

# TESS<sup>®</sup>

Subsea

- Hydraulic Distribution Systems
- Terminations
- Hoses and fittings

## TESS at your service

TESS was established in 1968 and is a company owned by its two Norwegian founders.

Today TESS is Norway's leading company for supply of hoses and fittings to all applications. The company coordinates more than 100 workshops and service outlets in addition to similar departments in Sweden, Denmark and Scotland.

Our clients are within subsea, offshore, shipbuilders, contractors, traditional land based industry as well as public service activities.



## Technical solutions

TESS acquires a rapidly expanding market share for subsea and hydraulic solutions where hoses, small bore piping and hydraulics are major components in a system supply. The company has an advanced workshop for assembly, welding, testing and flushing to relevant offshore and industrial standards. In addition TESS has a dedicated service team and mobile service units for offshore and onshore activities.

In later years TESS has established a dedicated technical division with R&D activities, customized production and total solution deliveries.

TESS has more than 800 employees to serve our clients. The yearly turnover is approx. USD 300 millions.



## ISO 9001 and ISO 14001

In manufacturing matters TESS is certified according to ISO 9001:2008/NS-EN ISO 3834-2:2006. In environmental matters we are certified according to ISO 14001:2004.

TESS offers services from DnV-certified hose assemblers, traveling domestic as well as abroad. TESS Academy educates our collaborators in the profession of hoses and hose services. The passing aspirant's is appointed as Master of hoses.





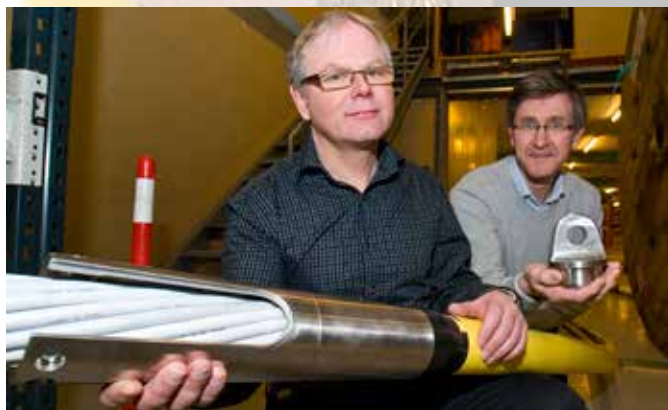
# Subsea distribution systems

TESS is proud to introduce its own portfolio of products and services for the international oil & gas subsea market. Our activities are based on wide experience and several decades of serving the demanding offshore petroleum industry with sub-sea hoses, hose equipment, hydraulics and related services.



The range of products and services includes the following:

- In house engineering of distribution solutions
- In house engineering of terminations
- Hydraulic jumpers (Hydraulic Flying Leads)
- Hose bundles protected with spiralguard
- Umbilicals (shorth lengths)
- Termination assembly services
- Subsea hoses and fittings
- Tailor made fittings
- DnV certified hoses and hose assemblers



## Engineering

Our well qualified and experienced staff of engineers carries out R&D activities, product improvements, and qualifications. We develop jumpers and umbilical solutions as well as terminations on demand. TESS has approved hose workshops and production lines for assembly, pressure testing and flushing our subsea distribution products.





## Hydraulic jumpers

We provide all kind of jumper configurations on customers demand for hydraulic oil and chemical purposes. Typically parameters are 1-13 lines, lengths up to 300 metres and use of world class first rated subsea hoses with specifications as requested.

Lightweight TESS jumpers:

- Screwed connections
- Simple robust design
- ROV-friendly installation
- Hoses assembled directly to hydraulic couplers
- Bend restrictor to avoid kinking of hoses
- Built-in steel wire for tension relief
- Compliant with ISO 13628-5

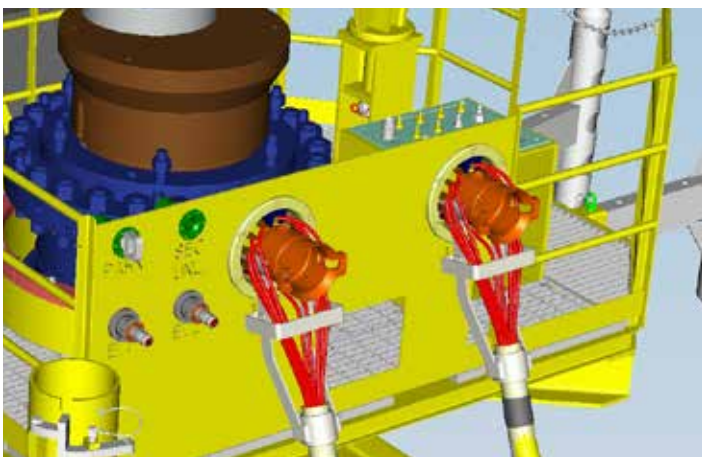
The next generation world class TESS hydraulic jumpers to be used on the the worlds largest subsea field Pazflor are featuring technical advantages such as:

- All-welded connections
- Minimized number of leaking points
- Extremely robust
- ROV-friendly installation by reduced weight and size
- Hoses assembled directly to hydraulic couplers
- Bend restrictor to avoid kinking of hoses
- Built-in steel wire for tension relief
- Compliant with ISO 13628-5

All production activities are carried out in our own workshops. Our hydraulic department is equipped with purpose built HPU powerpacks for pressure testing and flushing. All measurements are done by electronic monitoring systems and will be stored for documentation.







