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Honor & Achievement

- Founded in 1994, over 20 years dedication to Flexible Composite Pipe R&D and manufacture
- Globalized R&D platform, 22 patents, 5 industry innovation awards.
- Undertaker of National Offshore Flexible Composite Pipe Research and Development 863 Program of China
- Industry Leading expertise, the first drafter and reviser of Chinese Flexible Composite Pipe Industry Standards (SY.T/6662-2012)
- Dominates China oil & gas fields over 70% market share
- Up to 2015, more than 25000KM SRTP Pipe was installed.
- Qualified Vender of CNPC, SINOPEC, CNOOC in their China and globle operations.
1. Company Profile

● Business Structure & Location

- **Group Board**

  - **Secretary of the Board**

  - **Onshore SRTP Base**
    - Main responsible for onshore SRTP pipe manufacturing, testing and inspection, package and delivery

  - **Beijing RTP R&D**
    - Mainly responsible for onshore SRTP pipe design, research development and technical service to our global clients and overseas market development

  - **Shanghai Offshore FCP, D-Riser R&D**
    - Mainly responsible for offshore Flexible Pipe research development and technical service to our global clients and overseas market development

  - **Zhoushan Offshore FCP, D-Riser Base**
    - Main responsible for onshore offshore Flexible Pipe manufacturing, testing and inspection package and delivery

  - **Houston Offshore FCP, D-Riser Design**
    - Gathering world glass technical experts and talents in Flexible Pipe, mainly responsible for Flexible Pipe design, new product development and American market exploring
Hebei Heng An Tai-Onshore SRTP Pipe Base

Key Factor:

Annual Capacity: 6000Km

Staff numbers: 233

Land Coverage: 17969M²
Heng An Tai Zhejiang-FCP & Dynamic Riser Base

Key Factor:

Annual Capacity: 200Km

Staff numbers: 173

Land Coverage: Phase I: 167Mu
Standards & Certification

- Comply with the standards of API 15S, API SPEC 17J, Shell DEP 31.40.10.20-Gen and GOST 224800 for Flexible Composite Pipe System.
Certificate of Authority to use the Official API Monogram  
License Number: 17J-0011

The American Petroleum Institute hereby grants to

HEBEI HENGANTAI PIPELINE CO., LTD.
Heng De Industrial Estate
North Area
Jing County, Hebei
People's Republic of China

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and API-17J and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: 17J-0011

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Unbonded Flexible Pipe

QMS Exclusions: Servicing; Customer Property

Effective Date: FEBRUARY 3, 2016
Expiration Date: AUGUST 4, 2017

To verify the authenticity of this license, go to www.api.org/compositelist.
II. Spoolable RTP Pipe

Product Features

- **Keys to Market Acceptance**
  - Lower overall installed cost
  - Faster Installation
  - Smaller Crew Size (3-5 people typically needed to install the pipe)
  - Reduced Environmental Risk (spool lengths up to 2.5 km)
  - Lower Safety Risks (less people required in the trench)
  - 100% corrosion free
  - Standard and Simple Pipe connections (Crimped Couplings, Flanges and Union Connector)

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**Note:** An typical cost estimation indicates that the cost of SRTP maybe at least 35% lower than that of steel pipeline. This figure refers to a pipeline with a diameter of 150mm and a length of 4Km on a flat.
Applications

• Multiphase liquid or crude oil gathering
• Gas gathering and distribution line (23.8°C-800Psi, 60°C-640Psi)
• Water disposal line (up to 8”)
• Water injection (up to 32Mpa)
• Methanol injection
• Alternative to Steel pipeline

Installation Methods

• Conventional trench
• Surface Lay
• Rehabilitation
II. Spoolable RTP Pipe

Application Demonstration in onshore Oil Fields

Figure 1: Illustration of meter setup in allocation problems, simplified for clarity. A host field "A" processing plant separates, processes and exports hydrocarbon flows from field "A", and two satellite fields "B" and "C". Legend: Red M is custody transfer meter, black M fiscal meter, gray M indicate optional allocation meter.

SRTP Line Pipe applicable for Multiphase flow pipeline, gathering line and flowing line and water methanol injection lines and waste water disposal.
**Product Features**

**Pipe Design for API RP 15S Application**

- Structure with roots in API RP15S
- Reinforcing layer wound around HDPE or modified polymer
- Different reinforcements available:
  - Steel wire/tape
  - Loose glass fiber or prepregs or tow-preg
  - Kevlar tape
  - Polyester fiber
- Traditionally only available in lower temp and pressure. Temperature rated to 60° C, 82° C & 95° C continuous operation
- Sizes up to 8”
- Full range of operating pressures – (500 - 4640psi / 3.4 - 32 MPa)
II. Spoolable RTP Pipe

Product Features

➢ Raw Material

● Inner Liner-PE100+/PE-RTII/PEX
● Reinforcement PET/Fiber Glass Kevlar Tapes and Steel Wire and Tapes
● Outer Jacket-PE80/LLDPE

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Log Average of 5 data points at 110°C

TABLE 5: EXTRAPOLATION TIME LIMITS ACCORDING ISO 9080

Graphic: HOOP STRESS PERFORMANCE OF PE-RT, SEM ACCORDING ISO 9080
Product Features

