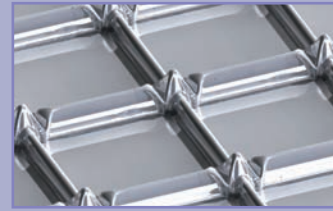


# GST<sup>®</sup> Containment System

## **AS A PRIMARY BARRIER :**

### **a flexible (1.2mm) stainless steel membrane**

The double network of corrugations absorbs the thermal contractions due to the very low temperature of the LNG.



### **Insulating panel**

The thickness of the panels can be adjusted to provide a large range of boil-off rates according to the operator's requirements (typically 0.05% per day).

### **Plywood**

### **Reinforced polyurethane foam**

## **AS A SECONDARY BARRIER :**

### **a composite laminated material**

This consists of a thin sheet of aluminium between two layers of glass cloth and resin. In the event of a failure of the primary membrane, it prevents the build-up of stress concentrations on concrete corner and ensures the liquid tightness of the concrete wall.

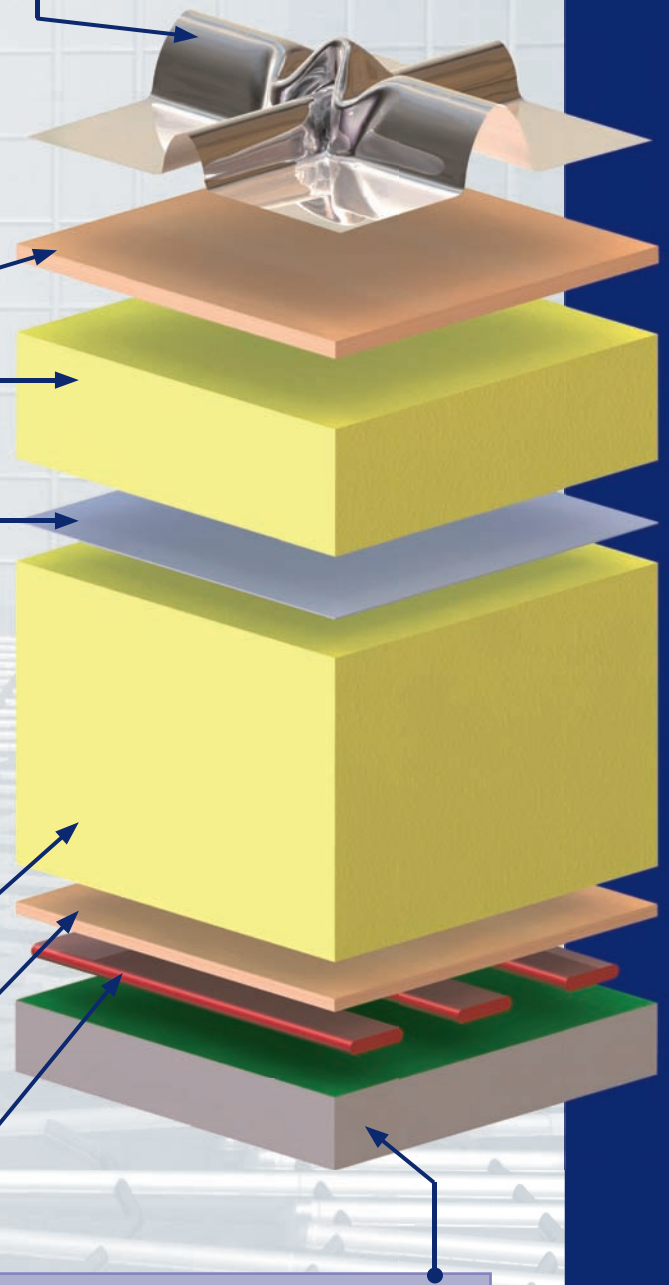
### **Reinforced polyurethane foam**

### **Plywood**

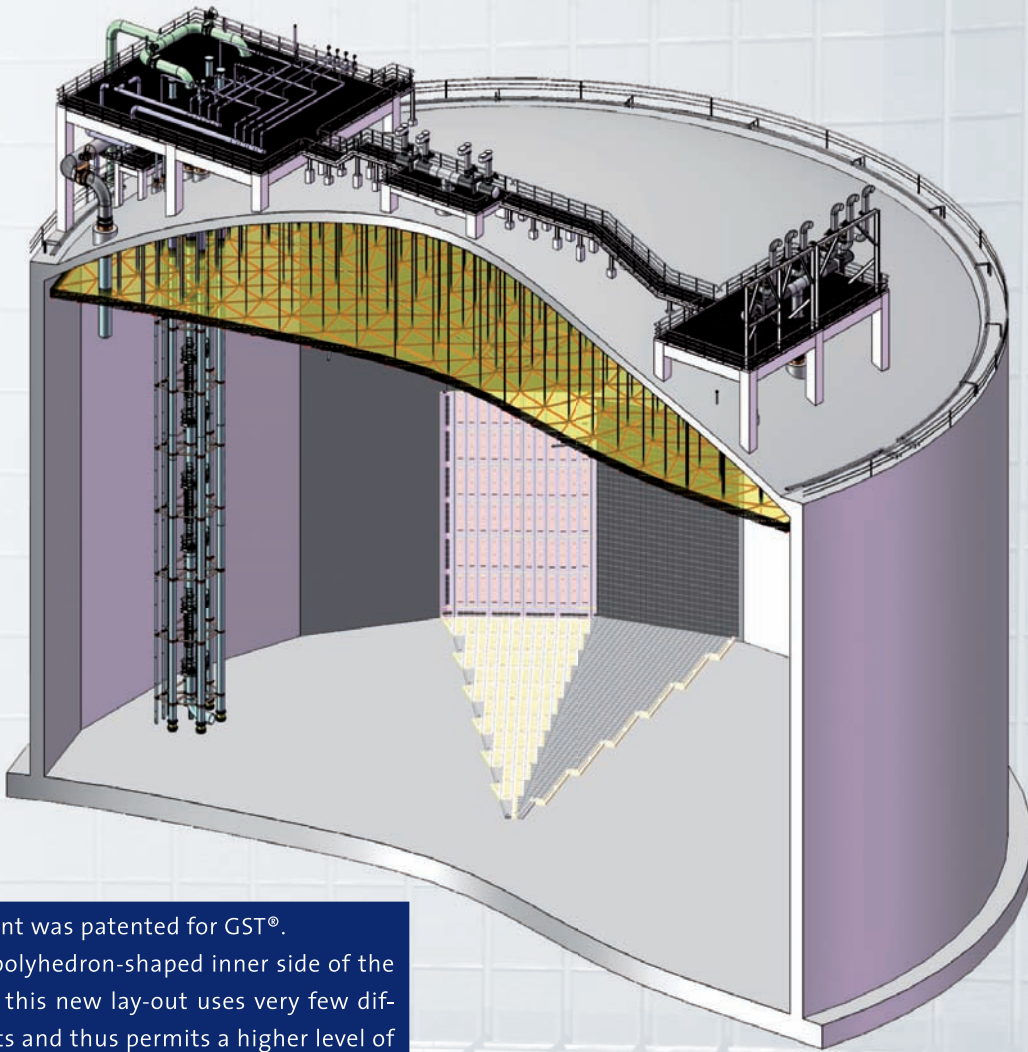
### **Mastic**

### **Post-tensioned concrete covered by a moisture barrier**

The outer concrete container provides the *structural resistance* to internal (LNG hydrostatic & dynamic pressure, and vapour gas pressure) and external (wind, snow, ice) loads. A moisture barrier, applied on its inner side, prevents moisture from entering the tank.

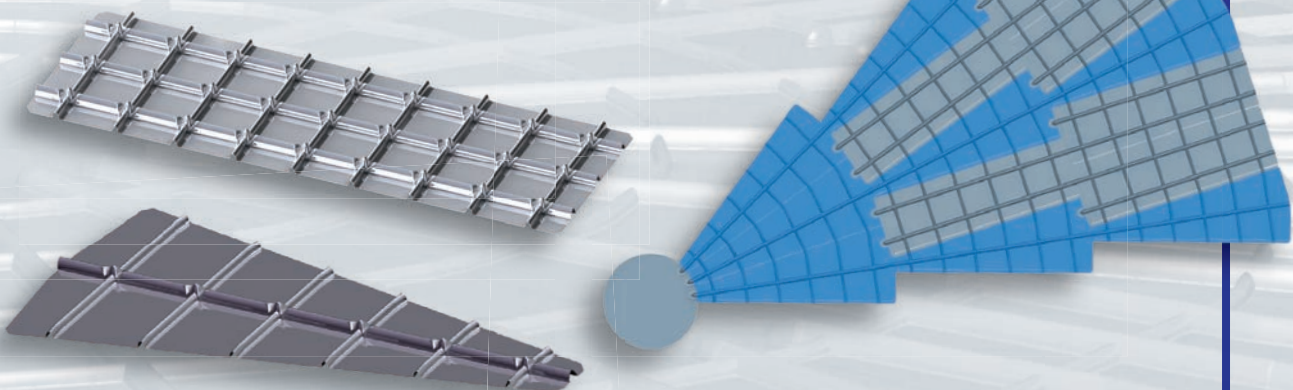


# GST® Pavement



A new pavement was patented for GST®. Adapted to a polyhedron-shaped inner side of the concrete tank, this new lay-out uses very few different elements and thus permits a higher level of standardization. The new shapes were designed in such a way that they can be easily prefabricated with the existing production lines.

## GST® pavement principle



# LNG Track-record

Year	Location	Client	Description
2003	Nagasaki (Japan)	Saibu Gas	1 inground tank 35 000 m <sup>3</sup>
2003	Ohgishima (Japan)	Tokyo Gas	1 inground tank <b>200 000 m<sup>3</sup></b>
1998	Pyeong Taek III (Korea)	Kogas	3 above-ground tanks 100 000 m <sup>3</sup>
1997	Sendai (Japan)	Sendai City Gas	1 inground tank 80 000 m <sup>3</sup>
1996	Negishi II (Japan)	Tokyo Gas	2 inground tanks <b>200 000 m<sup>3</sup></b>
1996	Fukuoka (Japan)	Saibu Gas	2 inground tanks 35 000 m <sup>3</sup>
1995	Pyeong Taek II (Korea)	Kogas	3 above-ground tanks 100 000 m <sup>3</sup>
1990	Kaohsiung (Taiwan)	CPC	3 inground tanks 100 000 m <sup>3</sup>
1987	Pyeong Taek I (Korea)	Kogas	4 above-ground tanks 100 000 m <sup>3</sup>
1987	Futtsu (Japan)	Tokyo Electric Power	1 inground tank 90 000 m <sup>3</sup>
1985	Sodegaura (Japan)	Tokyo Gas	1 inground tank 130 000 m <sup>3</sup>
1984	Higashi Ohgishima (Japan)	Tokyo Electric Power	4 inground tanks 60 000 m <sup>3</sup>
1981	Negishi (Japan)	Tokyo Gas	1 inground tank 95 000 m <sup>3</sup>
1981	Montoir (France)	Gaz de France	2 above-ground tanks 120 000 m <sup>3</sup>



## A proven technology both at sea and on land

As an improved version of the Technigaz membrane, GST<sup>®</sup> benefits from a strong experience of land storage systems: 29 tanks have already been built in Europe and Asia.

The Technigaz membrane was itself an adaptation of the Mark III membrane designed for LNG tankers, which successfully equips more than 20% of the fleet today.



Credit photo: l'Espresso photo de Gaz de France / Pierre Buis



# Gaztransport & Technigaz



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