## Umbilicals

TESS provides short length umbilicals in several configurations on demand. The umbilicals will typically be extruded with a cover in polyester or other materials according to our customers demand. The units are always fully customized.

- Hydraulic lines, oil and chemicals
- Combination of hydraulic and electrical power lines
- Built-in steel wire or aramid net for tension relief



## Terminations, hoses and fittings

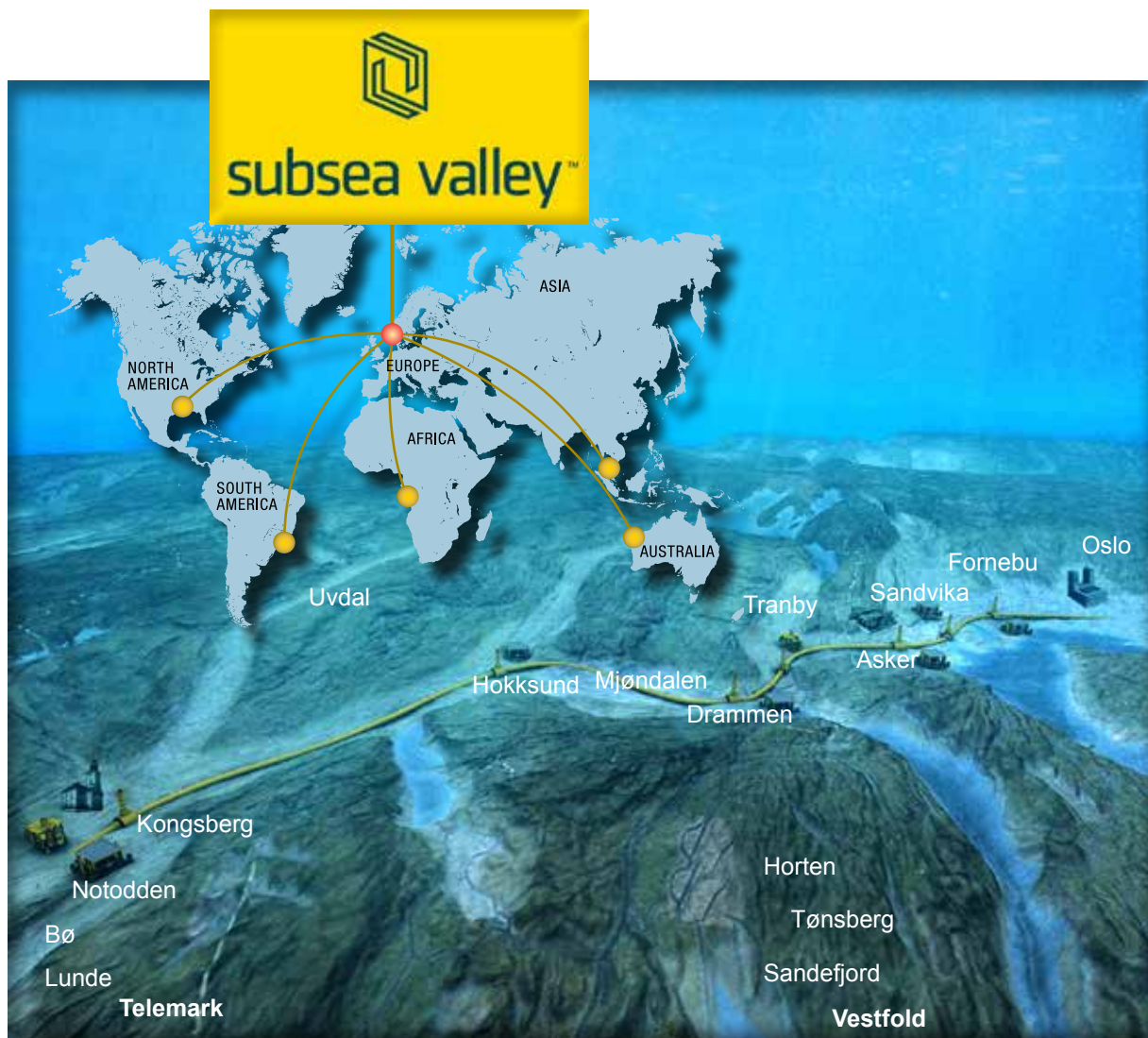
We develop new termination solutions, and offer assembly services on request. TESS holds in stock terminations, hoses and fittings from world class suppliers in cooperation with the customers. In some cases, we will point out the best fittings, by producing them ourself.

## Hydraulic Power Units

In the past years, we have engineered and delivered HPU's in various designs for industrial purposes, both onshore and offshore. In coordination with our strategic partners, we are attended to develop customized HPU-solutions for the subsea market.

