

# TMPnews

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Project developed in-house

Authorisation from the Court of La Spezia N. 5/08 dtd. 02/12/2008

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February 2018, issue 01

## Flash News

### Vladimir Putin visits TMP's Russian Joint Venture production plant

Following the Russian-Kazakhstan Forum held in Chelyabinsk on November 9th 2017, the Russian President visited the production facilities of Termomeccanica Pompe's Russian JV - Transneft Oil Pump JSC (TOP), thus confirming the strategic importance of this local company for the country. The JV partners, whose scope is the production of pumps for the local Oil & Gas market, are Transneft PJSC (50%), a leading pipeline transportation company, Konar JSC, a local manufacturer of the industrial sector and Termomeccanica Pompe (25%), the foreign company chosen as the technological partner thanks to its century-old know-how in the design and production of engineered pumps.



From left to right: Transneft PJSC's Chairman, Nicolay Tokarev (with his arm up) and the Russian President, Vladimir Putin in front of a pump produced by TOP.

### TMP takes part in Watrex 2018 in Egypt

From 5 to 7 February, Termomeccanica Pompe took part to Watrex held at the New Cairo International Conference Center (NCICC). The event, dedicated to the Water sector (Waste Water & Water Treatment Technologies), was organized with the patronage of the President of the Arab Republic of Egypt himself, Abdel Fattah El Sisi" and with the participation of the Egyptian Armed Forces Engineering Authority.



From left to right: Brigadier Essam Abdalla Shokr, Director of the Water Department at the Egyptian Ministry of Defense and our representative, Nehad Shawki, Sales & Marketing Manager of the New Product Division

## UAE New acquisitions in the Oil & Gas sector for Termomeccanica Pompe

Following the recent supplies for the Umm Lulu Umm Shaif and SARB offshore projects and other recent supplies for onshore projects, TMP further confirms its role as key qualified supplier to the ADNOC group with the acquisition of 4 new contracts.

### TMP is awarded 3 contracts for the Upper Zakum offshore project

In the second half of last year, Termomeccanica Pompe acquired three important contracts for the supply of the main centrifugal pumps that will be installed in the Upper Zakum offshore oil field. The latter is currently the 2nd largest offshore oil field in the world and the 4th largest in absolute terms (offshore + onshore). With Phase 3 of the project, the aim is to further increase the production capacity of the oil field so as to reach 1 million barrels of crude per day (1 MMBOPD). The third phase of the project (EPC-3) consists in the installation of a Sulphate Reduction Plant (SRP) module together with new installations and connections to the existing facilities on West Island. The SRP module incorporates state-of-the-art water treatment technologies with advanced filtration and nano-filtration systems. These systems are used for the injection of water into the reservoir structure of the western Upper Zakum basin, which requires high quality water with lower sulphate content and particle size. The customer is Technip FMC while the end user is ZADCO (recently integrated into ADNOC Offshore). The "core" of TMP supply (of a value of more than 7 M€) consists in 4 multi-cell water injection pumps, produced in super-duplex steel, according to API 610 standards and assembled on a skid with an "Ex-de" explosion-proof motor of a 4.4MW power, a API 614" special purpose " oil lubrication system, an API 613 gearbox and an API 671 flexible coupling. The project is characterized by the use of high-quality

materials such as SuperDuplex and Titanium and by particularly stringent quality requirements dictated by the end user. The entire supply will be tested internally at the company's Test Center in La Spezia. The scope of the supply also includes n. 4 booster pumps and 4 nano-filtration system feed pumps, both types with BB2-type radial split casing as well as n.5 OH2-type pumps for the "cleaning in place" service.

### TMP is awarded an order for the onshore Haliba Water Injection Project

TMP also acquired the contract for the water injection pumps of the ADNOC Haliba onshore plant located 150km South of the capital Abu Dhabi.

The supply consists of n.4 API 610 BB5-type pumps in SuperDuplex SS complete with electric motor, double mechanical seal system with Plan 53B and Automatic Top Up unit.

Pumps are the "heart" of a water injection plant which, in this case, will also be completely automated and therefore managed by a minimum number of operators. These factors have therefore led the EPC contractor, Larsen & Toubro Hydrocarbon Engineering, to choose the supplier of the pumping units of the contract in question paying particular attention to reliability.

With this new supply, Termomeccanica Pompe further demonstrates its ability to provide engineered pumping solutions for critical applications, strengthening its collaboration with both the end user ADNOC and the most important private EPC contractor in the Indian market (to which it supplied in 2015 the main Boiler Feed Water pumps for NPCIL's RAPP plant - Rajasthan Atomic Power Plant).

Upper Zakum oil field



## Termomeccanica presents the new version of its integrated air end SCI10 model

Following success of new model SCI8, TMP continues the restyling of its fully integrated family by launching into the market the new version of its SCI10.

The latter was developed with a special design which, on top of excellent technical performances, also offers advantages in terms of dimension (compactness) and maintenance (more simplicity).

Numerical analysis played a key part in validating the quality of the SCI10 design for the 15 barg operating pressure. In fact, a stress analysis campaign was conducted in reference to two different loading conditions:

1. the maximum operating pressure (15 barg);
2. the hydrostatic test pressure 1.5 times the maximum operating pressure (22.5 barg).

The analysis was completed using the finite element methods (F.E.M.) which results were illustrated by colored maps of deformations and stresses.

A contact analysis was also performed to evaluate the level of tightness between clamped components.

The main parts considered in the FEM analysis were:

1. the external casing that constitutes a unique casting with rotor casing and oil separation/recovery tank;
2. the external cover from which the gas flows out at pressure discharge condition, separated from oil.

From the structural point of view, it can be said that the SCI10 design guaranteed an elevated level of tightness and ensured that all the stresses generated by the two combinations of loads previously described had an adequate safety margin from material failure, following the main International Standards indications.

## TMP launches the new version of its predictive maintenance integrated system

For a long time, Termomeccanica Pompe has been paying special attention to the Service portfolio it offers to the end users of its products. Within such portfolio, TMP proposes solutions for the management of its pumps, which range from preventive maintenance programs to predictive maintenance integrated systems.

Cyclop® - the patented monitoring system developed by the company that allows to constantly check the status of its machines, even remotely - falls into this latter category.

Over the last fifteen years, we have witnessed a great revolution in communication systems that have evolved from simple telephone based systems to real computing centers that interact with one another through increasingly powerful data networks.

During the same period, the operators / end-users of the industrial plants in which our products are installed have been giving a growing importance to the improvement of the maintenance process, with the clear objective to reduce management costs and increase systems reliability.

As a result, pumping units, which account for a significant part of the maintenance costs of these plants, have been receiving particular attention. Until recently, the maintenance of industrial pumps was carried out solely on a calendar basis, i.e. at pre-established intervals of operation, without taking into

consideration the real state of the machines. This type of maintenance, however, lacks flexibility (difficult modification of predefined plans) and involves fixed and non-reducible machine downtimes, therefore entailing high costs. A new maintenance methodology has recently been added to this preventive philosophy, a methodology focused on the real conditions of the machines, which allows us to plan ("predict") how and when to intervene, taking action only the components that show problems. Such type of maintenance, based on a machine status and not its hours of operation, allows savings both in terms of management (only the components that actually need to be changed are changed) and in terms of machine downtime (less invasive and faster interventions). Obviously, this new so called "predictive" maintenance philosophy implies the need to be able to analyze the state of a machine through some important operating parameters. Normally, this analysis is performed periodically using portable instruments. This way, however, only the states in which the machine is when controlled can be evaluated and neither the complete behavior of the parameters over time nor the real correlation between the parameters that have been measured and those that have not can be assessed.

On the other hand, Termomeccanica Pompe, as an Original Equipment Manufacturer of rotating machines, has implemented a solution called Cyclop®. Through the installation on board the machine of a system for the collection of all the necessary operating data and its transmission to head office, the company is able to monitor its pumps in a continuous manner and to carry out a more expert analysis which allows to correctly correlate cause and effect and to generate an integrated maintenance solution.

Cyclop®, recently updated in light of the latest technological innovations mentioned above, mainly corresponds to a National Instruments rack consisting of a mother system and modules, expandable according to the type of signals (4-20 mA, 10V, etc.) and to the complexity of the system to be monitored.

The rack is directly connected to the instrumentation, in particular to dedicated vibration sensors and other existing instruments.

This unit alone is able to store data for several months of operation, even for complex machines. Moreover, the rack is connected, through an independent connection with IPsec security protocol, to TMP's central server where, in absolute safety, all the data collected in the various installations in the world converge.

The communication system is totally independent from the plants protocols and uses a dedicated Internet connection, consisting of a firewall and routers connected to a satellite dish or UMTS antenna depending on the installations.

This architecture allows Cyclop®, in an autonomous and safe manner, to record parameters 24 hours a day, including process parameters (which are not usually included in the maintenance analysis proposed by the other players of the sector) and to send them to company headquarters, thus providing Termomeccanica's customers a complete support for the implementation of an effective predictive maintenance plan, with all its related benefits.

The new Cyclop® system has already been successfully installed at Termomeccanica Pompe's main customers plants and the company foresees in the future to systematically install the system on all the machines it manufactures.

## Review of the industrial plant engineering crisis



For several years now, the production capacity of the Industrial Plant Engineering manufacturers has been greater than the absorption capacity of the market. Over the last two years, the discrepancy has widened, amplifying the saturation of the market and giving rise to price reductions by manufacturers. If the crisis prolongs itself over a long period of time and companies do not adapt by conducting a healthy cost reduction policy, the problem is curbed in a superficial way, delaying the economic impact of the crisis for some time, but then making the consequences emerge abruptly in their full intensity.

Our company has faced the situation with farsightedness, launching cost reduction projects that have already born (and will continue to bear) fruits, as evidenced by its good business results in contrast with those of other companies in the sector. However, we must not let our guard down because the crisis is unfortunately not over and some of its repercussions are still ongoing.

For Termomeccanica Pompe, 2018 will continue to be a year focused on cost optimization through a dedicated project called "Competitiveness of Internal Added Value" and new product development, for both the Pumps and Compressors sectors. The consolidation of our presence on foreign geographic markets presenting high potential will also continue.

Edoardo Garibotti



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