



Installing ballast water treatment systems on deck

What's required and why it matters

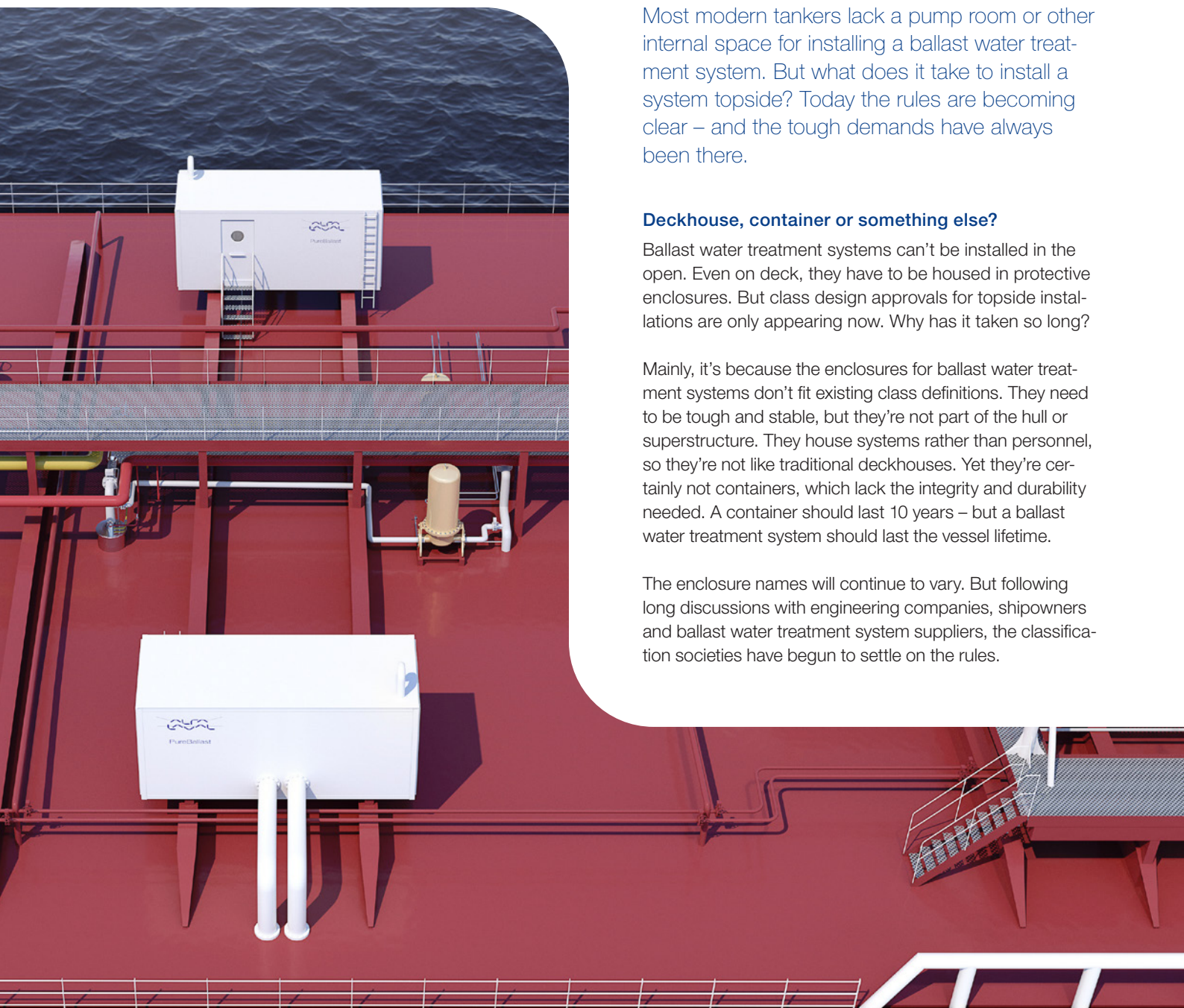
Most modern tankers lack a pump room or other internal space for installing a ballast water treatment system. But what does it take to install a system topside? Today the rules are becoming clear – and the tough demands have always been there.

Deckhouse, container or something else?

Ballast water treatment systems can't be installed in the open. Even on deck, they have to be housed in protective enclosures. But class design approvals for topside installations are only appearing now. Why has it taken so long?

Mainly, it's because the enclosures for ballast water treatment systems don't fit existing class definitions. They need to be tough and stable, but they're not part of the hull or superstructure. They house systems rather than personnel, so they're not like traditional deckhouses. Yet they're certainly not containers, which lack the integrity and durability needed. A container should last 10 years – but a ballast water treatment system should last the vessel lifetime.

The enclosure names will continue to vary. But following long discussions with engineering companies, shipowners and ballast water treatment system suppliers, the classification societies have begun to settle on the rules.





What's needed in a deck enclosure?

No matter what it's called, an enclosure that houses a ballast water treatment system (BWTS) has an important job to do. Besides offering protection, it has to ensure conditions that let the system perform according to its type approval. Here's what it needs to provide:

- **Stability and lifetime**
The enclosure has to be suitable for a fixed installation on deck. That means having the right material certificates, a structural design based on hull rules and a FEM (finite element method) analysis that clearly defines its design limits – from wind and wave loads to acceleration.
- **Correct ambient temperature**
The enclosure has to have the right operating temperature inside, no matter how hot or cold the weather gets outside. Its insulation, cooling and heating must all be sufficient to ensure compliant BWTS performance.
- **Adequate ventilation**
Besides supporting the BWTS, the interior conditions have to allow safe maintenance work by the crew. As well as fulfilling the class requirement of 20 air exchanges, the enclosure must be supported by a ventilation and heating calculation that covers the whole space inside.
- **Sufficient lighting**
Safe work inside the enclosure demands being able to see. Correct lighting is needed at all times – including emergency lighting during a power failure.
- **Ex classification**
Components inside the enclosure must all be correctly specified according to zone, temperature and explosion group. Without sufficient ATEX/IEC classifications, BWTS operation could be restricted.

System installation and design approval

The smartest solution is to have the enclosure delivered with the type-approved ballast water treatment system pre-installed. The whole enclosure, including the internal system installation, should have class design approval prior to delivery.

Handling the delivery this way saves time and money at the shipyard, since it simplifies both installation work and the onboard approval by the classification society. Only the enclosure's mounting and its connections to the vessel will need to be reviewed.

Alfa Laval PureBallast 3 Ex deckhouses

Early on, Alfa Laval recognized the importance of a standardized and purpose-built solution for installing Alfa Laval PureBallast 3 Ex systems on deck. The resulting enclosure design – referred to as a deckhouse – is proven at sea and has served as the benchmark for class design approvals.

Alfa Laval PureBallast 3 Ex deckhouses provide structural integrity, interior conditions and a long lifetime that protect system design limits and ballast water treatment compliance. To learn more, visit www.alfalaval.com/pureballast

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