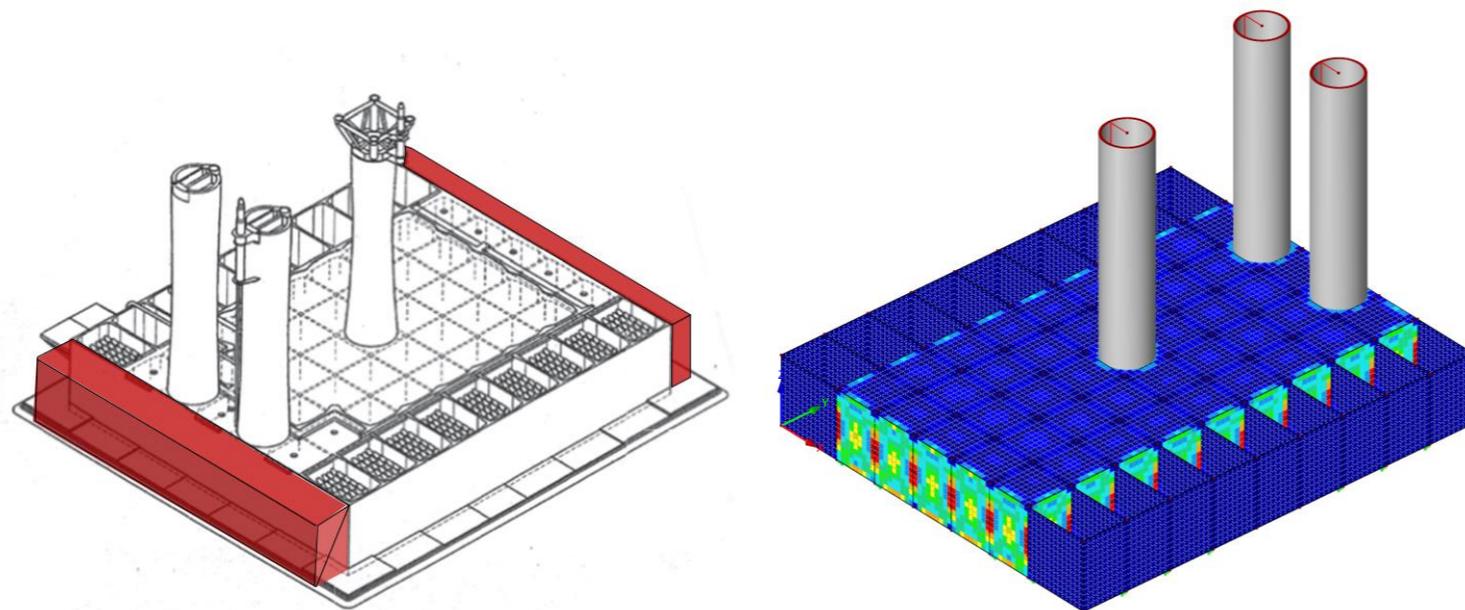


Next to oil and gas slowly decreasing in consumption, oil- and gas platforms were built with a lifespan of 30 to 40 years. After this lifespan, wells and thus platforms are no longer financially engaging for operation. With current technologies more accessible, it has become simpler to remove all assets. One structure that remains an exception to this, is the Gravity Based Structure (GBS). Reason for this is the technical challenge of the immense weight of the structure and the risks that can occur during decommissioning. A solution for these steel or concrete substructures remains unknown.

**“Which defined execution method is preferred to dispose the Gravity Based Structures located within the Dutch North Sea, in a safe, low-risk and economically beneficial way?”**

It was concluded that the best way to decommission the Gravity Based Structure is to fit two additional buoyancy tanks to the structure underwater so that it re-floats. The left buoyancy tank of 5.634 tonnes must be 71 x 9 x 15 meters and the right buoyancy tank of 2.530 tonnes must be 71 x 4 x 15 meters (length x width x height). An extensive study within RFEM, a software programme that is widely used in the offshore sector, showed whether the structure was capable of handling this type of removal method regarding all forces. This study revealed that the structure indeed is capable of handling all forces as the total stress was only 35,5 MPa. Besides this, the study also indicated to connect the buoyancy tanks using a special squeeze connection, also referred to as a clamp. Because this method does not endanger the structural integrity of the structure as it only provides 10,4 MPa of internal stress which can easily be dealt with by concrete. The removal method of the structure will take at least 200 hours offshore as the break-out must be overcome.



## Decommissioning Gravity Based Structures

*Research about the safe decommissioning of the Gravity Based Structures in the North Sea*



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