Thermoplastic Composite Pipe
Manufacturing Equipment

TCP/RTP OILFIELD PIPE PLANT TURNKEY

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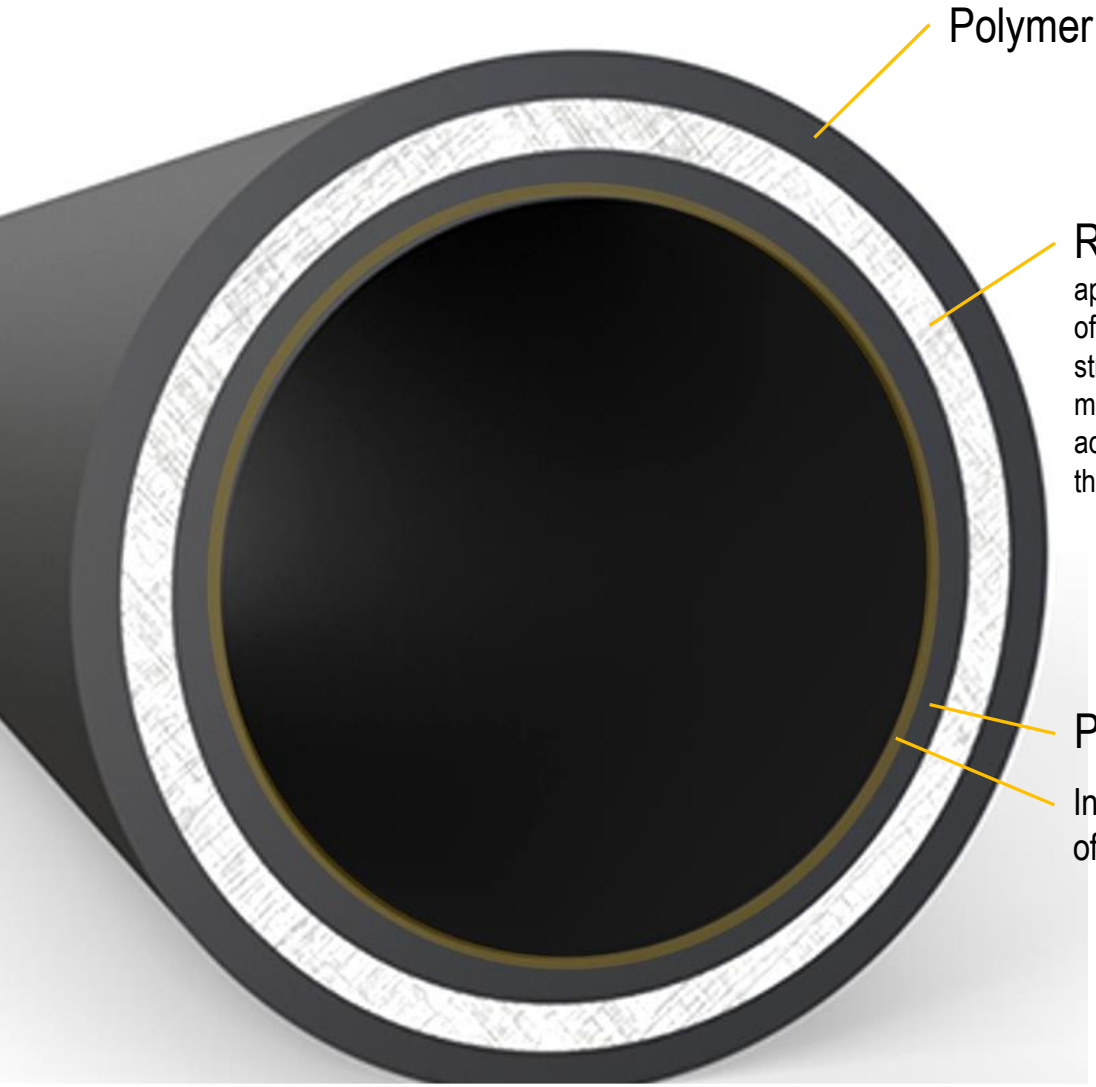
Thermoplastic Composite Pipe

Reinforced Thermoplastic Pipes

PRODUCTS



Flexible oilfield Thermoplastic composite pipes (TCP)

for onshore and offshore applications

can be manufactured in Reinforced Thermoplastic Pipes (RTP) version

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PRODUCTS

Flexible oilfield Thermoplastic composite pipes (TCP)

Specifications

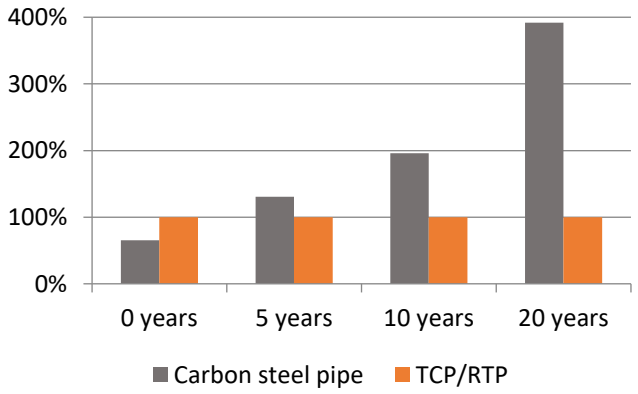
Diameter range (ID): 2-10 ”

Materials HDPE, PE-RT, PA-12, PVDF, PEEK

Operating pressure: 4,0… 137,9 MPa
(600 … 20 000 psi)

Qualification: API RP 15S, DNVGL-ST-F119

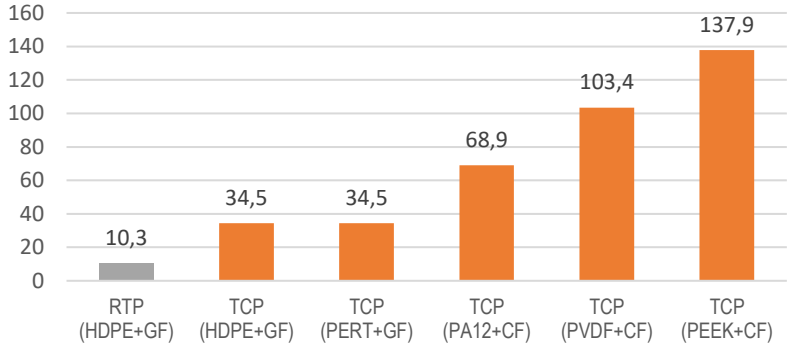
Cost of ownership of pipelines, %



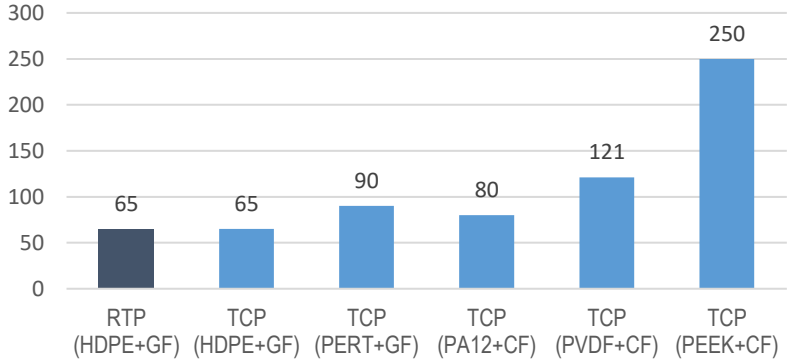
TCP/RTP pipelines

The range of currently produced composite pipes and comparison

Operating pressure, MPa



Working temperature, ^{O}C



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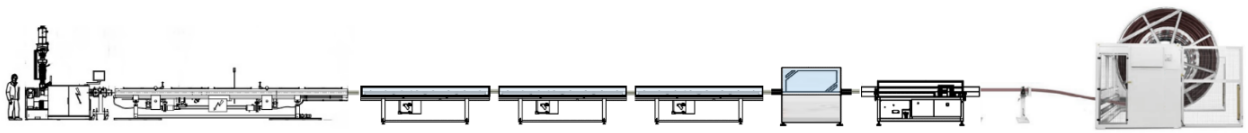
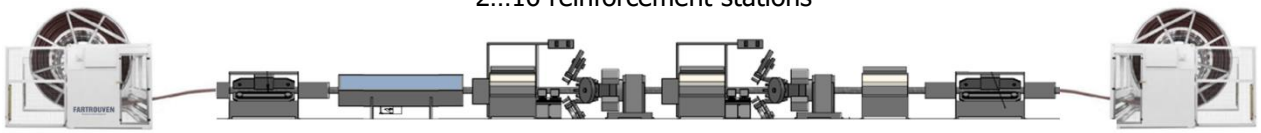
THREE STAGES

STAGE 1. Liner manufacturing

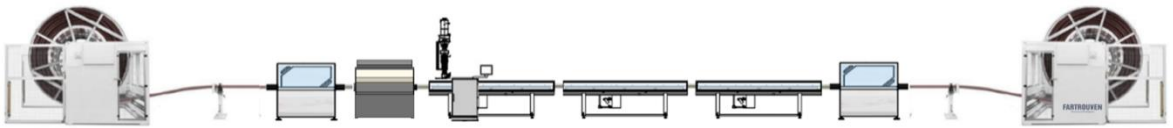


STAGE 2. Formation of the reinforcing system

2...16 reinforcement stations



STAGE 3. Applying a polymer sheath



MANUFACTURING PROCESS

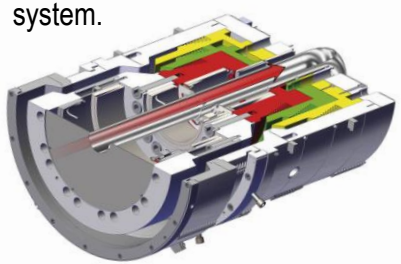
The process is divided into 3 stages. This allows you to carefully control the manufacturing process of all TCP layers, improving the quality of the pipe as a whole. It also facilitates the implementation of repeated reinforcement cycles.

The three-stage manufacturing process also allows for flexible placement of equipment in the production area.

Liner Air Cooling (LAC)

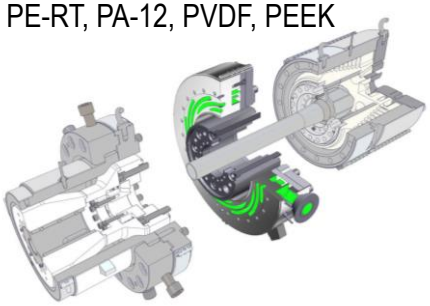
An effective system for reducing cooling length and reducing liner out-of-roundness.

The LAC system reduces the length of the production line due to the high efficiency of the internal liner cooling system.



Sheath coex-unit

Radial-spiral technology for applying external sheath. Coex-unit is a radial-distributing ring system for obtaining a coextruded external layer from HDPE, PE-RT, PA-12, PVDF, PEEK



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EQUIPMENT

HIGH-TECH EQUIPMENT

ENGINEERING

Optimization of production equipment specifications to solve consumer problems.

Flexible solutions to achieve the best performance and high quality finished products

Automated Process Control

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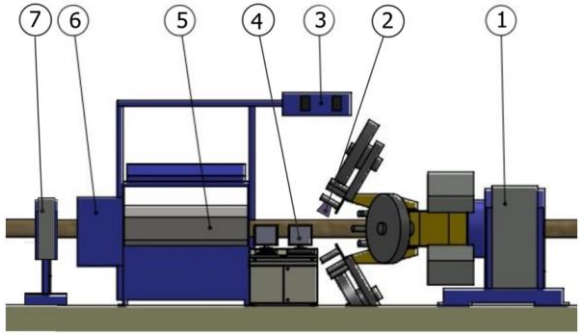
EQUIPMENT

REINFORCEMENT LINES

Optimization of production equipment specifications to solve consumer problems.

