



Vallourec at the heart of innovation

To enhance our tubular solutions by harnessing the potential of new technology and to expand our offer into new markets: these are the challenges Vallourec faces in open innovation mode, to go further and be more agile.

With industry and research institutes LONG-TERM PARTNERSHIPS

With NSC (formerly NSSMC) to develop VAM® connections and with the BetriebsForschungsInstitut in Düsseldorf (Germany) to improve manufacturing processes.

With customers CUSTOM SOLUTIONS

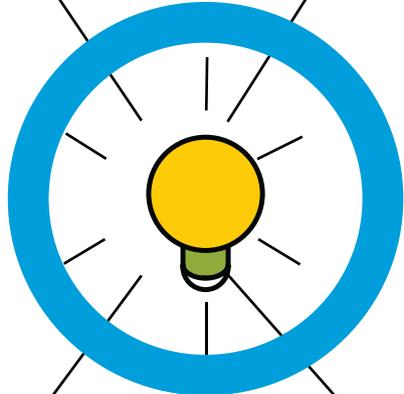
Extreme tubes for oil fields, special horizontal drilling tubes, premium connections for complex wells, innovative applications, optimized welding for pipelines or high-performance steels for electric power plants: Vallourec innovates together with customers to match their needs.

€45 M
invested in 2018

500
researchers and
technicians

10
partnerships
with start-ups

2
incubators

INN  NOVATION

6
R&D centers

an open ecosystem

With employees WE ARE ALL INNOVATORS

Our innovation platform enables employees to suggest ideas for products or services for our historical markets or new growth areas, which every employee can then discuss and improve. A network of advisers approves the best ideas and supports the innovators through to creation of the final product. In 2019, 182 ideas were registered worldwide in just three months. The panel and employees voted for four innovations, which are now under development.

With tech players THE "AUGMENTED" TUBES OF TOMORROW

Through its website openinnovationplatform.vallourec.com, the Group is forming partnerships with start-ups, laboratories and other innovators. The program for 2019: ways to transport data and/or energy through our tubes, and ways to maximize the flow of fluids within the tubes. The site received 46 proposals in just three months! Vallourec's odyssey of innovation beckons.

With universities IN FUNDAMENTAL RESEARCH

Mines ParisTech (France), RWTH Aachen University (Germany), Carnegie Mellon (United States) and Federal University of Rio de Janeiro (Brazil) are just some of Vallourec's R&D partners.

3 areas of innovation

- 1- HIGH-TECH PRODUCTS that make complex projects possible in complete safety
- 2- SOLUTIONS that optimize customers' operational efficiency
- 3- NEW MARKETS and new business models

Increasing the pace of development and generating technical ideas: R&D plays a pivotal role

Vallourec maintains its R&D budgets at high levels to keep its technological core at the cutting edge and respond to the challenges of all markets.



Our R&D experts provide technical support to all Vallourec sites worldwide and assist them in the development of new solutions to continuously improve our products.



A world of expertise

Vallourec's six research centers drive forward its products and manufacturing processes with a close focus on customers and their operations.

HOUSTON (United States)
Developing custom VAM® connections for the American market.

DÜSSELDORF (Germany)
Development unit for steel tubes intended for electric power plants and center of expertise for hot forming.

BELO HORIZONTE (Brazil)
Adapting Vallourec solutions to the needs of its Brazilian customers, notably for operation in pre-salt fields.

AND ALSO...
R&D activities in Indonesia and Japan.

AULNOYE-AYMERIES (France)
The Group's metallurgy unit of many years and center of expertise for threaded connections, from design to full-scale testing.



Cleanwell®: an R&D innovation to meet a customer need

This factory-applied coating improves the performance of VAM® connections, reducing handling and operational costs. A product of Vallourec R&D, it has been acclaimed by operators worldwide.



The challenge of digital innovation is to use the power of data to optimize customer performance

Vallourec's enhanced offer integrates expert services and new-generation digital solutions. It supports each customer's entire value chain, from tube design through to construction and during operation of the well, pipeline or building, and enhances their journey from initial order through to post-sales.

Smartengo solutions



Best Fit
optimizes line pipe assembly and facilitates welding operations in all types of environment.



Running Expert
brings digital to the drilling platform to speed up tube descent (casing and production tubes) and improve operational safety.



Inventory
provides total visibility of tube management and optimizes storage yard operations.



Traceability
allows identification of individual pipes and provides accurate pipe data to optimize field operations.



Smartengo Marketplace
enables customers around the world to purchase, in just three clicks, almost 140 different tubes and OCTG* accessories, all delivered in record time. The platform hosts 200 active customer accounts and receives 100 visits per day.

*Oil Country Tubular Goods



Smartengo Best Fit success in the North Sea

On a project involving 1,000 pipes, Smartengo Best Fit made it possible to identify four incompatible pipes upstream, reduce assembly time by 15% and reduce weld repairs by 78%. The result was a significant improvement in pipeline performance and quality over time.

Capitalizing on every new technology and every Vallourec asset to improve our customers' sustainable efficiency



Additive manufacturing is a reality at Vallourec

The Group has used it to produce an OCTG component enhanced with a protective function and a high-performance OCTG surface accessory, and plans to provide molded parts on demand via the Smartengo Marketplace platform.



The internet of objects is the next revolution

Sensors and cameras collect all data relating to the well and its environment for even greater operational efficiency.



Carbon neutrality is essential

The "green" tubes manufactured by Vallourec in Brazil boast the world's lowest carbon emissions per ton of steel.

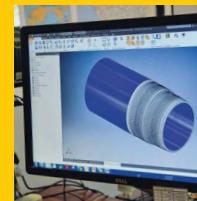


Capitalizing on its 100,000 hectares of eucalyptus forest in Brazil, managed since 1969 by the subsidiary Vallourec Florestal, the Group is devising virtuous solutions: today, "green" tubes and tomorrow, new business models that will help its customers reduce their carbon footprint.

Innovation is at the heart of our connected and intelligent factories

In Industry 4.0 factories, our employees see technology and data delivering improved industrial performance and "augmented" product quality.

BIG DATA AND SIMULATION



To resolve complex problems quickly

Advanced algorithms make it possible to run multiple simulations and noticeably improve manufacturing processes. For example, it takes just 30 GB of data and some in-house software to optimize the electrical energy consumption of the furnaces in Youngstown, United States.



ADDITIVE MANUFACTURING



To provide parts on demand

A diagram and 3D printer are enough to create a replacement part or tool within a few hours, rather than several weeks as in the past. This represents an impressive increase in productivity for our sites and in quality of service for our customers.



"AUGMENTED" EMPLOYEES



Enhancing everyone's work

At Déville-lès-Rouen in France, smartphones link maintenance personnel and production operatives in an intuitive and effective preventative maintenance system. In the United States, augmented reality headsets energize employee training. All these applications help give digitalization a human face.

4.0

Pioneer of yesterday and of tomorrow

Looking back at seven key dates

1965

The first VAM® connection revolutionizes the oil industry with its perfect metal-to-metal seal.

1983

Eighteen years later, Vallourec launches the second generation of New VAM® connections.

2000

Focus on the environment with Cleanwell®, the first grease-free coating.

2010

Breakthrough into offshore with the acquisition of Serimax, expert in welding in extreme conditions.

2016

First internal innovation challenge and the partnership on big data signed with Saagie.

2017

First co-innovation workshops with our customers. Vallourec launches its first external Open Innovation Challenge.

2018

The enhanced Vallourec.smart offer and Smartengo Marketplace platform boost customers' competitiveness and their digital transformation.

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