

# TMP news



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## Water Injection Pump performance tests for the ENI Val D'Agri order

Last June the Test Center of Termomeccanica Pompe carried out performance tests on the three groups for water injection designated for the Centro Olio Val d'Agri, located in Viggiano in Basilicata and owned by ENI. The project originated from the Client's need to strengthen the extraction capacity of the existing plant, and therefore has an important strategic value also for the considerable economic fallout related to it.



Val d'Agri Oil Center

Each group includes:

- Multistage barrel pumps with high pressure multistage horizontal axes (13 stages and 2800 m of head);
- 1100 kW electric motor directly connected to the pump by means of an elastic joint;
- Lubrication system, installed on the skid with the control instrumentation and the auxiliary pipes;
- Minimum recirculation valve;
- Electrical feed system by means of inverter with 33 kV input and 6kV output, which permits regulating motor speed in the 2300 – 3950 rpm field;

For each group the electrical feed system is installed inside a proper control shelter where, apart from the inverter, mid-voltage switchboards, a series of electrical control panels, an air-conditioning system and a fire prevention system are housed. The supply, typical of the Oil & Gas industry, had to comply with the following

API standards:

- API 610 for the base and pump
- API 614 for the power units
- API 670 for the vibration monitoring system.

The shelter and the related parts, which are not subject to API standards, have also been designed in accordance with the following technical requisites and standards in order to permit their installation in a refinery: IEC, CE, Machine Directive, Fire prevention, ATEX. The Test Center carried out performance tests on all the pumps which were witnessed by the Client.

In order to verify the performance of the entire supply, one of the three pumps was also subjected to a "string test", that is a performance test of the pump skid (complete with pump, electric motor, base, auxiliary pipes, instrumentation, and lubrication system), together with the recirculation valve and the shelter of the electrical feed group.

The complexity of making the electrical connections and of the inverter start up and management was compounded by the logistic difficulties caused by the considerable dimensions of the shelter (8.5 m in length, 6 m in height and 3 m in width), which had to be placed outside the Test Center.

The performance tests and string test were coordinated by the Test Center and required the contemporaneous intervention of many company bodies and various subcontractors, the latter mainly involved in arranging the tools and doing the related wiring, constructing and installing the auxiliary pipes, laying and connecting the electrical cables for the feed system and the motor.

The string test enabled verifying the correct behavior of the various equipment in different running conditions set forth by the contract, through measuring all the physical quantities that regulate the running of various components (pressure, capacity, temperature, vibration, noise, absorbed power).

The Client's total satisfaction with the excellent results is proof of the project



Installation of water injection pump's complete skid

validity and further confirms that Termomeccanica Pompe not only has a longstanding positive experience in the design of centrifugal pumps, but has also gained extensive know-how over the years in technical definition and complex systems management, which, on an increasingly greater scale, are requested by Clients as an integration to the supply of the machines.

## The "Lean Screw" project of Termomeccanica Compressori

*Lean Thinking* is a production strategy originating in the automotive industry, which today is universally implemented in different sectors and areas to increase efficiency and eliminate waste. It is a production strategy because it contains, apart from organizational thought and theories, a practical approach (the human work needed to convert to lean).

The entire company is involved in the comprehensive vision by making main processes flow, from design up to order management:

- from the marketing idea, through the process of developing new products, a validated preproduction is achieved,

- from the client request, through the processes of information and order management, the client is given what he or she requested,

- from suppliers, through the production transformation process, the packaged finished product is obtained,

- from the warehouse and finished products, through the distribution/installation and delivery process, the client is given the availability of the finished product.

All of these processes also involve the organization, industrial accounting and quality management for the best employment of the resources engaged.

Now TMC has launched the implementation of these methods, with **the Lean Screw project**, involving each company player on a daily basis, from the Management to the individual worker, in order to give value to our clients, value that translates into the obvious yet not taken for granted affirmation: "doing the right thing at the right time with the right resources".

The application of these principles has been hugely successful thanks to both specific training and guidance for the completion of the first projects, with the support from the Politecnico di Milano, the largest technical university in Italy.

The projects were then presented at the congress promoted by the same Politecnico, called **The new frontiers of Lean Management** held in Milan on 03/07/2012, where Termomeccanica Compressori was invited to discuss its experience in the applicability of the Lean Screw program in all its branches, including the Shanghai-based Chinese branch, TMCSS LLC.



**Lean Screw  
Process  
Improvement  
Program**

## TM.P. Service Sud and the development of Global Service

The commitment of TM.P. Service Sud to increase LTSA (Long Term Service Agreements) in its order portfolio continues. Upon renewal of the framework agreement with Edipower for the overhaul of Termomeccanica pumps and BHS-Voith reduction gears and epicycloidal multipliers (by now "historical" for the company as drawn up in 2006), this year saw the addition of the open contract for air compressor maintenance with the ENI Refinery in Taranto and the open contracts for alternative and rotating machine maintenance with Polimeri Europa in Ravenna and the Sannazzaro Refinery (the latter in consortium with the headquarters). Moreover, the Group's Service company located in Massafra has recently perfected a two-year contract with Partenope Ambiente SpA, a subsidiary of Gruppo A2A, which has autonomously managed the Waste to Energy plant in Acerra since 2009. The framework agreement sets forth the supply, on behalf of TM.P. Service Sud, of a planned and emergency maintenance service and specialized assistance for boiler water pumps, condensate extraction pumps and pumps for various service installed in the plant in Acerra.



