

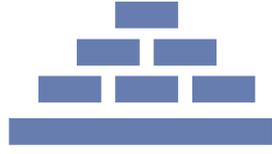
# AFRICA SPECIAL

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- Wast Heat Boiler (biomass or RDF)
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  - Hot Oil Package
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- Flue Gas Desulfuration System (FGD)
  - Flue Gas DeNOx
- Dust Filtration System
  - Revamping
- Boiler Repowering
- Automation

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- Wast Water treatment
  - Polishing
  - Ion Exchange
- Biological Plant Refinery
- Filtration and Ultrafiltration Plant
  - Mtbe Treatment Plant
- Groundwater Treatment Plant
  - Water Engineering
  - Turnkey Facilities
- Rental of Emergency and Mobile Systems

#### Sea Water Thermal Desalinations (Distillation)

- Multi Stage Flash Distillation (MSF)
- Multi Effect Distillation (MED)
- Thermal Vapor Compression (MED-TVC)
  - Remineralization Water Systems
- Upgrading and Revamping of Existing Plants

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- Gas Turbine Unit Control System UCS
  - Burning Managment System BMS
  - Emergency Shutdown System ESD
  - Fire and Gas System Monitoring
- Generatore Control Protection Panel GCPP
- Steam Turbine Retrofit System Control and Woodward)
  - Local Panels, Power distribution, MCC and MV panels
- Instrumentation and Instrumentation Panels

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### **International four-monthly magazine**

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# NEWS

# ***AFRICA SPECIAL***

# ***INDUSTRIAL TECHNOLOGY***



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# Wireless technology

for process automation (Hart and ModBUS)

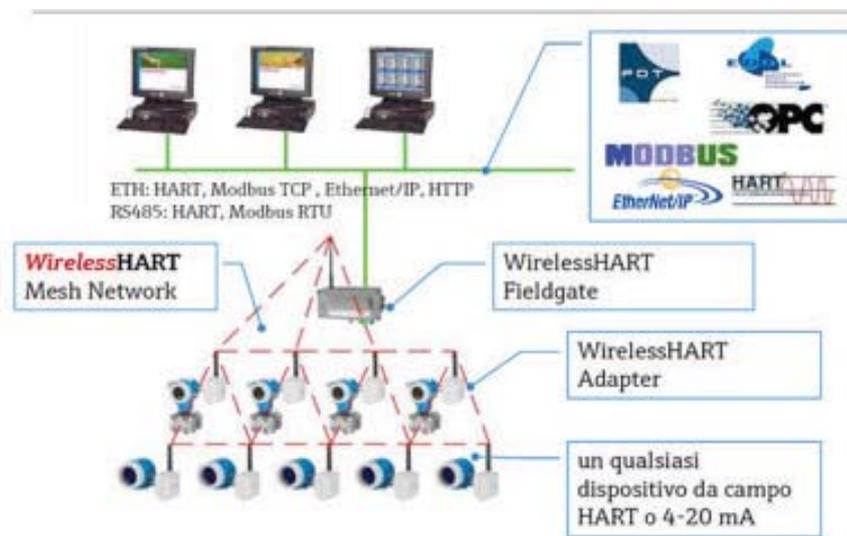
WirelessHART network uses a 2.4 GHz band (license-free and used worldwide). This type of industrial network uses a mesh network where all field devices form a network. Each device operates simultaneously as a signal source and a repeater. The original transmitter sends a message to its closest transmitter, which forwards the message to the base station and the actual receiver. In addition, alternative routes are set up during the initialisation phase. If the message cannot be transmitted on a particular route, due to an obstacle or a defective receiver, the message is automatically redirected to an alternative route. Thus, the wide area network provides redundant communication routes to increase reliability while extending the range of the network. The communication over the wireless network is coordinated with the TDMA system, which synchronizes the network participants in 10 ms timeframes. This allows you to create a highly reliable, collision-free network, and reduces the leads and lags when a station has to remain active. WirelessHART also uses FHSS (Frequency Hopping Spread Spectrum) technology to prevent interference. All 15 channels as specified in IEEE802.15.4 are used in parallel; WirelessHART uses FHSS to hop across these channels. Channels that are already in use are blocked out to avoid collisions with other wireless communication systems. The combination of 10 ms synchronization and 15 channels allows 1,500 communications per second.



Armando Zecchi

## Wireless technology in the process automation

The technological development of field bus is represented by solutions based on wireless radio technology. Although proprietary solutions have been available for some time, a standard application range has not yet become widespread on the market for a number of reasons. In the transfer of measured values of safety-critical data and of data directly related to process control, the cable represents the best available solution for transferring the signal. A cable-based solution should always be preferred to a radio technology solution for critical control applications, while wireless technology can play an important role for non-critical applications that do not require a cable to be installed.

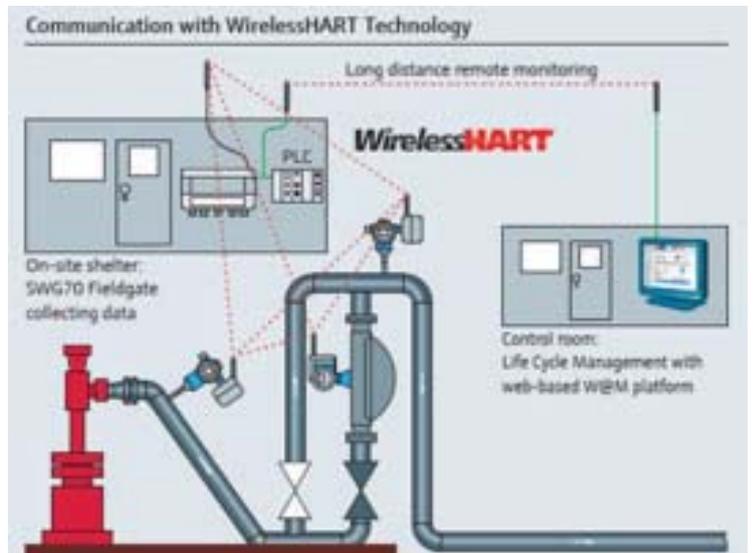


## Cable vs wireless dilemma

Cable-based solutions are not necessary in smaller plants and in logistics operations involving intermediate material storage since there may be no instrumentation and thus no feedback on storage levels. Cable solutions may also be discounted for economic reasons because there are obstacles between the control system and the process itself. Level measurements, which are generally carried out manually, can easily be replaced by a radio control method. Here there is no necessity for real-time transfer, and if a level value cannot be transmitted for a short period, it will not interfere with the operation of the plant. There are also new possibilities in the sphere of environmental monitoring. One example is corrosion measurement using CorrTran MV from Pepperl+Fuchs. Corrosion measurement is applied to critical areas of a vessel or pipeline. These positions are often extremely difficult to access or far away from the control system. The CorrTran MV wireless device can be installed optimizing the use of wiring. In this case, transmission security is not a critical application and, since corrosion is an extremely slow process, it is not time-critical. Nowadays, with a wireless system the status of ball valves is transmitted to the control room and, as a result, the control system monitors the status of the ball valves at all times. The same applies to all the other manually checked status parameters, such as pressure and temperature. Wireless technology can also be used to ensure quality and to optimize important process parameters. These parameters, which are generally less critical to the process control, are often only temporarily monitored, for example in the event of a fault being detected or in temporary plant installations with low volume requirements and frequent product changeovers. In these applications, wireless technology improves the information on plant status, material flow and process sequence. It provides a basis for sequence and process optimization, asset management and decisions relating to preventive maintenance. Wireless technology improves the economy of process plants.

## Wireless Hart according to Endress + Hauser

The second example of the use of the WirelessHart solution is a series of indications from Endress + Hauser, one of the most important companies in the Process Automation sector. This part of the article refers to the technical presentation made by engineer A. Icardi (Endress + Hauser Italia SPA) during the ANIPLA AIS workshop in Milan. HART 7 has been available for several years: it is a protocol extension that is already available on almost all process devices on the market. Revision 7 is fully compatible with existing HART field devices and all HART compatible host systems. In terms of process automation, it should be noted that the HART protocol is the most popular field protocol with over 30 million devices installed. WirelessHart features fast and flexible installation, and new sensors can easily be added to the network.



## **Applications in the process automation**

The main areas of application of this wireless solution are the monitoring and maintenance of systems based on wireless sensor networks. Integration is essential for Wireless Fieldgate sensor networks. WirelessHART Adapter and WirelessHART Mesh Network are available - these devices can integrate any HART field device (20-4 mA, Modbus TCP, Ethernet/IP, HTTP RS485: HART, Modbus RTU) into the network. The safety features of the given reliability, usability coexistence with other radio signals allow using standard technology with cost-effectiveness. Retrofit integration with a long-life battery adapter is also possible. The system operates with AES128 & CCM encryption, self-organizing mesh network, TDMA, FHSS, DSSS, CCA, blacklisting FDT, DD, OPC, Modbus, Wireless monitoring. This solution can be used in process automation for pressure and temperature monitoring on wellheads, flow monitoring, process data monitoring on wellheads, process data monitoring along the piping of an extraction plant, inventory data monitoring in oil&gas tanks at refineries and depots, temperature monitoring on rotary kiln Tank Gauging system, pressure measurement at the relevant manifold.

The typical installation for each site is composed of 6 pressure meters, 5 temperature meters, 1 flow meter - each instrument with its own SWA70 adapter connects to 1 SWG70 Fieldgate within an area of approx. 100 m<sup>2</sup>.

### **General characteristics**

Wireless Industrial Sensor Networks, Acquisition/transmission data and monitoring over local wireless network 250 kBit/s with the following range: indoor 60 -100 m, outdoor up to 400 m low battery operation, GSM, GPRS 55, 6 kBit/s UMTS 1.8 Mbit/s.

Wireless Local Area Networks (WLAN), Connection between PLC, DCS, PC, High Speed: 11108 MBit/s Range: indoor up to 40 m, outdoor up to 300 m.

Personal Area Networks (PAN) (Alti consume)  
Local mobile wireless operation, for ex. Field  
Xpert with Bluetooth, Bluetooth speed:  
723,2 kBit/s Range: indoor 10 m.

The logo for Industrial Technology editorial office is located in the bottom right corner. It consists of a white hexagonal shape with a dark purple border. Inside the hexagon, the words "INDUSTRIAL" and "TECHNOLOGY" are stacked vertically in a bold, white, sans-serif font. Below "TECHNOLOGY", the words "editorial office" are written in a smaller, italicized, white, sans-serif font.

**INDUSTRIAL  
TECHNOLOGY**  
*editorial office*

## Glencore To Acquire Hail Creek Coal Mine In Queensland

Baar, Switzerland 20-04-2018 Glencore has reached agreement to acquire Rio Tinto's 82% interest in the Hail Creek coal mine and adjacent coal resources, as well as its 71.2% interest in the Valeria coal resource in central Queensland for a total cash consideration of US\$1.7 billion.

The remaining 18% of Hail Creek is currently owned by Nippon Steel Australia Pty Ltd (8%), Marubeni Coal Pty Ltd (6.67%) and Sumisho Coal Development Pty Ltd (3.33%). Each Joint Venture partner has the right to sell its share to Glencore through a "tag-along" right with respect to this transaction, which could result in additional consideration of up to US\$340 million.

The Hail Creek mine is located 120 kilometres south-west of Mackay and in 2017 produced about 9.4 million tonnes of coal for export from the Dalrymple Bay Coal Terminal.

In the 2017 financial year Rio Tinto's attributable share of Hail Creek was EBITDA of US\$408 million (US\$497 million on a 100% basis) with a pre-tax profit of US\$357 million (US\$435 million, on a 100% basis) and, including the Valeria resource, gross assets of US\$859 million (US\$1,013 million, on a 100% basis) at 31 December 2017.

Hail Creek is a large-scale, long-life and low-cost mine producing two-thirds premium quality hard coking coal and one-third thermal coal for export.

As at 31 December 2017, Hail Creek had JORC resources of 794 million tonnes with proven and probable reserves of 142 million tonnes.

The Valeria thermal coal deposit is located 265 kilometres west of Rockhampton and 67 kilometres south-east of our Clermont managed coal operation. It has JORC resources of 762 million tonnes.

The acquisition is subject to regulatory approvals and is expected to complete in H2 2018.

Glencore is already a significant contributor to the Queensland economy, employing more than 7,300 people across mining and minerals processing operations in coal, copper and zinc.

In 2017 Glencore operations contributed over A\$4.2 billion to the State economy in wages, goods and services, taxes and royalties, continued investment and community partnerships.

Our Australian coal business managed the production of more than 87 million tonnes of saleable coal last year from our 17 operational mines in Queensland and New South Wales.

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[www.criocabin.com](http://www.criocabin.com)

**CRIOCABIN**  
TASTE PRESENTATION

# Criocabin: the look of food storage



Eating habits have changed immensely over the past decade. There is a growing number of customers who lead a busy working life and pop in at the local deli to get some food. Food stores, cafes and snack corners have to adjust to these new trends by providing fresh and tasty food that is chilled at any time. They require convincing refrigerated display counters and display areas as well as appropriate cold rooms for food storage. CRIOCABIN SpA

**CRIOCABIN**  
TASTE PRESENTATION



is a manufacturer of cold store units and has been serving the market for two generations. Its products are top-notch solutions with regard to uniqueness, style and technology. The product range focuses on refrigerated display counters, self-service hot or refrigerated cabinets, and cold rooms. We create total display solutions using refrigerated display counters vertical and semi-vertical counters, along with new modern display concepts responding to the demand of the modern retail, Self-Cabinets Refrigerated and/or Hot Ventilated, salad bars, and all shapes and sizes of food display merchandising for fresh, unpackaged and packaged products. Our customer oriented approach, combined with a high eco ethic and top-notch solutions that cater for all customers has made Criocabin a well-respected name in the market.



# Taylor made solutions with different accessories and automatics lines

## IMT Intermato S.p.A.

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[www.imtintermato.com](http://www.imtintermato.com)

IMT Intermato S.p.A. started in 1983 its activity of design and construction of vertical lathes for the machining of aluminum alloy wheels. Over the years, the Company has constantly evolved with the introduction of the machines series for mechanical machining in general and with the entry, first in the Asian Market and then in the global one. Production and turnover have constantly grown as well as the production site. Currently, IMT Intermato S.p.A spreads over an area of about 15.000 square meters, has a turnover of around 50 million Euros per year and employs 120 people in the various departments, as well as specialized collaborators. Mechanical, software, electrical and plant design, production, assembly and testing are all phases carried out in our headquarters in Crosio della Valle, while other Companies, always on the Italian territory and of which IMT Intermato S.p.A. it is the mother company, realize ancillary machining and some key components. Our products are therefore fully made in Italy. The international presence is guaranteed by our service and spare parts points, directly managed by us (Indonesia and Germany) or through our close collaborators, especially in Shanghai, China, where we have a long-standing co-operation with highly qualified Technicians and spare parts warehouse. We are therefore able to operate quickly on the five continents, both with reference to maintenance interventions and for the supply of spare parts. Today IMT Intermato S.p.A. is a Supplier of complete turning solutions, able to assist the Customer in the definition of the technical specifications and to propose a range of tailor-made products, by ensuring at the same time high productivity with high quality standards. Although





maintaining its core business in the field of light alloy wheel machining, the production of IMT Intermato S.p.A. vertical lathes it is aimed at the various production sectors: automotive, aerospace, railway, heavy mechanics, oil & gas, nuclear and energetic fields, with solutions for pieces from a few tens of millimeters of diameter up to 6 meters and more. We offer several series of machines, each of which developed for a specific sector. The JW and RW series are destined to the machining of the light alloy wheels and they are sturdy, fast, reliable and precise machines, born from the constant development and from the over thirty years of experience of IMT Intermato. Summary of the production for this sector are our automated production cells, where the combination of high performance machines, automations developed by us and advanced process management, allow us to achieve surprising results in terms of productivity, quality and flexibility. For the automotive sector, the machines of VR series have been developed. They are vertical lathes with capacity up to around 400 mm of diameter, with possibility of self-loading configuration, for turning's machining and possible drilling/milling operations of the various components such as bearings, wheel hubs, brakes, flywheels and clutches. By increasing in size, we meet the VL series with the lathes model VL8, VL50 and VL60 dedicated to the machining in various application sectors of steel and other metals, with a turning capacity up to 1200 mm and configurations with turret or head. In the same range of dimensions, we have the machines of the S and P series, totally modular and customizable, that can be designed and manufactured according to the specific requirements of our Customers, by supplying a high performance product. In the sector of the big vertical lathes, we have developed the mono-column of NTM series and double-column of VBM series with capacity respectively up to 2 meters and up to 6 meters and more with mobile crossrail and hydrostatic movements. These machines also, can be customized with multiple configurations and accessories, such as pallet exchange systems, tools magazine, double ram, versions for milling operation, grinding operation, angular heads and so on. The possibility of customizations allows for having a wide range of products that are well suited to the most varied needs of the various productive sectors, which in some cases require large powers and considerable removal capacity and, on the other hand, in other applications, require extreme precisions and advanced technologies. The common denominator of all the machines is the philosophy of IMT Intermato: turnkey solutions specifically designed for the Customer, which allow the achievement of high production objectives combined with high quality.

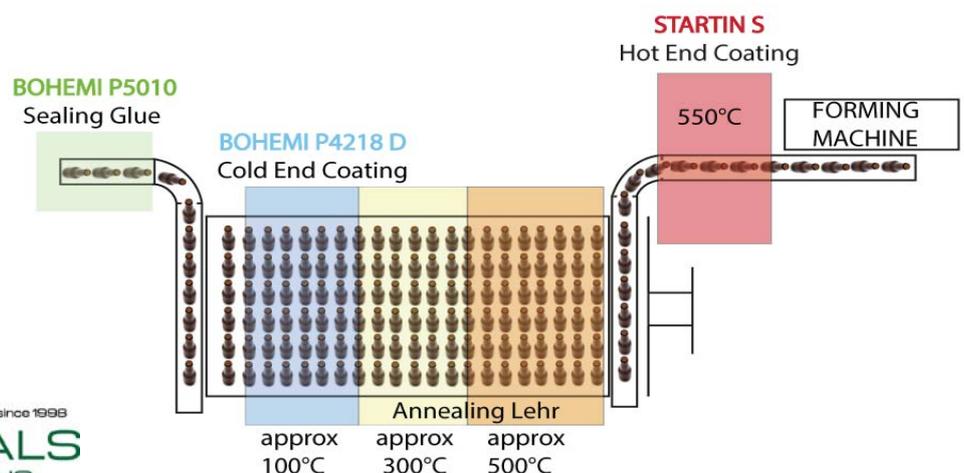
# High quality coatings for the hollow glass industry

## ABOUT BOHEMI CHEMICALS

Since 1998 we provide high quality coatings for the hollow glass industry from our warehouse in Milan, Italy to more than 100 customers all over the world. During this 20 years of activity we developed an expertise in the problem solving of the quality of hollow glass from the hot tunnel to the labelling process. Bohemi Chemicals' philosophy is to focus on a limited range of products as long as they are on the cutting edge of quality and are capable of providing a real added value.

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**STARTIN S** : pure MonoButylTinChloride (MBTC3) at 99,0 % to be sprayed on the bottle just after the forming phase at 550-450°C. The pure Tin layer remaining from the evaporation of the MBTC3 closes the microcracks of the glass caused by the rough surface of the mould, enhances the overall mechanical strength of the bottle and provides a grip for the successive cold end coating anchorage is provided. Startin S beyond being pure al 99,0 % presents a double quantity of stabilizer component making it suitable for more than 6 months storage.





since 1998

# BOHEMI CHEMICALS

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If you encounter problems in the quality of your glass such as scratches, white spots or blocked spraying system's filters we can solve them as done in many manufactories all over the world.

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Monobutyl trichloride  
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#### COLD END COATING (High Quality)



##### BOHEMI P4218 D

Polyethylene emulsion.  
Recommended for beer and wine bottles.  
Avoids the formation of residues in filters, pipes and solenoids.

#### COLD END COATING (Very High Quality)



##### BOHEMI P1500

Copolymer and Waxes emulsion.  
Suitable for precious bottles as liquor, champagne or returnable containers to be sterilized.

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## -COLD END COATING

Cold end coating is based on Polyethylene Waxes with a 20-25% solid content and has a strong impact on the overall result, finishing and lifecycle of the bottle; it is applied after the annealing Lehr (150° - 90° C). Sprayed on the bottle with appropriate and well oriented guns, it forms a protective plastic layer anchored on the hot end coating enhancing scratching resistance and avoiding the typical white ring on the its shoulder. Bohemi Chemicals supplies 3 Cold End Coatings suitable for different types of production requiring different quality specifications: standard bottles, luxury bottles and tableware.

**P4218 M** : standard quality cold end coating suitable for a generalist production such as for wine, beer or water bottles which do not justify the use of costly treatments.

**P1500** : very high quality coating suitable for luxury bottles such as for cognac, whiskey and champagne bottles. Thanks to its superior strength it has a proper application in returnable bottles which have to face an extended lifecycle and periodical sterilizing processes with caustic soda which may remove the coating. P1500 is a very versatile product capable of maintaining its properties in a wider range of application parameters as concentration percentage, spray angle and temperature.

**EN21** : the cold treatment for tableware items which are normally subjected to minor mechanical stresses thanks to the dedicated packaging and direct path to the final consumer. EN21 is specifically formulated for this type of products to have the best quality/cost ratio.

## -SEALING GLUE

Glass packaging is widely perceived as a high-quality choice from the consumers, and many food producers base their products' positioning strategy on this characteristic. Nowadays we can find in supermarkets a wide range of glass containers such as for yogurts, chocolate creams, jams, perfumes and medicines. The Food's Safety Regulations impose a strictly procedure for the packaging and in many case the container must implement a protective foil film between the content and the external cap.

**P5010** : is an aqueous dispersion based on high molecular weight ethylene copolymer thermoplastic having an excellent adhesion on glass. It provides a heat seal film capable of perfectly closing the container with the aluminium or paper sheet. Differently from other products which have to be applied by the food producer when he fills the jar, P5010 can be applied on the justly created container, left to dry and be secondly thermally reactivated when the jar is filled and closed by the external cap. In this way the glassmaker can offer a more complete service and the food maker can forget about the glue's supplying and application. Furthermore, P5010 does not leaves the typical and annoying aluminium or paper residues when the product is opened by the consumer.

# FMB

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Customer's loyalty is now a reached goal, thanks to our trade policy geared towards "customer's satisfaction".

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helpline, permit to consolidated and new customers to never feel alone. The seriousness of our company can be easily measured through another parameter: it is possible to quickly obtain official spare parts for outdated and no longer in production machines. The customer's centrality is proved by specific assistance programs carried out at our headquarter, for maintenance intervention and specific training. It is in the sharing of know-how between company and customer that lies, for FMB, a virtuous practice to be perpetrated day by day. These are the PLUS that for 35 years have made the difference in FMB.



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# The SEALCORE Network active for many years in the production of customized articles

The SEALCORE Network is the result of the union of some entrepreneurial Italian Companies active for many years in the production of customized articles to drawing and technical components for various industrial sectors. The Companies of the SEALCORE Network are active worldwide in the following industrial areas:

Aerospace - Wind - Mining & Earth Moving Equipment - Primary Metals - Pulp & Paper - Naval & Marine - Food - Automotive - Automation - Chemicals - Petrochemicals - Pharmaceutical - Hydraulic, Heating & Sanitary Systems - Dynamic & Static Sealing - Heavy Duty and General Industry.

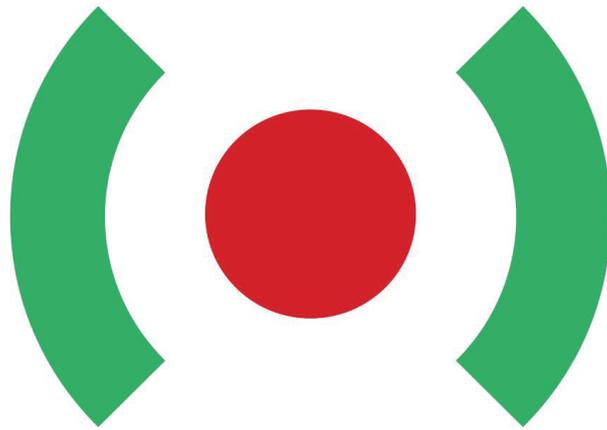
The SEALCORE Network is made of 12 Companies grouped under 7 main production divisions for a total of 652 employees and 130 million € in sales in the year 2017. About 44 million € have been invested between the year 2015 and the year 2017 in technology, infrastructure, people, training and equipment, and further 21 million € are planned for investments in year 2018. The lean management and a focus on the service to the customer, in addition to a guaranteed quality Made in Italy are the strength of the SEALCORE Network and its seven main production divisions:

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with our quality  
made in Italy”*



sealcore.net

**sealcore**<sup>®</sup>  
network



**fluortek**<sup>®</sup>  
PTFE and Technopolymers manufacturing



## SEALCORE



-DUEPI: Molds design and manufacturing. Production of Injection molded custom-made articles in various techno-polymers and liquid silicone ([www.duepistampi.com](http://www.duepistampi.com));  
-FLUORTEN: PTFE, PEEK and High Performance Techno-polymers. Stock shapes and customized engineered components ([www.fluorten.com](http://www.fluorten.com)). Norsok M-710 ed. 3 and API 6A approved materials available. ISO EN9100:2009 certification for aerospace available;  
-F.LLI PARIS: Rotary Shaft Oil Seals and custom-made articles to drawing in elastomer and rubber-to-metal ([www.fpparis.com](http://www.fpparis.com));  
-ATS: Special and large size rotary shaft oil seals for applications in the heavy-duty industry, and custom made oversize parts to drawing ([www.atsoilseals.com](http://www.atsoilseals.com));  
-SLIB ITALY: Self-lubricating bushings and washers for valves and other applications in the hydraulic, energy and metal industry ([www.slibitaly.com](http://www.slibitaly.com)).