Highly automated Wrapping Stations Schematic



Number	Description
1	Wrapping machine
2	Tape Heating Systems
3	Camera system
4	Control Console
5	IR Oven
6	Consolidation Unit
7	Pipe Cooling Unit

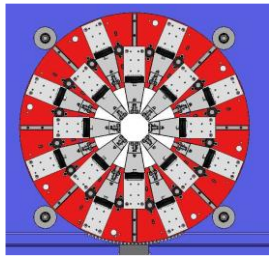
Camera Systems for Automatic Tape Gap Control

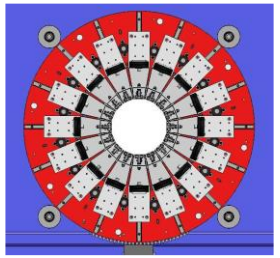
Heating systems

Controlled infrared oven

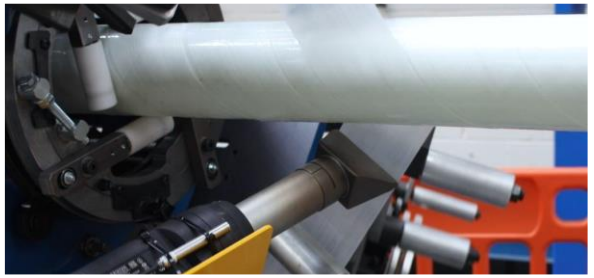
Each IR oven includes 16 heating units. Each unit can be controlled independently, providing the optimum temperature for each layer.

High specification heat control systems are used to control the power level of the radiant heating elements to enable a stable heat process to take place.





Tape Heating Systems



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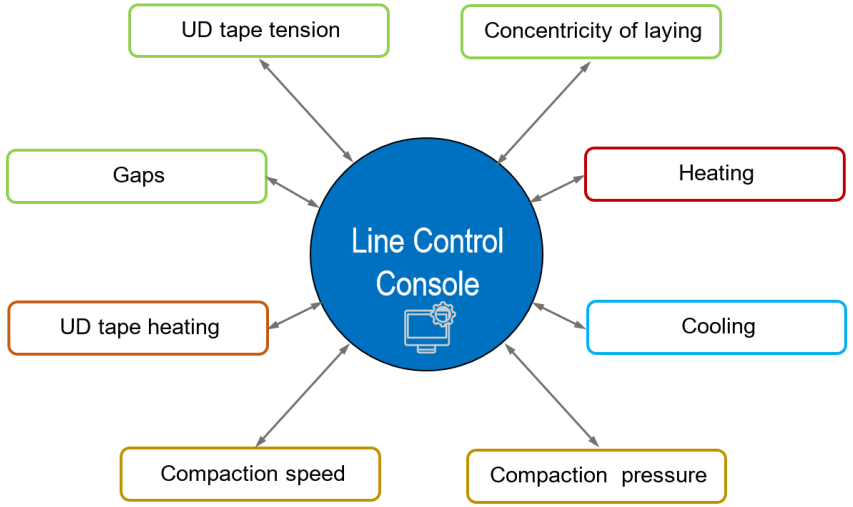
EQUIPMENT

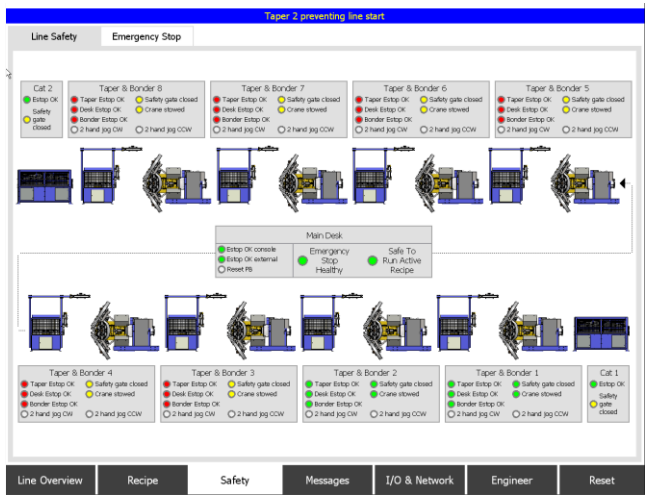
QUALITY

Careful control of the technological process of manufacturing TCP ensures high quality of the pipe without delamination of layers.

Consolidation Control



AUTOMATED PROCESS CONTROL



All TCP manufacturing processes are controlled and stabilized by a process control system

During the melt fusion bond process of the layers the compaction pressure and speed, the heating temperature and the cooling time determine the window of manufacturability required for autohesion and tight contact of the layers.

The automated control system monitors and stabilizes all TCP consolidation processes.

Consolidation TCP =

- UD tape tension
- Concentricity of laying UD tape
- Gaps between UD tapes
- Heating mode
- Compaction speed
- Compaction pressure
- Cooling mode

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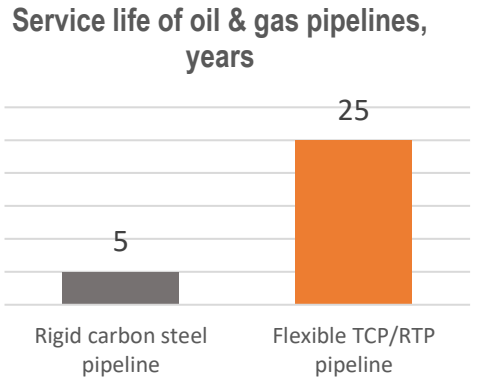
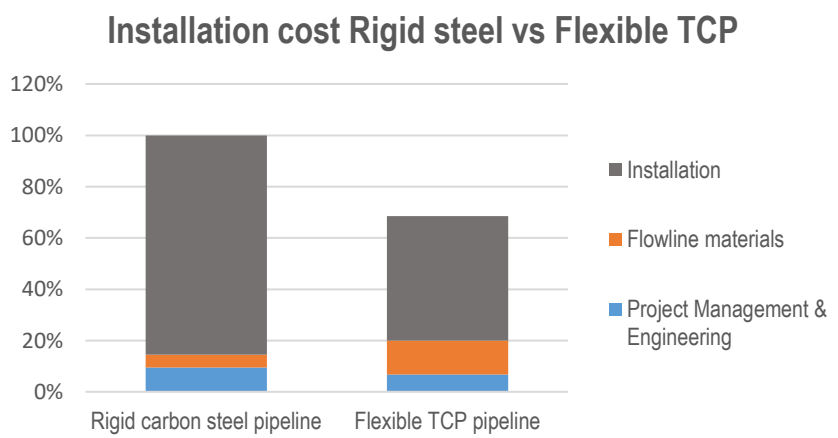
COMPETITIVE ADVANTAGES AND A GROWING MARKET

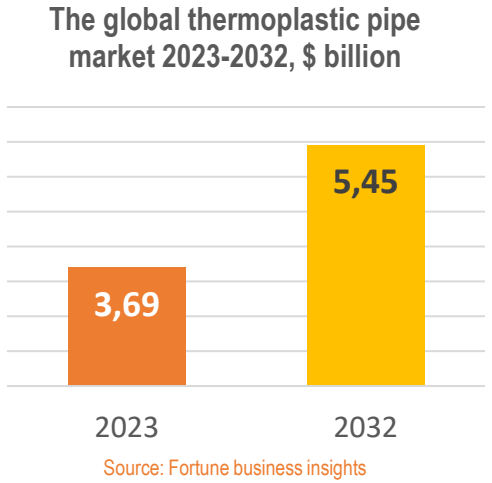
Extended service life of oil and gas pipelines