## Workover Completion System (WOCS)

In cooperation with our strategic partners we got all the building blocks giving us the ability to engineer and build a complete WOCS system including hydraulic power unit, controls, winch and WOCS umbilical.



**FMC Technologies**

 **GE Oil & Gas**

 **Aker Solutions**





## What is Subsea Valley?

**Subsea Valley is the term for the world leading technology cluster for petroleum subsea production systems, tools and services.**

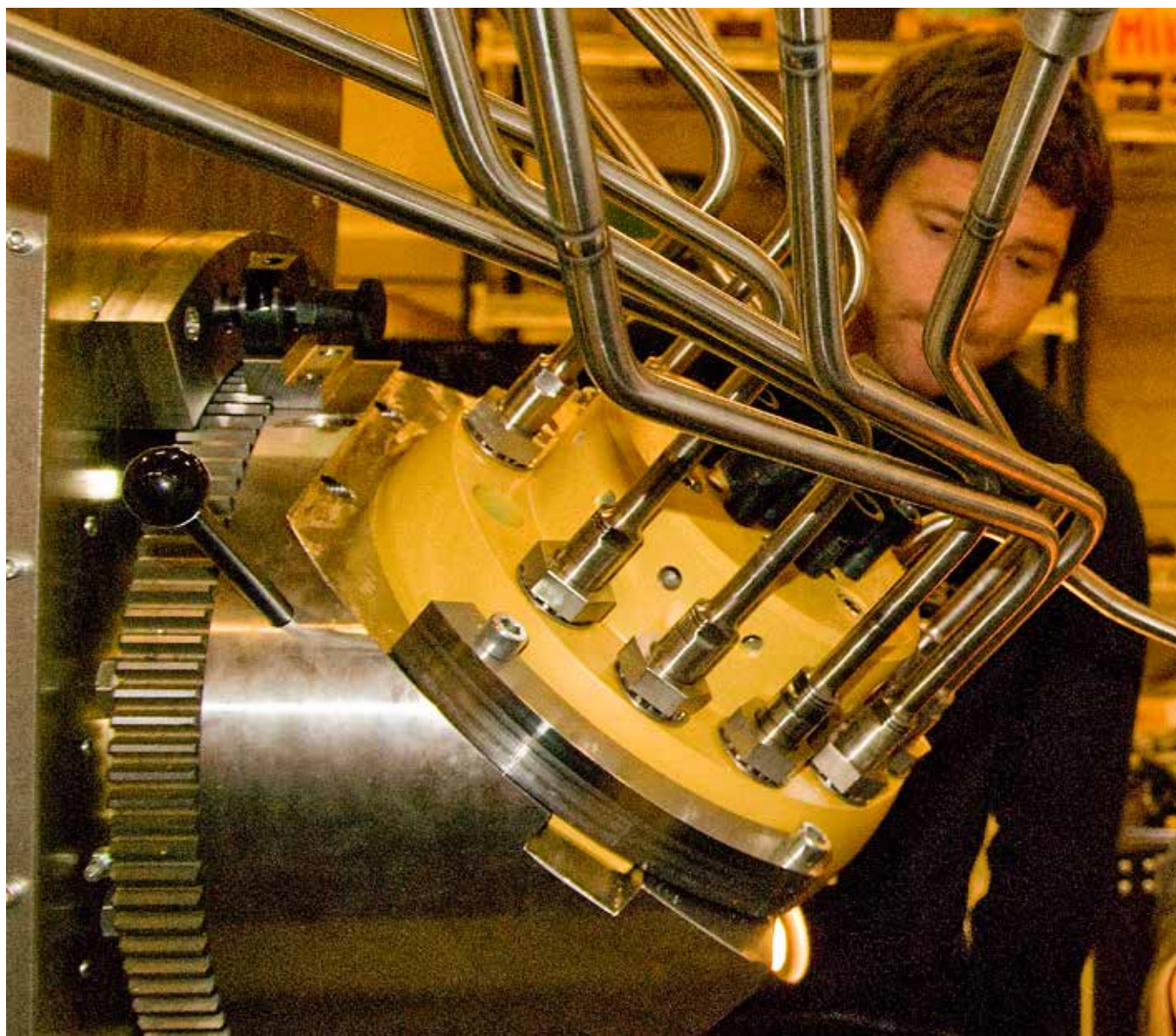
The Subsea Valley is about 80 kilometres long, and follows the main roads between Oslo and the city of Kongsberg.

World known companies inside Subsea Valley includes:

FMC Technologies  
Aker Solutions  
General Electric  
ABB  
National Oilwell

...and hundreds of small and medium sized companies within special products, subcontracting, engineering and consultancy.

- Forthcoming field projects will mainly be developed as subsea solutions.
- IOR – Increased oil recovery – is the future goal for the technological development.
- More than 50 percent of the remaining resources on the Norwegian shelf will be developed as subsea projects
- Increased recovery represents huge possibilities for Subsea Valley.
- Today Subsea Valley holds 60 percent market share globally.



## TESS Locations:

