed by controlled flooding. The reusable aspect of the concept may be particularly attractive in cases where jacket design has some standardisation of member sizes.
- To limit the impact of 'damage condition design' as relevant to jackets. A means of minimising the installation (lift) weight of a jacket is to design the jacket legs for temporary conditions (fabrication and installation) and then post-install a coaxial tubular in the leg, grouting the annulus to form a composite in-place leg section. The influence on jacket installation weight is very considerable and can often make the jacket light enough to install by lifting rather than launching with major resultant cost saving.
- To seal pipeline ends for repair purposes.