All this is much more is SEALCORE Network.

Discover us under [www.sealcore.net](http://www.sealcore.net) or download our SEALCORE APP from the Google store.

# We connect Homes by re-inventing Security Products & Solutions

**Ksenia Security recently launched what they are terming as “the largest scalable hybrid control panel” that ranges from 40 to over 1000 I/O for Security as well as Home & Building Automation.**

The new panel has been designed for the present digital industrial revolution, and in fact is called the **lares 4.0**. It is not only manageable but even programmable from any mobile with a dedicated APP (Ksenia Pro) for the Professional Installer only.

According to Ksenia, the new lares 4.0 represents by far the most advanced and reliable Solution in the digital revolution (IoT) in terms of Security (Intrusion, Video-surveillance, Access control) and the Home & Building Automation markets. Users are able to manage a number of outputs equal to the number of inputs (detectors) in order to control lights, climate, irrigation, automatic doors and windows, or, in short any type of automation or appliances. In other words, on top of all the required security functionalities, even the Smart Home or Smart Building features can now be managed by a single User APP (lares 4.0) and programmed by the Installer from any mobile terminal via the Ksenia Pro APP.

In spite of its dimensions, the control panel's mother board is incorporated with a native Ethernet port as well as the onboard wireless transceiver (868 MHz bi-directional) and so is compatible with all existing wireless Ksenia's peripherals. These control panels are also equipped with a double BUS system and detachable connectors.

All mother boards are designed to operate directly on-board (with no need to have a communication BUS so as to enhance



# KSENIA SECURITY



the transit speed of all data) both the 3G Module (and soon the 4G-LTE) and, where required, the PSTN Module. This ensures that the transmission of voice messages, emails, contact ID and SIA DC-09 Level III Protocol to the CMS (Central Monitoring Stations) is provided in any application communication. The Installer APP also enables the centralization and geo- localization of all panels installed and therefore offers the utmost in terms of maintenance and service by means of push notifications even for technical alerts (valid for all IoT panels: Lares 4.0 and Lares wls).

The lares 4.0 platform has been developed and manufactured with what Ksenia believes to be unprecedented characteristics of power, calculation speed and capacity of memory calculations (even compared to the traditional lares) as specified in the table below.

	lares	lares wls	lares 4.0
Flash memory (spazio codice)	512 KB	2 MB	4 MB
RAM	96 KB	512 KB	512 KB
CPU Clock	80 MHz	120 MHz	240 MHz
Drystone MIPS (MLN.Istruzioni per sec.)	132	240	480
NAND data memory	8 MB	16 MB	32 MB
NOR data memory (eMMC)	-	4 GB	4 GB
SD card slot	no	si	si

# INDUSTRY 4.0: MOBILE REVOLUTION

# lares 4.0

The most Innovative **IoT** Solution  
for Security and Home &  
Building Automation

# Expertise and innovation in material handling and production logistics

## GENERAL

BONFANTI owns a proven experience in development of specific solutions in the segment of material handling and production logistics. Our company staff has the aim to plan the most effective strategies in order to facilitate material handling with the consequent optimization of process timing, allowing in this way to our clients to increase the profitability of their activities, guaranteeing maximum level quality and safety standards. Expertise and innovation in every branch of activity are the key words of BONFANTI design and development. Our range of products represents the optimized response to all requirements of the clients: from material handling to equipment feeding, from warehousing to process control and monitoring.

BONFANTI is involved in design, production and installation of:

- lifting equipment,
- material handling and storing equipment,
- SW applications and systems.

BONFANTI also provides consultancy and turn-key projects in EPC organization (Engineering, Procurement and Construction) for the supply of complete factories and systems.

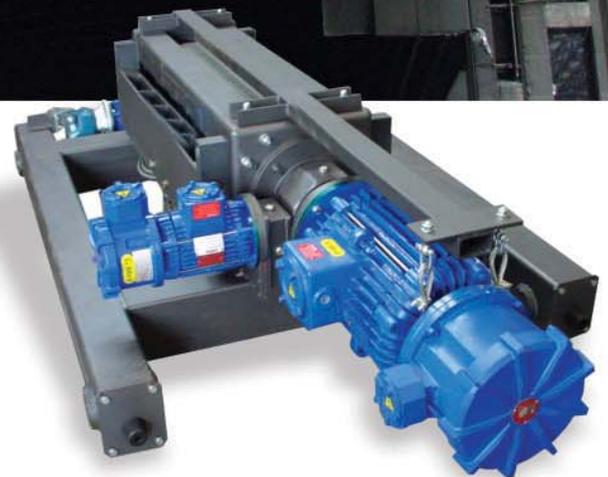
Our product range includes:

- standard lifting equipment (man-operated),
- other material handling machines and systems,
- automatic warehouses,
- process monitoring and control,
- general engineering.

BONFANTI has a dedicated line of products for different industrial sectors, offering products that vary from relatively simple maintenance cranes and/or other lifting equipment up to specific process or heavy duty equipment with capacities up to a 400t.

## BONFANTI STANDARDS AND QUALITY

BONFANTI equipment is designed using FEM and ISO standards in accordance with the MACHINERY DIRECTIVE for



- Overhead bridge cranes
- Other lifting equipment
- Crane kit - crane components
- Bonfanti for steel - lifting solutions for steel industry
- Explosion proof lifting equipment
- Automatic handling systems
- Automatic warehousing solutions

**Bonfanti** •  
INTEGRATED HANDLING SOLUTIONS

**Bonfanti S.r.l.**  
Strada Statale Briantea 4, 24030 Ambivere (BG), Italy  
Tel. +39 035 908911 Fax +39 035 908909  
[com@bonfanti.it](mailto:com@bonfanti.it)  
[www.bonfanti.it](http://www.bonfanti.it)



CE marking. Their dimensioning, besides the standards, takes into account both the particularities of the service as well as the conditions present in the work area where they are going to be used. Since long time already BONFANTI has been operating under the control and quality assurance regime certified ISO 9001 for the following activity fields: design, fabrication, installation, commissioning and after sales support. Paying maximum attention to the standardization of spare parts and proposing Spare Part Kits carefully chosen, BONFANTI offers to the Clients the opportunity to contain the costs of their supply and to minimize the reparation times (and production loss times) that, consequently, generate costs much higher than those dedicated to spare parts. Our mission is to offer expertise and products to the clients whose main objective is the increase of profitability of their company activities and of internal logistics efficiency.

#### **BONFANTI FOR STEEL - HDC EQUIPMENT**

In order to provide valid replies to Client requests for always bigger productivity, BONFANTI has developed the “HDC” range of products dedicated to steel industry, able to satisfy always more complex operational requirements with the increase of uptime and reduction of time losses. The “HDC” equipment is studied to respond to the specific requirements of this extremely heavy duty sector such as:

- safety,
- reliability,
- highest performance levels.

This range of products consents to cover all the production process handling starting from raw material/mineral/scrap going all the way to the final phases dedicated to storage and dispatch areas. Since every application inside the steelworks presents its own particularities, requiring specially designed solutions, BONFANTI has diversified its “HDC” range based on various stages of the production process. Being orientated toward continuous improvement, the solutions applied on “HDC” equipment get constantly updated to make them always more suitable to solve specific issues related to this sector such as:

- presence of heat sources and dusts,
- management of limited maintenance periods,
- operators safety.

The design basis of “HDC” equipment assumes maximum care to the aspect of standardization of mechanical and electrical parts in order to make less burdensome the supply of spare parts. All this consents to provide to the end users the experience and products whose main objectives are the increase of productivity and logistic efficiency with particular regard to the increase of safety and to reduction of the maintenance costs.

### **BONFANTI FOR HEAT TREATMENT - HT AUTOMATIC EQUIPMENT**

The “HT” equipment are designed to manage AUTOMATIC handling and storing activities for the Forging/Heat treatment processes. The typical destinations are: forging, wireworks, fastener and bolts productions. The modularity of the “HT” solutions permits to realize a complete engineering of the logistic processes.

The main features are:

- anti-sway mechanical system to avoid any oscillation during the execution of the handling/storing process,
- automatic identification of the material to be handles,
- dimensional verification of the material,
- automatic positioning of the material (to be treated and treated) in a complete process area including the loading of the furnaces, of the annealing water baths and of the cooling platforms.
- automatic storing in WIP Warehouses for the material to be treated and treated,
- automatic evacuation of the treated material from the working area,
- process data exchange with ERP and MES external applications.

### **BONFANTI FOR PICKLING - “PP” AUTOMATIC EQUIPMENT**

The “PP” equipment permits a fully Automatic management of the material handling for the pickling plants. The typical destinations are: Wireworks, Fastener and bolts productions.

The main features of these systems are:

- designed and produced to operate in corrosive and heavy environments typical of the pickling plants,
- anti-sway mechanical system to avoid any oscillation during the execution of the handling process,
- complete management of the working cycles,
- automatic positioning and execution of the movements of the material between the pickling tanks,
- complete control and certification of the dipping times,
- different working cycles in base of different kind of material,
- possibility to handle, at the same time, different kind of materials.

### **BONFANTI FOR STORING - “WS” AUTOMATIC EQUIPMENT**

The “WS” equipment are designed to manage the AUTOMATIC storing of material having big dimensions and/or heavy weight (like Steel and Aluminium coils, steel billets, brass billets and profiles, Aluminium and steel plates, profiles, bars). The main features are:

- anti-sway mechanical system to avoid any oscillation during the execution of the storing process,
- automatic handling (aerial with automatic stacker cranes and ground with combination of conveyors and shuttles according at the logistic and cycle constrains of the application) of the material during the receiving (input), storing and releasing (output) of the material,
- automatic verification of the material dimensions before the storing,
- automatic storing of the material in base of the availability of the space inside the warehouse and in base of the preconfigured storing logics,
- complete management of export (pickup) lists in order to automatically provide the material in the output bays in base of the required retrieval list,
- automatic reordering of the warehouse in order to optimize the space use and to minimize the future storing/retrieval cycles,
- data exchange with ERP and MES systems for the receiving of the material data, the picking list and for the transmission of the warehouse storing cells and the I/O missions.

### **BONFANTI FOR PLASTIC**

BONFANTI is market leader for Automatic handling, storing and packaging systems for the Plastic Film Production. A complete range of equipment and systems is available to satisfy any process requirement in this production process.

More information is available on the BONFANTI website ([www.bonfanti.it](http://www.bonfanti.it)).

# Italian manufacturer, specialized in metal and plastic components and accessories for metal can industry

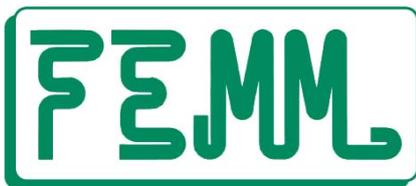
FEMM is an Italian manufacturer specialized in metal and plastic components and accessories, targeted at the packaging industry (general line for chemical products, lubricants and paints).

Through its 40 years long history, the company has become a reference for the industry.

Provided with a background in the tin cans manufacture sector, the founder Emilio Ganapini realized soon how strategical could have been an offer of products and services customized on the needs of the metal packaging industry. From there he decided to start his own business, alongside a few selected partners.

The original team is still active in the company, assisting the 'second generation' that has nowadays taken the reins at the head of the company.

We supply a wide range of items, spreading from wire and plastic handles, to welding plates (couplings and clips), earlugs, rivets, plastic handles and band, which all suit to tin plate / black steel cans, pails and drums.



METAL AND PLASTIC PACKAGING COMPONENTS MANUFACTURER



**METAL AND PLASTIC PACKAGING COMPONENTS MANUFACTURER**



- a perfect integration with the customers supply chain
- excellent response time and fast delivery service
- empathetic and proactive customer service
  - high-quality product standards
  - ISO 9001 process certification
- available for product developments and customization
- acknowledged partner of the world's leading manufacturers of industrial packaging machinery

**FEMM s.r.l.**

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website: [www.femm.it](http://www.femm.it)



Our internal processes are certified according to ISO 9001 regulation. Nonetheless, our effort to comply with customers needs goes further. We unceasingly strive to enhance the level of performance in terms of support offered to our clients. High degree of reliability, respect of requested deadlines, flexibility in logistic, prompt information flow are among our distinguishing pluses  
“For more information: [www.femm.it](http://www.femm.it) | [info@femm.it](mailto:info@femm.it)”



# Generac Mobile Products for the mining environment

Located near Milan, Italy, Generac Mobile Products is a company specializing in the production of mobile lighting towers. Since establishment in 1997, the company has developed dozens of different models of lighting towers to fit any customer's needs, from mining companies to equipment rental companies. To date, it has specific solutions for mining, quarries, roadworks, building sites, mobile surveillance, army, events, amongst others.

Very active all over the world, Generac Mobile Products entered the African market many years ago, establishing dealerships in many countries to cater for needs of various industries.

Thus far, Generac's lighting towers are spread over almost the entire African continent, where they are being utilized in big mining sites. As example, their products are being utilized in Iamgold mines in Mali and Burkina Faso, copper mines in the Democratic Republic of Congo, iron ore mines in Swaziland, over and above diamond, chrome and coal mines in South Africa.

One of the most "mining-specific" solution amongst Generac wide product range is the new VMAX LED, says the company's Sales Manager for the African market, Davide Salesi. "This is a specific mobile lighting tower equipped with 6 powerful 320W LED lamps, able to illuminate a working area of more than 5000 square meters."

"African mining companies should look forward another recent model of lighting tower, the VTevo," Salesi reveals. "The VTevo is a model that we launched on the market in the second half of

**GENERAC**<sup>®</sup> | **MOBILE  
PRODUCTS**

## GENERAC MOBILE PRODUCTS



2016. Its main features are: 4x320W LED lamps, 8m vertical telescopic mast, very compact shape and two different, fuel saving, engines available, with up to 240 hours of running time.”

These days are hundreds, if not thousands of LED lighting products on the market, and Generac tells African mining companies to be circumspect when making crucial procurement decisions.

“Even though we have still traditional models with 4x1000W metal halide lamps available, we are gradually moving to a complete LED range, for example VT EVO and VMAX are both LED models. Cognizant that LED is very important in the mining sector, we have ensured that the lamp life of our products is much longer and the LED floodlight, is very robust and resistant to bumps, shakes and vibrations. It’s very difficult to break it in a mining field.

“Energy-efficiency is another benefit of our products. As you might be aware, a 320W LED emits more light of a 1000W metal halide but absorbs much less power. This allows to equip the lighting tower with a small engine, decreasing drastically fuel and maintenance costs and increasing running time,” Salesi says.

“For these reasons, we have noticed that most of our customers are replacing all their metal halide light towers with LED models,” he adds.

With 20 years of experience in the lighting tower manufacturing, the company is able to quickly design and produce special models specific to customer’s requirements. Generac Mobile Products has also available other product lines suitable for the mining market, such as power generators and dust control systems.

You can find more information about all Generac’s products on [www.towerlight.com](http://www.towerlight.com).

# GENERAC MOBILE PRODUCTS

## THE SPECIALIST, SINCE 1997

### VT8

1000W Metal Halide  
3 engines available  
Compact and powerful



### VTevo

4x320W LED  
Long running time  
Low fuel consumption



### VMAX 2

6x320W LED  
Wide illuminated area  
Robust, ideal for any application



Generac Mobile Products can provide you with a full range of different products for construction, industrial and mining sectors, such as mobile lighting towers, dust control systems, vacuum assisted pumps, power generators and much more. **Be different.**

**GENERAC** | **MOBILE PRODUCTS**

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# INDUSTRIAL TECHNOLOGY



*The international magazine  
about machines, components,  
plants and automation for the  
Oil&Gas - Petrochemical -  
Chemical - Energy sectors*

**Industrial Technology** is an international magazine that deals with machines, components, instrumentation and automation for Oil & Gas industries, petrochemical, chemical and energy. It contains news, information and case histories of products, technologies, suppliers and manufacturers. The insights are mainly related to complete installations, automation, control, instruments, valves, pumps, compressors, blowers, boilers, heat exchangers, process units, pipes, systems, software, seals, PTFE, bolts and fasteners, tanks, analysis and control, and in general to every product and service that can be used in the industrial process.

## **PARTICIPANT COMPANIES - WHO ARE THE ADVERTISERS**

The magazine has a broad and targeted distribution, and is an excellent tool to promote manufacturers, OEMs, suppliers, installers, engineering companies. There are interests, either for the companies that want to be known by the end user, the contractor, the EPC, also the companies that want to promote themselves with OEMs. Thanks to a specialized work distribution and reporting, advertisers are guaranteed to have a commercial return in terms of expendable contacts.

## **THE TARGET OF READERS - WHO READS**

Industrial Technology reaches more than 50,000 companies worldwide, with a particularly careful and effective distribution in the Middle East. Readers belong mainly to the oil and gas industries, chemical, petrochemical, or are distributors, engineering companies, consultants, contractors, OEM and EPC. The magazine also reaches the main fairs and major trade associations of various countries, in order to have the widest possible dissemination among stakeholders.

## **THE EDITORIAL TEAM - ABOUT US**

The magazine is produced by industry professionals to meet the technical and commercial needs of companies. In addition to publishing specialists, marketing and communications, they collaborate with the magazine engineers and active trading in the market. The team is international in order to cover the most of the major distribution areas - Europe, Arab countries, Iran and Africa - and takes advantage of a partnership with an import-export company in Tehran.

# Which markets are you interested in?

Industrial Technology is distributed worldwide, and it covers especially the following markets



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# The Applications and Uses of Industrial Centrifuges

## What is an Industrial Centrifuge?

A centrifuge machine finds application across industries for fast and efficient solid-liquid separation. An Industrial centrifuge employs the centrifugal force to produce energy that exceeds the gravitational force by at least 50 times to facilitate the separation of suspensions that contain solids and liquids. Industrial centrifuge machines are available in several makes and models but almost all of them can be classified into two main categories.

In the first category are centrifuge machines that separate solids and liquids through sedimentation depending on the difference in density between two phases. The second category of industrial centrifuge comprises filtration machines that force the liquids through the filter using the centrifugal force. A few centrifuge machines are designed to perform both these functions in a single unit but some may discharge solids intermittently while the others may be able to perform this function continuously.

## **Sedimentation Centrifuge**

The sedimentation centrifuge is relatively slow in speed and features a separator with a large diameter that not only facilitates intermittent removal of accumulated solids but also continuous, high-speed sedimentation with periodic or continuous discharge. Certain centrifuge machines can also separate solid particles according to their particle size or density.

Slow-speed sedimentation centrifuges contain imperforate bowls and their operating cycles span over several hours. From compacting solids to skimming to unloading, all of these operations can be performed manually or they can also be automated. High-speed sedimentation centrifuges with manual discharge comprise both tubular and disk machines for solid-liquid separation. Certain industrial centrifuge machines are designed to run at speeds up to 15,000 r.p.m. while generating a centrifugal force that is 15,000 times higher than the gravitational force. Sedimentation centrifuge machines feature a simple operating mechanism and are easy to clean and maintain.

## **Filtration Centrifuge**

Filtration centrifuge machines are used for separating suspensions in slurries that contain larger solids. When the unclean liquid that is to be purified, enters the separator that is rotating at high-speed, the solids get trapped in the walls under the effect of centrifugal force and the clean liquid flows out from the other side. This type of centrifuge typically finds application in the filtration of sediment flow, stones and sand.

Filtration centrifuges work on the principles of centrifugal force and gravity for solid-liquid separation. Water enters at a tangent in the body of the centrifuge where the centrifugal force moves the high-density solid particles towards the wall while pushing the stones and the sand into the tank and the water in the downstream outlet.

## **Applications of Centrifuge Machine**

Centrifuge machines find application in a wide variety of industrial processes which can be further divided into the following different categories.

**Wastewater treatment:** Used for separating municipal waste, organic waste, dissolved air flotation, mud, environmental sludge, and trapped grease.

**Chemical processing:** Used in the production of raw materials like salts, acids, polymers, oil-water solids, and by-products of oil refineries.

**Synthetic fuels:** Used in the biofuel industry for separating synthetic fuels, ethanol, and biodiesel, in the purification of lube oil and for dewatering algae biomass.

**Food processing:** Used for refining dairy products, vegetable oils, brown grease, fruit juice, for liquor clarification, and for beef and swine rendering.

**Mining:** For processing minerals like tar, coal, precious metals, kaolin clay, copper, sands and calcium carbonate.

Industrial centrifuges are used in approximately 200 industrial processes for solid-liquid separation.



**Author Bio:**

Jigar Patel is the director of Oriental Manufacturers. He believes in the power of good functional designs and its ability to boost productivity and drive growth. Fuelled by his passion for innovative designs and all things EPC, Jigar took to blogging about all the information and technical know-how he has amassed over the years. He writes on topics related to process machinery production, turnkey solutions, best industry practices and his personal insights!

The logo is a white hexagon with a dark purple background. Inside the hexagon, the words "INDUSTRIAL" and "TECHNOLOGY" are stacked vertically in a bold, sans-serif font. Below "TECHNOLOGY", the words "editorial office" are written in a smaller, lowercase, italicized sans-serif font.

**INDUSTRIAL  
TECHNOLOGY**  
*editorial office*

# Orlando srl, highly specialized in pumps and accessories



ORLANDO srl formed in 1994 and export to 118 countries. Their products are used in the following sectors:

Hydraulics, Agriculture, Thermo-sanitary, Air, Purification plants, Food Industry.

In particular, we are highly specialized in: pumps (surface, submersed, vacuum and special AISI 304 and AISI 316 pumps) Franklin and Orlando electric motors, accessories for pumps (such as original Square D and Telemecanique Pressure switches, pressure gauges, tanks, control boxes, float switches, flexible hoses and capacitors) Blowers, Pumping unit, water filters, Pressure regulators (Presscontrol, Controlpump, Mascontrol, Controlpres) Valves.

Orlando promote the sales of Italian products in the International market, thanks to a very well-organized commercial department, offering to the customers a multi-language assistance.

Orlando operates with some of the most important distributors, able to develop, professionally, the sales of innovative products in the market. Orlando is certified ISO 9001:2000.

 SQUARE D



 Telemecanique





4" and 6" SP S/ Steel Submersible pumps  
 4" ST S/Steel Submersible pumps noryl impeller  
 4" and 6" Submersible motors MADE IN ITALY



(7x7) 3,4,5,6 and 8 mm  
 AISI 316 S/Steel cable



AISI 316 S/Steel  
 wire rope clips

5" Submersible electric  
 Pump Made in Italy



### Tanks



### Square "D" - Telemecanique



Pressure gauges



Connections



Anti-vibration  
 Flexible hoses



Flow switches



### Pressure regulators



Filters & Cartridges



### Float switches



# Politec, Made in Italy excellence



## Made in Italy excellence

Politec is an Italian company that specialises in the design and production of active infrared anti-intrusion perimeter barriers designed specifically to protect outdoor perimeters.

For more than 20 years, Politec has been creating the most advanced products with high quality and technological standards, combined with ease of use and installation, made entirely in Italy.

Politec has the technology and the expertise to design and manufacture intrusion detection systems, offering the solution for the indoor and outdoor perimeter protection of your property.

Over the years we have developed a notable and innovative

 **POLITEC**  
Perimeter protection

# MANA SMA



## Barrier for protecting large perimeters.

Mana is the new barrier designed by POLITEC for outdoor protection of large sites. MANA can be composed and configured to match the installation requirements and the level of security required: only IR, only microwave, double "dual technology" or "triple technology", where there is a Doppler microwave that covers the dead zone.



HIGH INTENSITY  
LEDS  
VISIBLE AT 250 m

MANA can be connected and managed remotely via RS485 BUS

### MANA DT3 triple technology

This version has a Doppler microwave installed inside the column to protect the blind zone.

## Performances

- Outdoor range 250m
- Random delay
- Parallel or crossed beams
- Fog disqualification with dedicated output OC
- Random AND or bottom two beams activation
- Exclusion of the first beam or the lower two beams
- Wired or optical synchronization

- Antimask detection with dedicated output OC
- Crawl detect on bottom beam
- Adjustable response time
- optical synchronization
- Exclusion Leds
- RS485 connection (only with wired synchronization) with the Adbus system
- Dimensions 25 x 20 cm - H 1,2 ÷ 4 m.





research and development resource that enables us to meet the requirements of a challenging and demanding market and to adapt to our customers needs, who are ever more aware of a need of security.

WS SMA - HIBRID SMA - SMA SOLAR are defacto new product lines meeting all the market demands even for the most critical installation environments.

Politec is constantly committed to designing innovative products and systems to meet the requests for customised solutions.

A partner who supports you from the design phase: Politec works closely with architecture firms, builders and engineers to draw up technical specifications for public, residential or industrial projects that require intrusion detection systems.

# Carlo Salvi headers: Technical solutions, high-quality materials, and attention to detail

## COMPANY HISTORY:

The company was founded in 1939 by Mr. Carlo Salvi, with the purpose of building mechanical descenders. In the late 40's started the production of flat die thread rollers; shortly after, the production of head slotter machines for the screw market was begun.

In 1952, the first single die - double blow header to produce screw blanks was built, with an immediate success.

The first market which appreciated its technical qualities was Germany, overcome by the U.S. market only in the middle 70's. In the early 70's was introduced a new line of headers for the semi tubular and fully tubular rivets. These machines allowed to produce up to 600 rivets per minute, with very low production costs. In the 80's new headers were added: two die four blow and progressive.

Since the 90's have been introduced ranges of progressive headers with 5 and 6 dies for the production of parts with particularly complex shapes, included tubular rivets, capable of handling wire from 1,2 up to 24 mm. in diameter.

Presently the company is developing an its own technology, not only for the cold heading but also the hot heading, using induction processes capable to heat the wire up to 900 °C.

This technology opens new horizons to Carlo Salvi for the heading of materials which can not be formed by cold process, like titanium and other special alloys especially used in the aerospace and automotive industry.

As of April 1, 2016 Carlo Salvi S.p.A. is joining forces with Hatebur Umformmaschinen AG. This acquisition represents for both companies a great potential and will allow Carlo Salvi

carlo / salvi

A HATEBUR COMPANY



S.p.A. and Hatebur to be a strong and powerful supplier of innovative and advanced cold, warm and hot forming solutions and services to the market.

### **MANUFACTURING PROGRAM:**

#### ***1-die 2-blow headers***

This kind of headers allows to head up to six diameters of material and offers the possibility to produce components with quite complex shapes. Main features: high speed and precision to head screws, semi tubular rivets even with a shouldered shank and tubular rivets, granting a remarkable tool life and an easy manintenance.

#### ***2-die 4-blow headers***

These headers allow to obtain components with complex shapes which cannot easily produced on multi station machines, where it is necessary to transfer the part several times, because the shank is very short or the head too big. Components which can be obtained: screws, shaped semi tubular rivets and tubular rivets with large head.

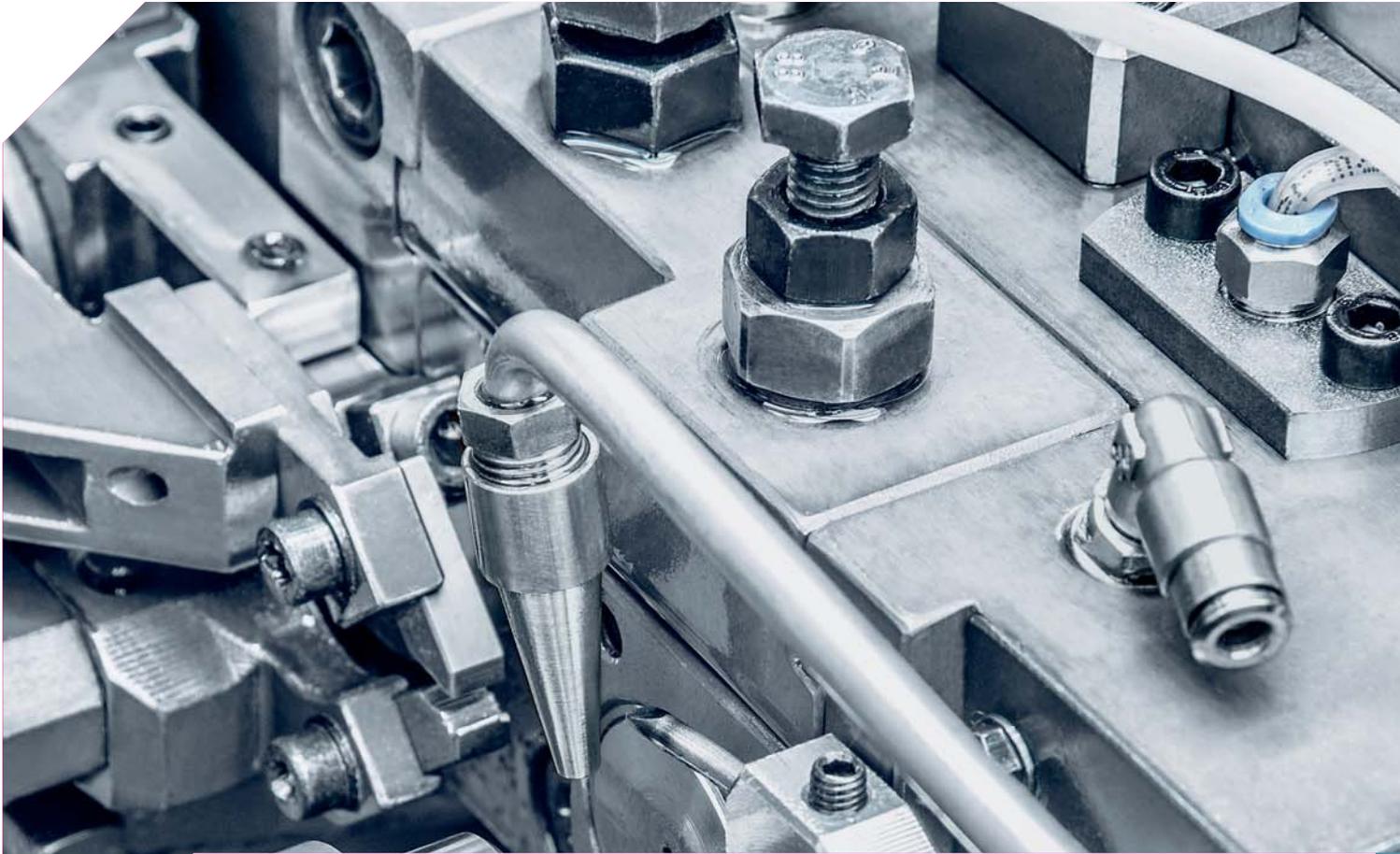
#### ***Progressive headers***

The progressive headers allow to produce with high precision special parts with very complex shapes, which are used in various fields of the market and particularly in the automotive and in the aerospace industries.

Since 2012 Carlo Salvi is investing in men and equipment to rebuild machines by its own but even by customer's facilities: a new service that is gathering a big success and interest.

### **FACILITIES:**

The administrative offices are located in Milan, since the year of the foundation, 1939. The management, accounting and commercial offices as well as the development department, the production area, the assembly room and the spare parts warehouse are in Garlate. At the end of 90's Carlo Salvi USA was established in Toledo, Ohio, with the aim to better serve the customers of North America, Canada and Mexico. Since April 2011 is operating the Chinese subsidiary, Carlo Salvi (Guangzhou) Machinery and Equipment LTD. Since April 2013 is fully operative the Uk branch, Carlo Salvi UK Limited, located in Birmingham area.



Carlo Salvi CS 001

## 1 die - 2 blow header for highest precision and productivity

The perfect machine for the production of screw blanks and solid parts. Small quantities as low as 5'000 parts are profitable due to the minimized set-up time.



**carlosalvi@carlosalvi.it**

Please get in touch for any questions you may have.

For technical information and brochures,  
visit [www.carlosalvi.com](http://www.carlosalvi.com)



### Highlights

**Suitable for the heading of very small parts**

– Up to 660 parts per minute

– Wire diameter from 0.6 mm up to 3 mm

– Equipped with Toggle Action system for smooth forming process

– Complete with P.K.O.'s on both punches

# Teco spa, the perfect partner for the industrial sector

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Teco Spa is a real point of reference in the field of technical products for the industrial sector: the company, based in Brescia, has been able to build over time a leading role in this market, thanks to an extensive and innovative offer, and great experience gained in over forty-five years of activity. The company's added value lies in the fact that it not only operates in the exclusive distribution of technical equipment for the mechanical and industrial sectors but also that their products meet the customer's requirements from the initial installation through ordinary and extraordinary maintenance.

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### **GREAT ATTENTION AND CARE**

The attention to quality is extremely high and all the items imported for Italy come from ISO9001 certified companies of the major industrial countries in the world. Also the customer care is of high level: for this reason, the clients who turn to Teco Spa can find concrete answers and practical solutions through a personalized, tailor-made service; they can also count on a well-stocked warehouse with an impressively rich stock which makes the wholesale/assistance phase easier. The warehouse also includes spare parts for the most common types of industrial transmissions, making Teco the ideal partner in case of replacement of fundamental elements for industrial machinery. And that's not all: by connecting directly to the company's website ([www.tecospa.it](http://www.tecospa.it)) you can access the online shop, which allows you to purchase with just a few clicks all the products offered by the company.

### **45 - THE COMPANY CAN COUNT ON 45 YEARS OF EXPERIENCE IN THE FIELD OF MECHANICAL INDUSTRY**

#### **CUT DOWN THE ORDER PROCESSING TIME**

In addition to this, the company also offers an extremely efficient shipping service, which can cover in a very short time not only Brescia and its province but the entire Italian national territory, including the islands. Even the order processing times are very fast: Teco has in fact developed a system that significantly reduces the time that occurs between the first contact and the delivery, being well aware that in a constantly evolving market, in which speed and quality are essential, resuming work in the shortest time is an element of fundamental importance. With this innovative approach, Teco Spa is the ideal partner for all the professionals in the sector: in addition to offering a wide range of services, in fact, suitable to cover all needs, the use of a single contact for the purchase of spare parts, shipping, delivery, assembly and maintenance, is an added value that has a significant impact on cost savings and processing time.

#### **THE OFFER | A PERFECT MIX**

#### **PRODUCTS AND SERVICES FOR ANY NEED**

Industrial chains and accessories, gears, electric motors, ball bearings, roller bearings, needle bearings, rolling bearings. And more: belts sleeves and toothed belts, smooth and cogged V-belts and self-aligning bearing supports, just to mention some of the many products on the list of Teco Spa. However, one thing remains unique: all these products are at the forefront. In fact, the company constantly looks at the market developments in order to keep up with the times.

#### **PROVEN QUALITY**

In addition to importing industrial products from the best international brands, Teco Spa manages an in-house department specifically equipped to obtain from standard rolls of chain, sections or rings of the length desired by the customer and a department equipped to obtain from whole sleeves, cogged belts in rubber or polyurethane of the desired width. Proven quality products combined with highly customizable service packages and supplies create a perfect mix, which is a key part of the company's success in the Italian market and abroad.

# UFS, an Italian manufacturer completes 70 years of business in production of tap tools



UFS is an Italian manufacturer who last year (2017), completed 70 years of business in production of tap tools, for cutting internal threads.

The company, situated 50 Km for Turin, with 4000 square metres of industrial building and 50 employees, has continued to evolve following the requirements of the world of mechanics and of manufacturing materials, in use over innumerable applications and developed over these decades.

The results of UFS (UFS Technology Plant) research coupled with the manufacturing capacity guarantees high performance products, able to satisfy the requirements of major mechanical processing, for small and large series (automotive, oil extraction facilities, naval, wind farms, aeronautics, heavy industry, etc.)

The points of strength, recognized by so many clients of UFS are: Precision, flexibility and technical support. Furthermore,





the high technology applied to the tools and the control over the whole production process, carried out entirely in our own establishment, make us a safe and reliable partner.

The tools are 100% made at our premises, starting with steel bar from the best steel producers in Europe, tempered and processed according to our own consolidated cycles, covered with the latest generation PVD processes. With such a process, the “UFS tap” is without doubt known as amongst the best threading tools, with an appreciable price-quality ratio.

Some UFS characteristics

**•Staff:**

-50 employees, R&S, Design, Production, Sales

-2 production shifts

-Relatively low average age (<40 years)

-Significant potential for growth, due to our own organization and the acquired capacity for ability and excellence

**•The UFS catalogue**, available on the site, offers a vast range of products, with over 8500 articles covering various standards of threading (M, MF, G PG, UNC-UNF-etc), from 2 mm to 160 mm, all complete, in steel with a high content of vanadium and cobalt, from powder (PM), with various types of product

**•Extensive product availability in stock;** the warehouse holds over 500,000 taps for threading, contained in the “tower” of the automatic vertical store. A large Company investment to satisfy Clients with a consignment service within 24 hours of the client’s order.

**•Flexibility:** Capacity for making taps to order from the Client’s or UFS design, supporting the client in fine tuning for use in their process.

**•Export:** Greater than 50% of the global product sold, with presence in Europe, Asia and Latin America (commercial development continues, with investment in the search for Distributors in areas not yet covered).

**•The main applications of UFS taps:**

- Automotive (engine block, motor shaft, gear box, con rods, wheel hubs, tractor parts, car and lorry oil filter plate threading.

-Fittings, valves and fittings, nuts

-Naval industry

-Wind generator plant

Enclosed in “Special Applications”, brochure viewable in “News” on the site [www.ufs.it](http://www.ufs.it)



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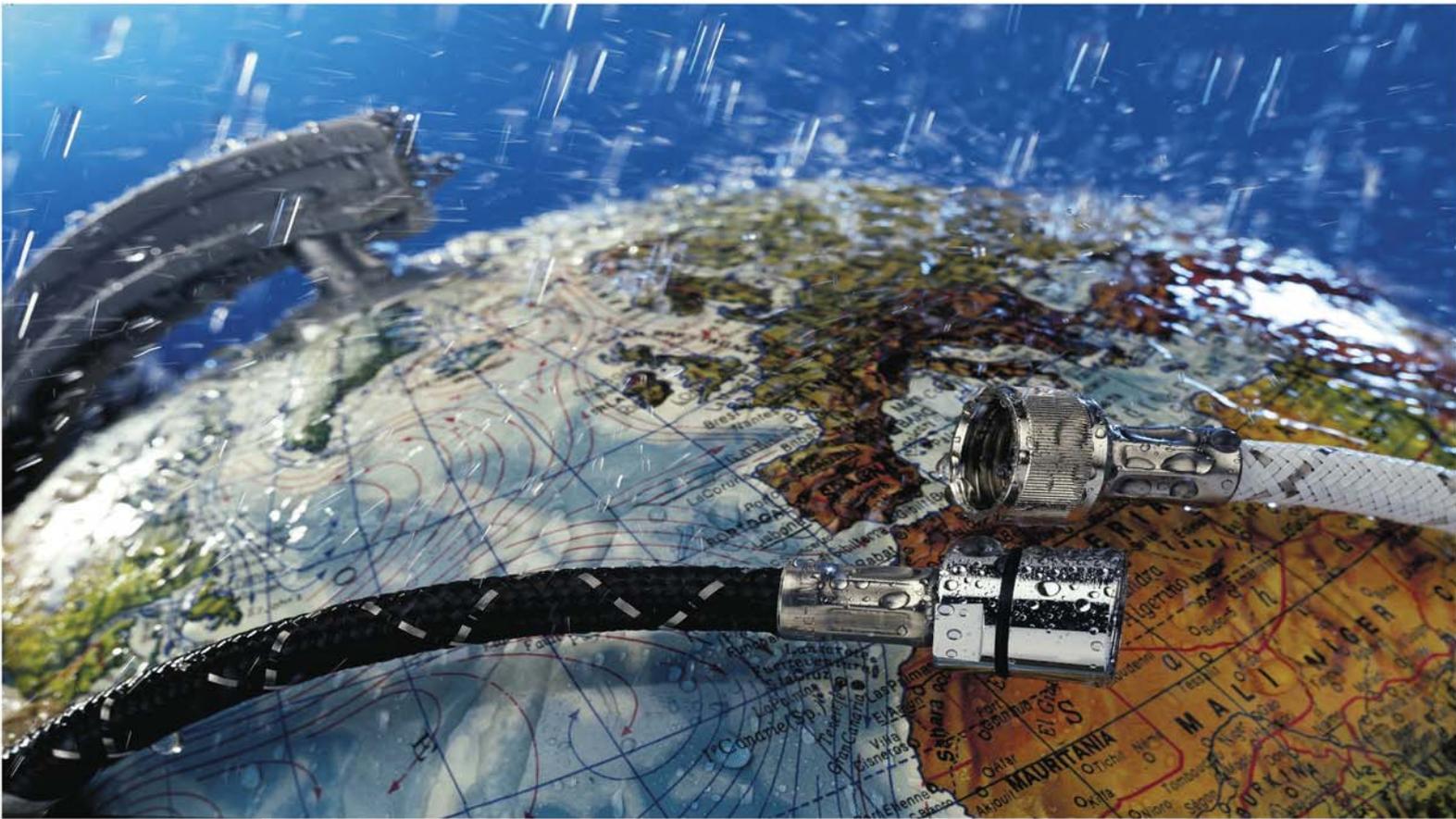
# NPI Italia, an industry reference for professionals in the plumbing, heating and household appliance fields



**PARIGI**<sup>®</sup>  
NPI Italia Srl | A NEOPERL Company

“Parigi Group’s history (today NPI Italia) is the fruit of a long tradition of a family company. The industrial activity of Parigi’s family begins in Milan in 1950, with the production of components for household appliances and for gas units. At the end of the 60s the activity moves to Monza and in 1975 Cesare Parigi patents Parinox<sup>®</sup>, the first flexible hose made of rubber and covered by stainless steel braiding suitable for connection between water network and any kind of taps.

This product makes the company very popular and enables it to quickly expand during the following decades. Thanks also to the growth in product offerings, the Parigi Group becomes an industry reference for professionals in the plumbing, heating and household appliance fields. In 2014 Parigi became part of the NEOPERL Group, a global company that offers innovative solutions for drinking water components used by the plumbing industry, including water and energy saving products worldwide.”



High Quality Flexible Hoses

## Company specialized in screens for water wells

PAPARELLI ALESSANDRO E FIGLIO SRL has its origins in the previous family business: The production of tools, the building and repairing of machines for carpentry, mechanics and house building, started in the first decade of the 20th century. Later, at the end of the 50's, thanks to his creativity, skills and business experience, Mr. Alessandro started the production of casings and screens for water wells.

At the end of 70's Alessandro's son, Sergio (current owner), joined the company and in the following decade brought it to a continuous national and international growth.

Nowadays PAPARELLI's products are sold on the Italian territory for the 30% and on the international markets for the remaining 70% including in Europe, Asia, Africa and South America.

PAPARELLI's factory presently covers an area of 7.200 sqmts and an outside open area of 15.000 sqmts. Here a wider range of products is manufactured: tubes, different types of screens, such as simple slotted, bridge slotted, spiral screen (Johnson type) ones, accessories and customized special parts.

The company also offers, thanks to its long-time experience, support to research and apply new technical solutions according to the needs of the customers.

Since May 1998, the management system of the company is DNV certified, presently according to the UNI EN 9001.

The system of quality is already conformed to the regulation 9001:2015.



Paparelli is very environmentally aware and sensible to the issue of energy saving. It has in fact a 228 KW photovoltaic system and from July 2014 till today it has produced energy equal to 856.000 Kwh avoiding a CO2 production equal to 556.000 kg (corresponding to 503 oil barrels, 3160 trees).

PAPARELLI's products can be realized in Stainless Steel (with brush Welded, Pickled and Passivated 304/304L; 316L etc.),



Carbon Steel (S 235 JR, Water Painted, Hot-Galvanized Carbon Steel and in every quality of steel).

The range of products includes:

- Spiral screens from  $\varnothing$  34 mm to  $\varnothing$  1016 mm in length till 12,00 Mt (with or without inside casing); moreover, to produce spiral screen, our production department work in wire-drawing and wire-profiling procedures.
- Bridge Slotted Screens;
- Riser Pipes;
- Simple Slotted Screens;
- Longstanding Casings for Water Wells and Casing for installation of Pumps;
- Different Pipe Unions: Threads, Collars, Flanges, Weld Rings, Reduced Flanges with Holes, Weld Rings etc.;
- Centralizers; Bottom Caps Dielectric Joints; Ties; Conical Reductions, holding clamps; Lifting Threaded Heads.

PAPARELLI also deals in PVC tubes and screens, and glass beads of different diameters to drain the wells.

To learn more about the way of working and learn about the prices, please just try to ask us for a quotation and we will be happy to answer you as soon as possible with our best prices without commitment.

Visiting the web site **[www.paparelli.it](http://www.paparelli.it)** you can see all the product range but do not hesitate to contact us for any need; by phone +39 (0) 31 790601(ask for Mrs. Angela, Mr. Marco, Miss Francesca,) or by mail writing to **[info@paparelli.it](mailto:info@paparelli.it)**

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# The Fischer-Tropsch synthesis

## as key technology of the Gas to Liquids processes



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Currently, the production of fuels and chemicals is based predominantly on crude oil. However, the proven reserves of natural gas represent a huge energy source.

Indeed, at the end of 2016, the estimated proven reserves of oil and natural gas were respectively 1700 and 1300·10<sup>9</sup> barrels oil equivalent. The interest in the gas-to-liquids (GtL) processes is not only a result of the abundant supply of natural gas, but also of a market demand for cleaner fuels. In this regard, the GtL fuels offer significant environmental benefits over the fuels derived from crude oil. Indeed, they are free of nitrogen, sulphur, aromatics and metals. This low-emission, premium-grade fuel can be used either “pure” or as a fuel additive in diesel engines. Furthermore, GtL diesel can be used in existing vehicles and fuel delivery systems without modifications.

From a technological point of view, the GtL process consists of three different steps: (i) the conversion of natural gas into synthesis gas (“syngas”), (ii) the syngas conversion into a mixture of hydrocarbons via Fischer-Tropsch synthesis and (iii) the hydroprocessing of this mixture to produce the final products.

Concerning the first stage, available technologies for the synthesis gas production for GtL plants include steam reforming, partial oxidation, and autothermal reforming. The second stage is based on the Fischer-Tropsch synthesis (FTS), which represents the chemical heart of the GtL technology. In this step, the synthesis gas is catalytically converted into predominantly straight-chain hydrocarbons, such as paraffins (from CH<sub>4</sub> to waxes, C<sub>n</sub>H<sub>2n+2</sub> with ), olefins (from ethylene to longer molecules, C<sub>n</sub>H<sub>2n</sub> with ), or alcohols. The main byproducts are water and carbon dioxide. In the final step of the GtL

processes, the FTS products are upgraded via hydrocracking and hydroisomerization. The treated compounds then go through a distillation column and are separated into fractions such as naphtha, diesel, kerosene, jet fuel and residues. The latter can either be recirculated to the hydrocracking/hydroisomerization reactor or be used as a base oil precursor fraction.

To date, South Africa is the world leader in FT technology. Accordingly, Sasol and PetroSA operate four FT plants in the country, so that 35% of the liquid fuels consumed in the country comes from synthetic fuels. Sasol also operates the Oryx plant, which was started up in Qatar in 2007, as the result of a joint venture with Qatar Petroleum. Another key player in the FT industry is Shell, which began developing GTL technology in the 1970s. Shell operates FT plants in Malaysia (Bintulu GTL since 1993) and in Qatar (Pearl GTL since 2011).

At the refinery scale, FT processes are implemented in a variety of large-scale pressurized catalytic reactors. These includes fixed-bed, fluidized-bed and slurry-bed reactors. The choice of the reactor configuration mainly depends on the desired final FTS products. If the focus is the production of heavy hydrocarbons (e.g., waxes), which can be upgraded to the diesel and jet fuel range, multi-tubular fixed bed and slurry bed reactor technologies are commonly used. Tubular reactors are simpler to operate and, since the liquid wax trickles down the catalyst bed, there is no need for a wax-catalyst separation unit. The latter, instead, is essential for slurry bed reactors as the small catalyst particles used are suspended in the liquid wax medium. On the large scale, slurry reactors are often preferred to fixed bed because of several advantages: lower construction costs, lower pressure drops over the reactor, more isothermal beds and longer reactors runs because on-line removal of used catalyst and the addition of fresh catalyst can be applied. However, critical points for slurry reactors are the catalyst/liquid products separation and the mechanical resistance of the catalyst particles.

Industrially, Sasol I, Shell-SMDS and Pearl GTL plants are based on multi-tubular fixed bed technology, while the Oryx plant is based on slurry bed technology.



For the production of gasoline and high-value  $\alpha$ -alkenes fluidized bed reactors are usually used. Conditions resulting in the production of waxes should be avoided in this case, as the presence of liquid wax on the outside of the catalyst particles will result in defluidization of the catalyst bed. Because of the turbulent nature of fluidized bed reactors at the gas space velocities used, the rate of heat exchange from the catalyst to the heat exchanger tubes is very high, resulting in nearly isothermal catalyst bed. An important advantage of using fluidized bed reactors at high temperature, where the rates of catalyst deactivation are inevitably high, is that the deactivated catalyst can be removed and fresh catalyst added on-line, which means long continuous runs can be achieved. Industrially, Sasol II, Sasol III and the PetroSA plant are based on fluidized bed technology.

Although the large-scale FT reactors are being operated with commercial success, there is great interest in applying the process intensification approaches to reduce the reactor size and improve performances. In this regard, the concept of “small-scale GtL application” is taking off as an important opportunity to unlock up to 50% of the stranded gas fields that conventional GtL cannot exploit economically. The compact GtL system is based on the modularization of the current GtL technology. This feature allows the GtL plants to be constructed in remote locations with significant amounts of cheap gas and demand for liquid fuels. Velocys Inc. based in Columbus, Ohio, USA, recently (2013) launched on the market a new reactor technology for the exploitation of remote natural gas sources. The success of the small GtL Velocys technology is in the microchannels reactor configuration with a highly efficient heat transfer mechanism. It is characterized by thousands of channels, with dimensions of the order of millimeters, filled with catalyst intercalated with water cooling channels. The small channels dissipate the heat faster than conventional FT reactors.



# Ultra Pompe: our history our strength

ULTRA POMPE S.r.l., founded in 1957, was one of the first Italian firms that completely design, produce and test external gear pumps in its own workshops. ULTRA's success is based on satisfying customer requirement through efficient manufacturing and by providing quality products and competitive pricing. ULTRA POMPE know how and experience has been handed down from one generation to the next. Due to this reason they have accumulated a lot of direct experience in the last sixty years. ULTRA POMPE maintains a large inventory of standard spare parts and unassembled pumps in its own stock, allowing us to quickly provide complete pumps or replacement spare parts for customer emergency. Compact enough to quickly provide innovative custom designs, but large enough to manufacture high volumes in a short time, Ultra Pompe invests every year in new technology for the automatization of its production lines. At today, each machinery in our factory has at least one automatic backup in addition to one controlled



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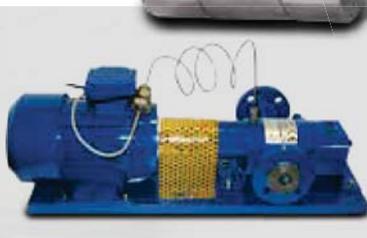


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manually. This allows us to avoid any production delays caused by machinery crashes and to meet promised delivery. ULTRA POMPE carries on in its own premises the whole of mechanical processing, gear cutting included, thus achieving an unparalleled quality standard of the finished products. Continually updating out technology and products designs allows ULTRA POMPE to provide the right gear pump or system for a variety of processes and liquid, semi-fluid or emulsions. Using of UNI/ISO/ANSI/DIN/MEC dimension significantly increase the possibility to meet all customer requests.

### **GEAR PUMPS – EASY VIEW**

These gear pumps are used from 1 up to viscosity 1'000'000 cSt. In the operating scheme is shown how the rotations of the gears displace the product from the inlet side to the outlet side. The entire operation can be resumed in three main phases: Suction, Delivery and Discharge. Into a gear pumps the two rotors, that are respectively called driving and driven rotor, are seated in a body that round them from all side. On the both sides of the mesh zone of the teeth there is a hole in the body of the pump. These holes are respectively called suction and discharge. Spinning the rotors the fluid is moved, through the chambers between the teeth of the rotors and the body, from the suction side to the discharge side. Fluid does not pass through the meshing zone of the gears due to small tolerances. A back-flow of the fluid is blocked by the contact of the teeth of the two rotors in the meshing zone.

### **ADVANDAGE**

Gear pumps need a lesser NPSH and have better properties of delivery repeatability. Gear pumps, being rotary volumetric pumps, are the best metering pumps, since their delivery depends directly on the revolutions rate. Also gear pumps will not generate flow pulsations, as standard metering pumps do, making the media flow constant.

### **MAIN APPLICATIONS**

- Lube oil Pumps
- Fuel Pumps
- Chemicals Pumps
- Bitumen Pumps
- Foam Pumps

## Total acquires a %16.33 stake in the Waha Concessions in Libya

Paris 2018/03/02: Total has acquired Marathon Oil Libya Limited which holds a 16,33% stake in the Waha Concessions in Libya. This acquisition will give Total access to reserves and resources in excess of 500 million barrels of oil equivalent, with immediate production of around 50.000 barrels of oil equivalent per day (boe/d) and a significant exploration potential across the area of 53.000 square kilometers covered by the Concessions in the prolific Sirte Basin. The consideration payment for the transaction is 450 million U.S. dollars.

“This acquisition is in line with Total’s strategy to reinforce its portfolio with high quality and low-technical cost assets whilst bolstering our historic strength in the Middle East and North Africa region,” said Patrick Pouyanné, Chairman and CEO of Total. “It builds on the Group’s long-term presence in Libya, a country with very large oil and gas resources, and demonstrates our commitment to continue supporting the recovering oil and gas industry of the country.”

The Waha Concessions currently produce around 300.000 boe/d. Thanks to the ongoing restart of the existing installations and the resumption of development drilling, the output is expected to ramp up and exceed 400.000 boe/d by the end of the decade.

The NOC (59.18%), Total (16.33%), ConocoPhillips (16.33%) and Hess (8.16%) jointly own the Waha Concessions. The Waha Oil Company, a 100% NOC owned entity, operates the asset.

### **Total in Libya**

Total has been present in Libya since 1954. In 2017, the Group’s production was 31.500 boe/d. This production comes from the offshore Al Jurf field (Total, 37.5%) and the El Sharara onshore area (Total, 15% on block ex-NC 115 and 12% on Block ex-NC 186).

# Oil And Gas Fields Development In Ghana

Nowadays, Ghana is the fastest growing economy in Africa with an average 10.1% in the last four years.

In fact this reflects continued high levels of growth in the industry sector, driven by mining and petroleum. The mining industry is still growing as we can expect, thus consolidated its position of the second largest producer of gold in Africa.

The oil output is expected to continue to rise to reach an average of 170.000 bpd this year and more than 210.000 bpd by 2020 as production increased in all existing oil fields and some new production came online. For instance, the Jubilee Fields increased production with the resolution of technical difficulties that arose in March 2016; and new production came online in the Offshore Cape Three Points (OCTP) Fields.

Here below a brief recap of mains Oil and Gas project ongoing in Ghana.



*Mor Nguirane*  
*Dott. Ing. Mor Nguirane*  
*Chemical Engineer*

## **A. TEN PROJECT**

The TEN development project includes the collective development of three hydrocarbon accumulations, namely Tweneboa, Enyenra and Ntomme. The three oil and gas fields are part of the Deepwater Tano license located offshore of Ghana. Tullow jointly developed the three fields using a single FPSO facility. A total of 33 wells were drilled, including 15 oil production, 15 water injection, one gas production and two gas injection wells. Another 16 wells are expected to be drilled in the future, depending upon the production levels.

The first production from the project was achieved in August 2016. The project is

expected to recover approximately 216 million barrels of oil. Tullow forecast an average production of 75.800 bpd in 2018 compared to an average 56.000 bpd produced in 2017.

Project Developer	Tullow Oil
Daily Production Rate	56.000 bpd (2017); 75.800 bpd (2018)
Total Proven Oil Reserve	216 million barrels of oil

## B. GHANA SANKOFA GAS PROJECT

The Sankofa Gas Project encompasses the development of the Sankofa and Gye Nyame gas fields. The fields are estimated to hold 1,45 trillion cubic feet (Tcf) of non-associated gas.

A part of the Offshore Cape Three Points (OCTP) project, the development of the natural gas fields comprises phase two of the wider project. Phase one encompasses the development of Sankofa East oil field, while the second phase aims at developing non-associated gas in the two fields.

The project is being developed by a joint venture of Eni Ghana, Vitol Ghana and Ghana National Petroleum Corporation. Production from the project is planned to commence in 2018.

Gas obtained from the project will enable 1.000 MW of domestic power generation, which is equivalent to approximately 40% of the country's total installed generation capacity.

### B.1 Sankofa gas project development details

The development plan for the gas fields includes drilling of five subsea non-associated gas wells, subsea umbilical's, risers and flowlines connecting the fields to an FPSO, and a 63 km-long gas pipeline from the FPSO to the shore. An onshore pipeline will link the fields to an onshore receiving facility, which will be equipped with a compression station and other related infrastructure. A direct pipeline will transport the gas from the receiving facility to an existing gas pipeline.

The Sankofa reservoirs will have four wells drilled, while one well will be drilled in Gye Nyame reservoir. Three new wells will be drilled, while two wells from the exploration phase will be re-entered.

### B.2 Onshore facilities

The project's onshore facilities will include a receiving facility constructed over a 90.000 m<sup>2</sup> area with 27.000 m<sup>2</sup> dedicated for accommodation.

Onshore activities will include construction of an underground gas export pipeline, setting up of the onshore receiving facility, camps, and helipad construction. A pipeline will also be installed to connect the receiving facility with the Ghana National Petroleum Corporation underground pipeline.



Project Developer	Eni Ghana, Vitol Ghana and Ghana National Petroleum Corporation
Daily Production Rate	Start planning on 2018
Total Proven Oil Reserve	1,45 Tcf of non-associated gas

### **C. OCTP RESERVES AND PRODUCTION**

The Offshore Cape Three Points (OCTP) Integrated Oil and Gas Project includes the combined development of the Sankofa Main, Sankofa East, Gye Nyame, Sankofa East Cenomanian and Sankofa East Campanian fields. The former three are non-associated gas fields while the latter two are oil fields. The development of the fields started in January 2015.

The offshore fields are estimated to hold approximately 1.5 trillion cubic feet of gas and approximately 500 million barrels of oil. The reserves are expected to continuously feed Ghana's thermal power plants for more than 20 years.

Oil production from the project started in May 2017 and is expected to peak at 80,000 barrels of oil a day in 2019. Gas production is expected to start in mid-2018, with a daily production capacity of 170 million cubic feet. This would be enough to generate an additional 1,100 MW of power for Ghana.

Project Developer	Eni Ghana, Vitol Ghana and Ghana National Petroleum Corporation
Daily Production Rate	80,000 bpd
Total Proven Oil Reserve	1,5 Tcf of gas and 500 million barrels of oil

### **D. CONSTRUCTION OF GAS PROCESSING PLANT**

The Gas Processing Plant which will be used to process the natural gas from the Jubilee field and subsequent gas from the other oil fields is being constructed by Sinopec International. The Plant is located at Atuabo at the western region in Ellembelle district. The project includes; the construction of gas pipeline from Atuabo to Takoradi for transporting the gas to Aboadze to power the thermal plants as well as for domestic consumption.

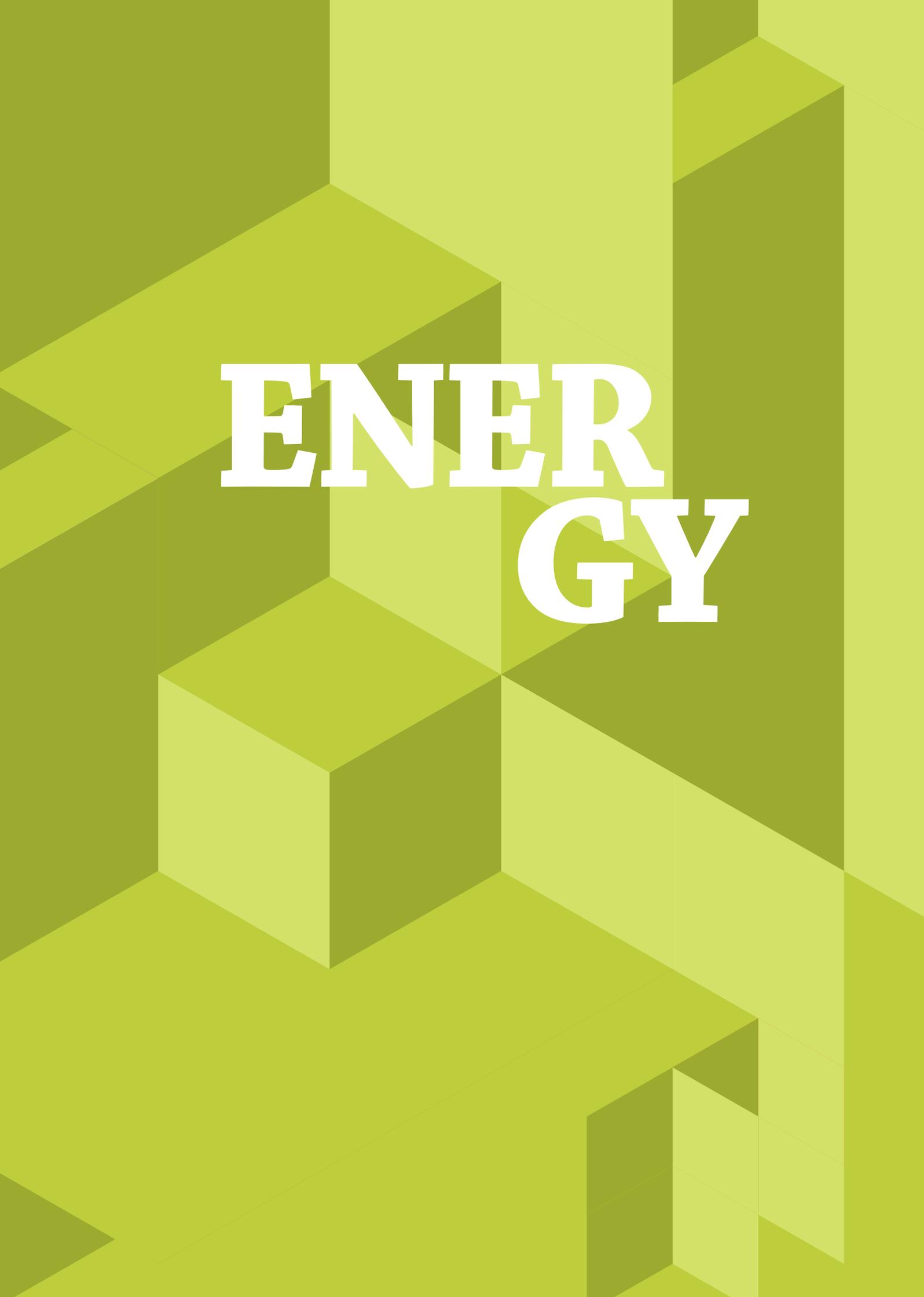
## **E. Deep Water Cape Three Points (DWCTP) block Exploration**

ExxonMobil Corporation has signed an agreement with the government of Ghana and the Ghana National Petroleum Corporation (GNPC) to acquire exploration and production rights for the Deep Water Cape Three Points (DWCTP) block. Exploration activities, including acquisition of seismic data and analysis are expected to start later this year.

The Deep Water Cape Three Points (DWCTP) block located 92 km off the coast of Ghana measures approximately 1482 km<sup>2</sup> in water depths ranging from 1.550 m to 2.850 m.

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# ENERGY



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# JETSCREEN

## H2020:

## JET fuel SCREENing and Optimization



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Web:  
creckmodeling.chem.polimi.it*

The requested 10% share of renewable energy in the transport sector in every European Union member state by 2020 and the targeted 40% share of low carbon sustainable fuels in aviation by 2050, necessitate the technical support for approval and production of new or existing renewable fuel blend stock. The approval process of a jet fuel is long, costly and complex, especially for start-ups and small-medium enterprises, often lacking resources for covering the qualification and certification of the fuel produced as their core activity is to develop the production process and make it economically feasible. On the other end of the approval process, air framers and manufacturers are in charge of assessing the airworthiness with dedicated and resource-intensive tests. The purpose of the JETSCREEN consortium is to provide fuel producers, air framers,

aero-engine and fuel system manufacturers with knowledge-based screening tools allowing to:

- streamline the alternative aviation fuel approval process;
- assess the compatibility of fuel composition/properties with respect to the fuel system and the combustion system;
- quantify the added value of alternative fuels;
- optimize fuel formulation in order to attain the full environmental potential of synthetic and conventional fuels.



Figure 1: Industrial and academic partners involved in the JETSCREEN H2020 project.

JETSCREEN partners (Figure 1) are developing a screening and optimization platform incorporating the distributed design tools and generic experiments to quantify the risks and benefits of alternative fuels, to assess their compatibility with relevant aircraft sub-systems and to optimize alternative and conventional fuels. The optimization process will identify fuels with maximum energy density, and minimum pollution potential. Moreover, based on low cost small scale experimental and model-based testing, JETSCREEN will develop advanced and reliable design tools accurately capturing fuel-related effects on airframe and engines. For example, the final user might be interested in predicting the impact of a fuel on a selected engine and on fuel system components. The first outcome will be to guarantee a faster assessment of blended feedstock and their compliance with the ASTM D7566 standards.



Figure 2: JETSCREEN project's logo.

The CRECK modeling group at Politecnico di Milano (Italy) is involved in the characterization of the physico-chemical properties of the pyrolysis bio-oil by means of surrogate mixtures formulation. In particular, the CRECK group is developing accurate chemical kinetic models for oxygenated compounds typically found in such feedstocks, and investigating the phenomena involved in single-droplet combustion and atomization. The photograph of Figure 3 shows results from a reactive fluid dynamic simulation of a single-droplet heated by natural convection, in terms of temperature yields and velocity of surrounding gases.

Within the JETSCREEN project the CRECK group at Politecnico di Milano is involved in the definition of appropriate surrogate mixtures. Surrogate fuels including a limited number of components are typically defined for combustion modelling purposes, enabling to mimic the behavior of complex real jet fuels with respect to a particular target. The targets of interest in this case are volatility, ignition propensity, flame propagation, and pollutant formation (NO<sub>x</sub>, sooting tendency etc.). The combustion kinetic model will be developed and validated by means of experimental data provided by other partners and from the scientific literature. As the enormous number of chemical species ( $\sim 10^3$ ) and reactions ( $\sim 10^4$ ) typically involved in jet fuels combustion kinetic models prevents any use in large scale fluid dynamic simulations of real combustion devices, a skeletal kinetic mechanism ( $\sim 10^1 - 10^2$  species) will be obtained by means of ad hoc simplification and reduction techniques.



**ACKNOWLEDGEMENT:**

*This project has received funding from the European Union's Horizon 2020 research and innovation programme under agreement No. 723525.*

**CONTACTS:**

*Project open-public website: [www.jetscreen-h2020.eu](http://www.jetscreen-h2020.eu)*

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**INDUSTRIAL  
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# Bacchi S.p.a., a professional and convenient partner in the construction field for over 80 years

Bacchi spa is an Italian company that has been working in the construction field for over 80 years, with the production of aggregates and mortars, the development of insulating materials and the last but not the least, an entire innovative eco-friendly construction system, studied and developed in order to build Passive Houses and Zero Energy Buildings.

The company, which sells its products all over the country, is structured with 4 operating centers, dozens of quarries for extraction and a fleet of more than 200 work machines.

In its main production sites of Reggio Emilia, Parma, Venice and Naples, Bacchi S.p.a. keep investing a lot in research and development of new solutions for the sake of reach the needs of the construction industry which keeps evolving.

The wide commercial offer from Bacchi spa has been organized into 3 business units by product category, usage, and users:

- **Building Solutions** for new construction and renovation, ranging from construction systems in cellular concrete to insulating multicellular glass systems, calcium silicates, and mineral insulation. All these materials are aimed at construction companies oriented to ecosustainable materials, lasting over time and offering unparalleled characteristics in terms of fire resistance, thermal insulation, strength, and workability at the same time Main brands are:



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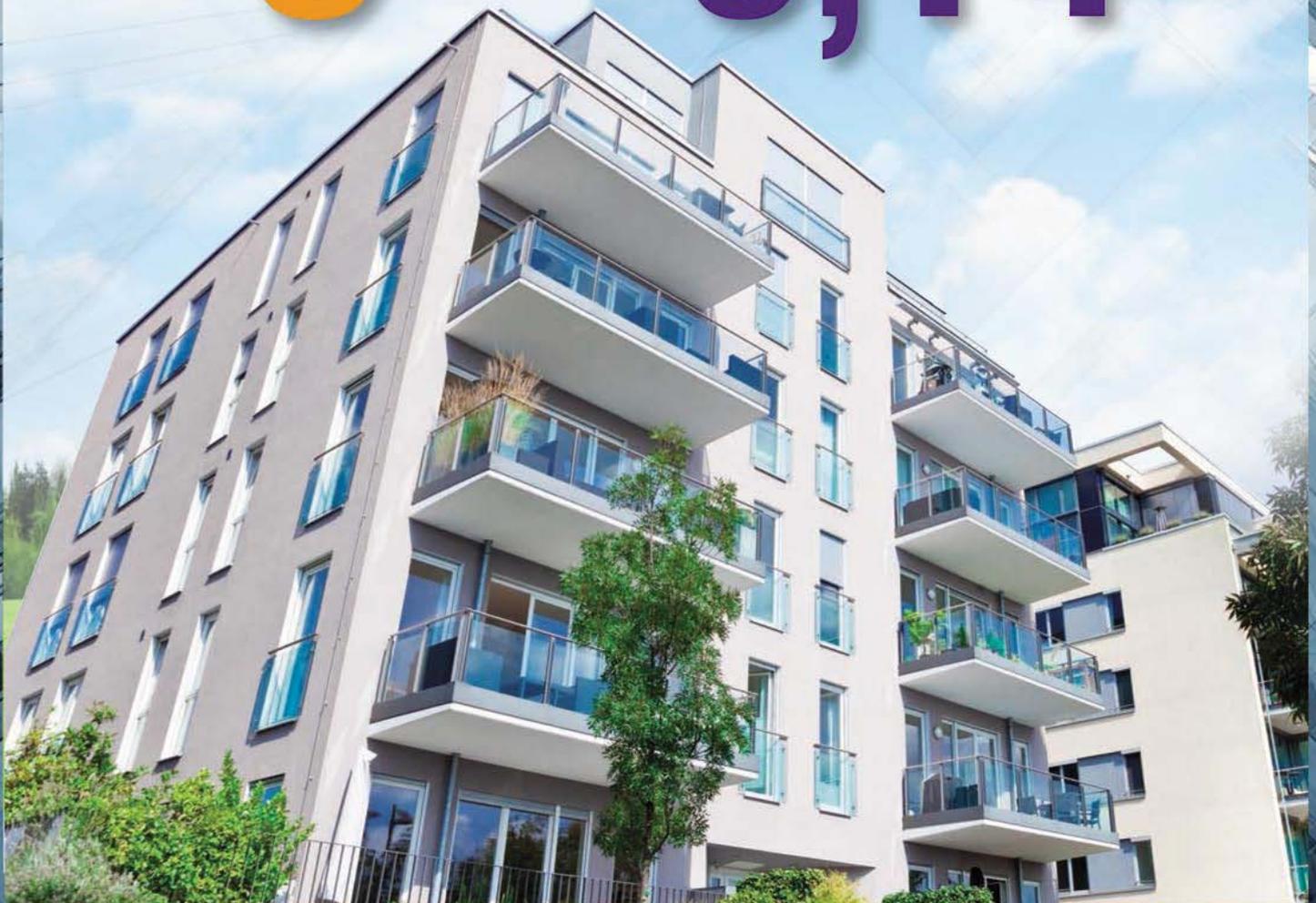


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- **GASBETON®**, historic leader in Italy in the production of autoclaved aerated concrete bricks and elements for highly insulating masonries, fire and earthquake resistance requirements, for civilians and industries, new buildings or restructuring;

- **GLAPOR**, a well known European cellular glass producer, based in Germany, starting from 100% recycled glass, they produce foam glass panels and granules specific for thermal insulation, durability, strength, and glass intrinsic properties.

• **Working Solutions** a wide range of products such as damp and dried silica sand, polymeric sands, mortars, slabs, adhesives, screeds, concrete, bituminous conglomerates, ready-touse cold asphalt and a line of accessories for usual construction..

• **Garden Solutions** a great variety of products such as stone materials for floorings and coverings, stone pebbles, and ornamental stones (with a wide availability of shapes, sizes, and colors), to meet all the needs of designers, garden designers, garden centers and building dealers in general. A special mention also goes to the broad range of specific sports sands, studied, developed, and produced in Parma (Sabbie di Parma) to meet the needs of sports professionals (football, beach, volleyball, golf, horseback riding, and rugby...).

A broad range of more than 1.300 products, for each project, from the DIY to extreme engineering; a nationwide presence thanks to a competent sale force network and a highly experienced technical support, able to provide assistance in financial decisions, design and construction. The last in order of occurrence but not of importance, pleasant and professional Customer Care service.

In conclusion, for these any many other reasons, Bacchi S.p.a. is considered as a professional and convenient partner to our clients, careful and proactive toward their needs, the environment, the evolving laws and market.

For more information:

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## Anglo American Platinum To Install Primus Power Energy Storage System At Amandelbult Complex

Johannesburg- 23-04-2018 - Anglo American Platinum announced today that Primus Power, the leading long-duration energy storage provider, will be installing eight EnergyPod® battery systems at their Amandelbult mine, in the Limpopo province, South Africa. The energy storage project at Amandelbult deepens the ongoing partnership between the companies. Having first invested in Primus Power through the Platinum Group Metals Development Fund (PGMDF) in 2014, Anglo American Platinum is both a strategic investor in Primus and a supplier of the platinum group metals (PGMs) used as a catalyst on the titanium electrodes inside the EnergyPod.

The eight EnergyPods will provide Amandelbult with 200 kW of power and 1,000 kWh of energy. These batteries are charged when demand for, and cost of grid electricity, is low. During times of peak, high cost electricity, the charged batteries release stored energy and reduce the mine's draw from the grid.

The project at Amandelbult also complements recent support received from the U.S. Trade and Development Agency to demonstrate EnergyPod performance, reliability and durability at Eskom, the national utility of South Africa. Anglo American Platinum, Primus and Johannesburg's SolAfrica are closely cooperating on testing four EnergyPods at Eskom's large-scale energy storage test facility in Rosherville, Johannesburg.

Andrew Hinkly, CEO of Anglo American Platinum's PGM Investment Programme, puts the benefits in perspective: "We are very excited to further our partnership with Primus. EnergyPods allow Amandelbult to realize an immediate monthly reduction in electricity costs and an improvement in energy security. Moreover, this project will also lay the groundwork to define future local South African manufacturing and assembly opportunities for the technology."

"South Africa represents an important growth area for Primus", states Tom Stepien, CEO of Primus. "Our long duration batteries will save Anglo American money and support their energy security, environmental and socio-economic goals. We look forward to deepening our relationship with them and our other partners in this vital market."

This initiative forms part of Anglo American Platinum's work to update the existing Sustainability Strategy and Implementation Plan, which is in response to the Anglo American Group's Sustainability Strategy, recently launched in March this year. This will see the company build off existing sustainability strategies for each operation, updating them to incorporate a focus on three pillars – Healthy Environment, Thriving Communities, and Trusted Corporate Leader.

# INSOL SOLAR ENGINEERING

## Solar thermal power plants

Since 1978 | ENGINEERING in Italy

### ABOUT

INSOL® is a large European group generating hot water from the sun – since 1978 we have been producing solar thermal power plants for an equivalent area of about 30,000 m<sup>2</sup>. We manufacture solar thermal power plants producing domestic hot water, sanitary hot water and swimming pool heating. Our panels have a TITANIUM capturing surface (our patent), which allows for the heating of water even in winter or in low light conditions, unlike other systems. We manufacture plants ranging from 160 Lt, 300 Lt, 500 Lt, 1000 Lt, 2000 Lt up to 5000 Lt, including 1, 2 or more solar collectors. Our systems are suitable for: villas, swimming pools, hotels, sports facilities, industrial warehouses, commercial farms, restaurants, resorts, campings and any other place where the consumption of energy (both gas and electricity) to generate hot water is rather high.

### THE REASONS BEHIND INSOL®'S SUCCESS

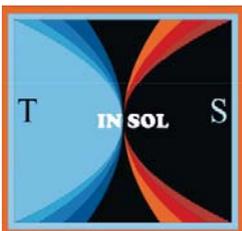
- 1) