Riser connections

TP-FE

- Metal-to-Metal gas tight Premium Connection
  - TP-CQ series — T&C
  - TP-G2 series — T&C
  - NEW TP-G4 series — T&C
  - NEW TP-WG — T&C
  - NEW TP-NF3 — T&C Semi-flush
  - TP-FJ/II — Integral Flush
  - TP-SFJ — Integral Upset
  - TP-ISF — Integral Upset
  - TP-TW — Riser Connection
  - TP-FE — Riser Connection
- Semi Premium Connection
  - TP-BM(S) — T&C
  - TP-JC — T&C
  - TP-QR — T&C

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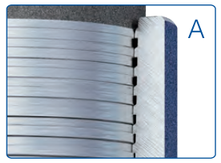
2022 Version 01

TP-FE 4-1/2in ~ 14in

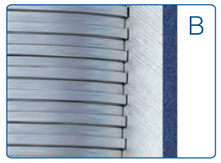
TP-FE Riser connection has been specially designed for use in deepwater drilling riser and inner production riser applications where an exceptional level of fatigue resistance and sealability performance is required (SAF ≤ 2.0 vs. DNVB1 curve).

- High fatigue resistance SAF≤2.0
- Excellent gas seal-ability under combined load
- High-grade and Corrosion material are available
- Easy Stabbing, No Cross Threading
- Superior Anti-Galling Performance
- API 5C5 and ISO 13679 CAL IV approved
- Full-scale fatigue test

Modified Thread
CSG: 4-1/2in~8-5/8in: 5T.P.I.
9-5/8in~14in: 4T.P.I.



Double elliptical groove
Improve connection fatigue resistance (optional)



Modified Thread
Low stress and super anti fatigue ability

Special Metal to Metal Seal
Tapered pin and box seal
Super sealing capacity

Application:
- Drilling Risers
- Inner Production Riser
- Extended reach horizontal well
- Casing drilling

1 . Description

1.1 Threaded connection
The special modified thread can effectively reduce the stress concentration of the thread and make it have a high anti fatigue ability. At the same time, the excellent strucutral interity including bending and tension resistance makes it suited for complex wells, such as drilling riser, horizontal and deep wells.

1.2 Metal to Metal Seal
Special Metal to Metal Seal system, allows enough contact length and contact stress on contact surface. The metal-to-metal seal offers excellent gas-tight sealing, even under the most severe combined loads, or after repeated make-ups and break-outs. Optimized seal geometry minimizes the risk of galling.

1.3 Reverse Angle Torque Shoulder
The reverse angle torque should provides accurate power tight make-up. The wedge effect caused by the reverse angle and seal system gives the connection a superior structural strength, and also improves sealability. The shoulder design is optimized to resist adverse conditions such as combined compression and external pressure or combined bending and compression.

1.4 Internal profile
The streamlined internal profile minimizes turbulence and energy loss when high-velocity gas flows.

1.5 Coupling Design
Double elliptical groove (optional) to improve connection fatigue resistance. Joint efficiency is more than 100% and coupling critical section is greater than pipe body section.

1.6 Lower stress design
The lower stress design makes the connections fatigue resistance SAF ≤ 2.0 vs. DNVB1 curve.

Figure 1 make-up equivalent stress

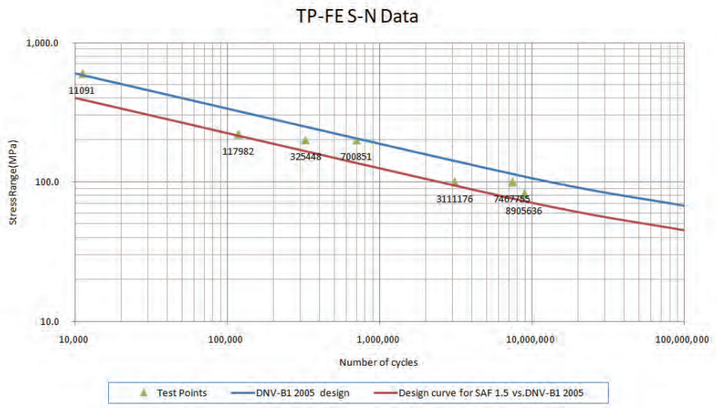


Figure 2 S-N data obtained by FEA

2. TP-FE Qualification Test

Table 1 Brief introduction of test

Steel grade	OD	Size	Lab.	Specification	Series	Result
L80	9-5/8 in	47# (244.48×11.99 mm)	TPCO	ISO 13679(2002) IV	CAL IV	Pass
L80	6 5/8 in	36.70# (168.28×14.27 mm)	TPCO	Full scale fatigue test	cyclical loading (168MPa)	ultimate life (2,300,000)
L110	9-5/8 in	75.6# (244.48x20.24 mm)	TPCO	Full scale fatigue test	6 cyclical loading point	SAF≤2.0

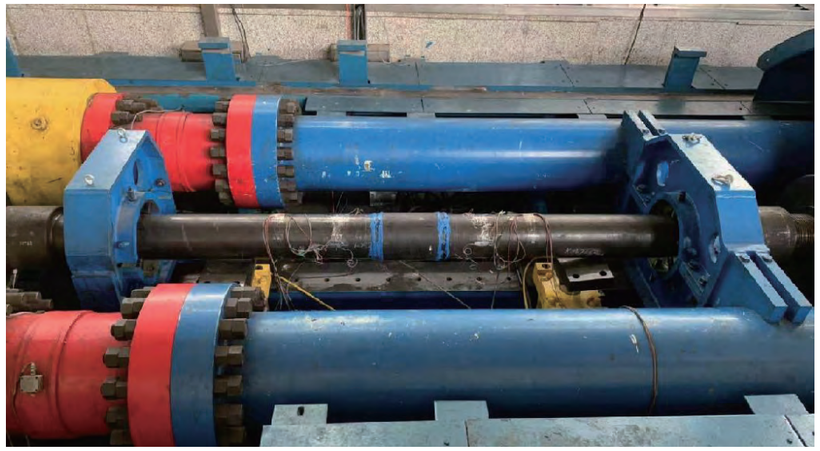


Figure 3 Full scale test

Figure 4 Full scale fatigue test

3. Use performance

Table 2 Performance profile

Steel grade	OD	Size	Water depth	user name	Length of use
P110	9-5/8 in	47# (244.48×11.99 mm)	1300（m）	PetroChina Ocean	2500(m)
P110	13-3/8 in	68# (339.72×12.19 mm)	1300（m）	PetroChina Ocean	400(m)
P110	9-5/8 in	75.6# (244.48x20.24 mm)	2000（m）	CRIMM	2000(m)

Figure 5 Construction Drilling Platform Blue Whale II