Pipe-to-Pipe & End Connector Information

- Field installed in less than 30 min
- No glues or epoxies used
- Mechanical compression fitting
- PTFE O-Rings create internal seal
- Design safety factor **3-4x the pipe operating rating**
- Various configurations available
  - Welded on flanges—standard
  - Weld prep—standard
  - Threaded ends, hammer unions or as required
Product Features

Buckle Compressed Thread Type Connector
产品特点

- One Piece Connectors
Product Features

Types of Connectors

- **Weld Neck Flange**
- **Threaded Flange**
API SPEC17J Flexible Pipe for Offshore Application

- Dynamic & Static Riser
- Static Flowline, gathering Line
- Water and Methanol Injection
Pipe Design for API SPEC 17J Application

GAS, OIL, WATER, CHEMICALS, 2½” to 16” ID down to 1500m water depth depending on size
The main design is divided into three families:
Family 1 “Smooth Bore” – smooth bore (liner), pressure + tensile armour, outer sheath
Family 2 “Rough Bore” – carcass, liner, special tensile armour, outer sheath
Family 3 “Rough Bore Reinforced” – carcass, liner, pressure + tensile armour, outer sheath

Each family may include special purpose insulation layers such as anti wear and layers
III. Flexible Composite Pipe & Riser

Venezuela- PDVSA

Steel Tape Reinforced Thermoplastic Pipe Maracaibo Project
Joint Couplers and Connectors
Production Process

Extrusion Process
Production Process

Continuous-winding Equipment for Reinforcement Layer
Production Process

Finished Products
Shipment

Shipment
Installation

• Minimal professional engineering manpower
• Less heavy installation equipment
• Rapid material deployment
• Less material multi-handling on site
Installation

- Smaller footprint and less environment disturbance
- 5-10KM installation per day
Installation

Onshore Relining Application
Insertion into Failed Pipeline
Installation

Terminal Connection and Riser
Case Study

CNPC PCOC Oil Field Methanol and Water Injection Pipeline

**Location:** CNPC PCOC 3rd Oil Production Plant

**Time:** from 2003-2010

**Application:** Water and Methanol injection pipeline

**Pipe:** DN17 PN32MPa -4000KM
  DN40~90 PN16~25MPa-1000KM
Case Study

CNPC Tarim Oil Field Oil & Gas and Water Gathering Pipeline

Location: CNPC Talimu oil Gas Production Plant
Time: from 2006-2010
Application: Oil, Gas and water gathering pipeline
Pipe: DN40~90 PN16~32MPa-200KM
CNPC Jilin Oil Field Oil Gathering Pipeline

**Location:** CNPC Jinlin oil Field 1st oil Production Plant  
**Time:** Oct. 2004  
**Application:** Oil gathering pipeline  
**Pipe:** DN50 PN6.4 - 20KM
CNPC PCOC Zhenbei and Xifeng Oil Field Water Injection line

**Location:** Ordos Basin  
**Time:** Oct. 2006  
**Application:** Water injection line  
**Nominal Pressure:** 25Mpa  
**Operation Pressure:** 20.5 Mpa, 15Mpa  
**Pipe:** MID65 PN25 - 166KM
Case Study

CNPC Middle Taklimakan Desert Gas Field Desulfurization Project

Location: Xijiang Taklimakan
Time: Jun.2009
Application: Gas and Condensate, water transmission
Operation Pressure: 9.2 Mpa
Operation Tem: 58.2 °C
Pipe: RFQ-102-16-16Mpa, 3600M
TOTAL Sulige Gas Field

**Location:** Ordos, Inner Mongolia  
**Time:** Dec. 2013  
**Application:** methanol and water injection pipeline  
**Pipe:** RFC 35-12Mpa -30KM  
RFS-80mm-12Mpa-22KM
Photos Gallery

“S” Type Laying

RTP Pipe Riser
Project Details:

**Project scope:** Design, manufacture and supply Flexible Composite Pipe

**Location:** South China Sea, Zhanjiang

**Time:** Oct.07.2015

**Application:** Water Injection

**Length of Pipe line:** 13183m

**Design Pressure:** 8.7MPA (1261.5Psig)

**Water Depth:** 38m
Case Study

PDVSA Maracaibo Oil & Gas Field Oil & Gas Gathering line

Project Details:

**Project scope:** Design, manufacture and supply products according to the client’s requirement  
**Location:** Maracaibo, Venezuela  
**Time:** In processing  
**Application:** Oil and gas gathering  
**Description:** In order to guarantee reliable and high efficient oil gas gathering form subsea well head to storage facility over the sea, HATFLEX SRRP-II steel wire rope reinforced Flexible Composite line pipe is well satisfied clients requirement for excellent corrosion resistance, anti-buoyancy, rapid and easy installation and fairly low cost than traditional steel line pipe.

**Pipe System:** HATFLEX SRRP-II 2”, 4” Line pipe with Max Operating Pressure 1160 PSI for 2” and 1740PSI for 4”, length of 98Km
CNOOC Weizhou 12-2/11-4N 6 Water Injection Line
Thanks for your attention!

www.hengantaipipeline.com