Top Tensioned Riser systems for deepwater & ultra deepwater
industry leader in high strength seamless technology
Choose the right grade for your application

Reference projects chose API and Vallourec proprietary grades in high strength from 80 ksi up to 125 ksi, also in HC and SS.

Why Vallourec Riser grades?

We offer Vallourec Riser grades to meet the known needs of our customers. Requirements are individually defined in their specifications and derived from lessons learnt. The summary of these different needs is the basic idea behind launching the Vallourec Riser grades series. In addition we want to contribute to the ongoing process of the Offshore Industry to establish new standards.

Seamless High strength grades are selected in all three Riser applications: 
- Production outer / inner / tubing riser
- SBOP Drilling riser
- Workover - early production riser

High toughness / the resistance to crack propagation can be measured, the following standards are put into place:
- VM 95 R, VM 110 R, VM 125 R, VM 95 RSS, VM 110 RSS
  - Impact Test: CVN - Charpy V Notch (-10°C / 75% Shear)
  - CTOD Test: Crack Tip Opening Displacement
  - NACE Method D Test: DCB - Double Cantilever Beam

<table>
<thead>
<tr>
<th>Minimum Yield Strength ksi</th>
<th>API grades</th>
<th>Vallourec special grades</th>
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<tr>
<td></td>
<td></td>
<td>High Collapse</td>
</tr>
<tr>
<td>80</td>
<td>N-80</td>
<td>VM 80 HC</td>
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<tr>
<td>90</td>
<td>C-90</td>
<td>VM 90 S</td>
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<tr>
<td>95</td>
<td>C-95</td>
<td>VM 95 HC</td>
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<td></td>
<td>T-95</td>
<td>VM 95 HC</td>
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<tr>
<td>110</td>
<td>P-110</td>
<td>VM 110 HC</td>
</tr>
<tr>
<td>125</td>
<td>Q-125</td>
<td>VM 125 HC</td>
</tr>
</tbody>
</table>

VAM® RISER references

- Gulf of Mexico
- Europe
- Brazil
- Egypt
- Indonesia
- Africa
- Spar
- TLP
- MODU Workover
- Hybrid
- Fixed
- MODU SBOP Drilling
Production Riser: outer - inner - tubing

T&C
Threaded & Coupled
Casing Riser
7" - 16"OD
SAFE 1.5
Make & Break
up to 10
- High fatigue performance
- External metal to metal sealing system
- Field proven

VAM® TTR
Outer Production Riser
Design features
• True metal to metal external seal.
• Fatigue oriented, triangular thread profile.
• Bending swoosh “hot spot” transfer zone.
• Gastight, internal metal to metal seal.
• Easy stabbing and running.

T&C
Threaded & Coupled
Casing Riser
7" - 16"OD
SAFE 2.0
Make & Break
up to 10
- Industry reference
- Field proven

VAM® TOP FE
Inner Production Riser - Riser Tubing
SBOP Drilling Riser
Design features
• Fatigue enhanced VAM TOP.
• Optimized coupling geometry.
• Gastight, internal metal to metal seal.
• Flexible coupling OD/swoosh design.

VAM® PDW 1
Outer Production Riser
Highest fatigue and static sections
Design features
• High fatigue design.
• Gastight internal metal to metal seal.
• Gastight external metal to metal seal.
• Dual shoulder.

Integral
Casing Riser
13 3/8"OD
SAFE 1.1
Make & Break
up to 5
- Top and Bottom sections
- Specialty Joints

SAF values are given versus DNV-B curve, based on full scale fatigue test.
Top Tensioned Risers solutions in T&C and high grades...

Production

7” - 16”

...seeing the riser world from a different point of view

SBOP Drilling
9 5/8” - 16”

Workover Completion Landing Early Production
6 5/8” + 7 5/8”

Drilling Riser Campaigns: Brazil - Egypt - Indonesia - GoM
Work Over Riser Campaigns: West Africa - Brazil - GoM - North Sea
**Workover - Completion - Landing - Early production**

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**T&C**
- Threaded & Coupled
- 7 5/8" OD
- SAF 1.1
- Make & Break up to 25
  - Heavy wall application
  - Field proven

**VAM® LDR**
- HPHT Workover and Landing string
- Design features
  - True metal to metal external seal.
  - Fatigue oriented, triangular thread profile.
  - Bending swoosh “hot spot” transfer zone.
  - Gastight internal metal to metal seal.
  - Easy stabbing and running.

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**Integral - DPR**
- Drill Pipe Riser
- 6 5/8" OD
- SCF 1.1
- Make & Break > 100
  - Replaceable Seal Ring
  - Gastight up to 10,000 psi
  - Field proven

**VAM® DPR SR**
- Workover / Completion / Landing / Early production Riser
- Design features
  - Tool joint connector.
  - Fatigue compliant connection.
  - API thread 30° loading/stabbing flanks.
  - External and internal shoulders.
  - Gastight device in PTFE housing.

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**Integral - DPR**
- Drill Pipe Riser
- 6 5/8" OD
- SAF 1.0
- Make & Break > 100
  - Gastight up to 15,000 psi
  - Field proven

**VAM® DPR HP**
- Workover / Completion / Landing / Early production Riser
- Design features
  - Tool joint connector.
  - Fatigue compliant connection.
  - Proprietary VAM® thread.
  - External and internal shoulders.
  - Metal to metal seal.

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SAF values are given versus DNV-B curve, based on full scale fatigue test. SCF value is given based on FEA.
R&D
• State of the art testing facilities, including resonant fatigue test frames: France, USA, Japan.
• We help you defining the appropriate qualification program for your project: custom sizes, special requirements or critical application.
• Engineers and technicians dedicated to the design of improved steel chemistries and adequate heat treatments.

Innovation
Did you know?
• VAM TOP FE was born in 2000 and improved VAM TOP’s fatigue life by a factor of 4 - FE stands for Fatigue Enhanced.
• VAM TTR was born in 2005 with fatigue life multiplied by 30 compared to VAM TOP.
• New riser developments include heavy wall connectors for HPHT applications, single barrier, tubing riser, SCR, ...
• 4 patents, 12 publications (DOT, OMAE, SPE, World Oil), Vallourec group Innovation Award.

Service
• All-in one technical support for pipe, material and VAM RISER connections.
• Design support of specialty parts interfaces.
• Field assistance on running and inspection.
• Worldwide presence of VAM® Field Service International and licensee network.
• Logistics, TSA coating, bolstering, storage…

Experience
• Worldwide manufacturing know-how.
• Field running experience including track records, on-site support, running recommendations.

Reliability
• Database of hundreds of connectors fatigue tested to failure.
• Structural integrity, sealability and Make and Break qualified to ISO 13679 procedure.
World Leader in Premium Tubular Solution

For further information on our connections, please visit our website www.vamservices.com

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