Acerra Waste to Energy Plant

Reaching maximum system efficiency and reliability is consolidated by specialized technicians making periodic visits to check the running conditions of the pumps, analyze and propose routine and/or extraordinary maintenance activities on site or at the factory in Massafra, check and propose the replenishment of spare parts stock, and continuously offer technological updates. This typology of integrated service offers the Client greater availability and reliability for the monitored units, considerably reducing running costs tied to downtime due to maintenance.



Moreover, it is a very useful tool for the mid-term planning of TM.P. Service Sud in that it enables managing and levelling off work peaks, both positive and negative, which are typical in service activities. Long Term Service Agreements seems the best path to follow for the company to propose itself to end users as a technological partner able to not only guarantee the reliability of the plant but also optimize the coordination of the various maintenance activities in the workshop and on site, activities which otherwise result difficult to plan.

### In November the Termomeccanica Group will participate in the most important Oil & Gas Exhibition in the Middle East



With regard to its business development strategy in the Oil & Gas sector, the Termomeccanica Pompe group will make its debut as an exhibitor (stand G547) at **ADIPEC 2012- the Abu Dhabi International Petroleum Exhibition and Conference** – which will take place from **November 11 - 14** at ADNEC, the *Abu Dhabi National Exhibition Centre*.

ADIPEC, sponsored by ADNOC - Abu Dhabi National Oil Company – and the United Arab Emirates Ministry of Energy, is the most important exhibition in the Middle East concerning the Oil & Gas industry and is one of the most important in the world.

With exhibitors and visitors from the world of Oil & Gas exploration, extraction, production, refining, storage and transport, ADIPEC reunites all the Oil & Gas sectors and presents the latest technological news.

The event will therefore be an opportunity for Termomeccanica Pompe, La Spezia headquarters & UAE branch, Termomeccanica Compressori and Termomeccanica Saudia to develop and reinforce their know-how and relationships with the most important international operators in the sector.

## flash news

### TM.P.'s Service Division finalizes a contract with EDIPOWER for the redesign and improvement of the pumping station of Truzzo

TM.P.'s Service Division has acquired an order worth euro1,240,000 in consortium with ABB for the turnkey supply concerning the redesign and improvement of the pumping station in Truzzo, which is part of the Mese (Sondrio) Hydroelectric Nucleus, belonging to EDIPOWER S.p.A.

The pumping station is at an altitude of 2,000 meters and its function is to lift water from a secondary basin of an artificial lake that is more uphill and collects water from the rivers in the Spluga valley; a particular aspect of this station is the positioning of the machines, which are located inside a cave.

The scope of work includes the supply of pumps, motors, inverters, transformers, wiring harnesses, and their relative installation and start up; the delivery of the materials has been set within the end of 2012.

From the point of view of plant design, the station will be modified by going from a four-pump configuration to one with two more high performance pumps, with the consequent need of adapting the internal layout of the pipes to the new installation idea.

A critical and fundamentally important aspect is transport at such a high altitude, since all materials must be brought by helicopter as there is no access by road.

The project is inserted in the renewal plans of EDIPOWER for all the pumping stations in their hydroelectric nuclei (Mese, Tusciano, Udine) and in the current prospect of developing systems that use renewable energies.



### TM.P. obtains 2 research fellowships development of R&D projects

Within projects related to research fellowships financed by the Liguria Region on PO CRO FSE 2007/13, which foresee the involvement of the Liguria District of Marine Technologies, Termomeccanica Pompe has presented two projects, together with another 45 proposals from companies in the territory, which received financing last June.

The parties involved, which shared the topics presented with the companies and will provide the necessary scientific competences, are:

- The University of Genoa (2 TMP fellowships + 34 others)
- CNR (National Research Council) (6)
- ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) (1)
- National Institute of Geophysics and Volcanology (4)

The regional financing will be integrated by an economic contribution from the companies that have presented projects, in favour of the fellows.

In August, the Liguria Region published the announcements concerning the selection of fellowship candidates, which is planned to start in November 2012, and last two years.

The topics of the two fellowship projects presented by TMP are:

**- Methods of computational numerical analyses applied to sea water feed systems at pumping stations (scientific head: Prof. Carlo Cravero)**

**- Calibration of CFD models for multistage centrifugal pumps (scientific head: Prof. Antonio Satta)**

The development of the two projects will lead to the interesting and useful involvement of our engineers from the R&D and Design departments, who, as company tutors for the fellows and in close collaboration with the University, will be invited to give their contribution for both the setting up and analysis of the theoretical calculation results and the organization and supervision of the experimental tests.

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## Our mission

To contribute to the success of our customers through our experience and know-how. We pursue this goal giving the utmost consideration to the hard work and commitment of employees and suppliers, respecting Environment and complying with expectations of our Shareholders.