Ease of installation and lower cost of ownership

TCP pipeline installation costs are 20-30% lower than carbon steel pipelines







Source: Fortune business insights

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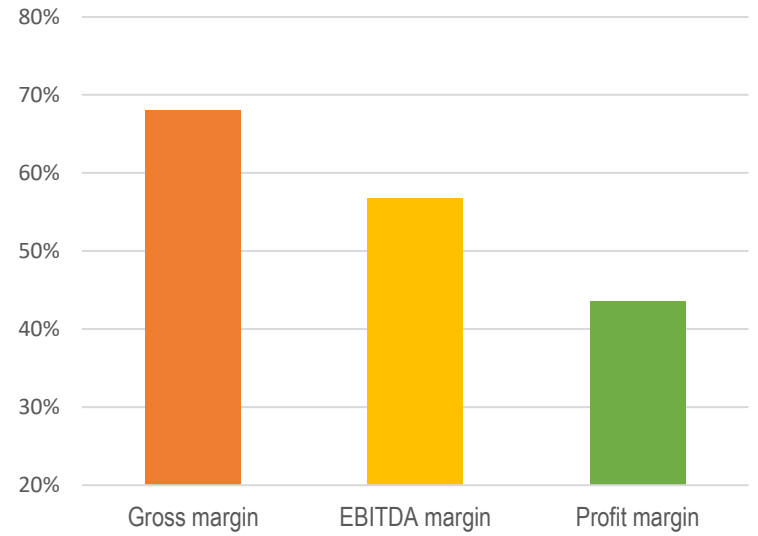
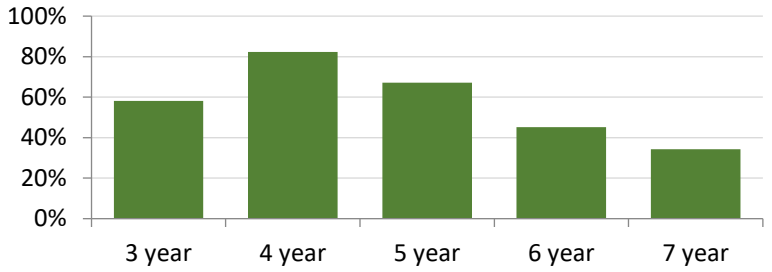
HIGH BUSINESS PROFITABILITY

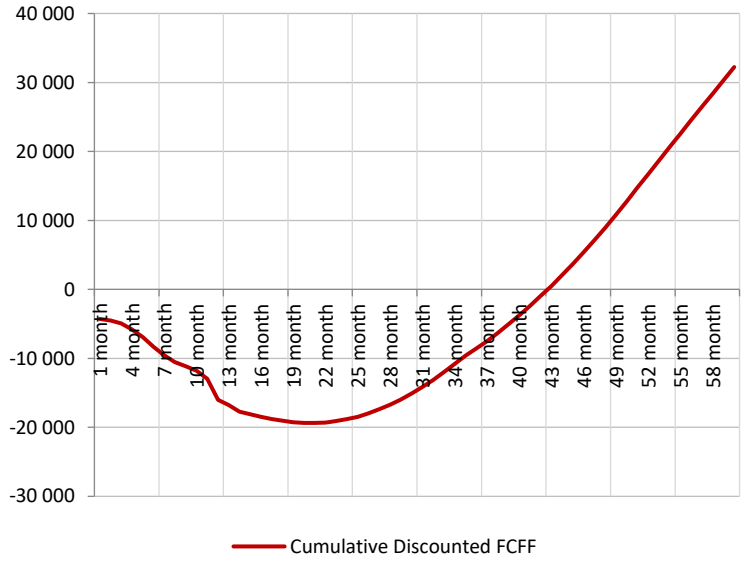
Project economic efficiency



ROI



Project payback schedule



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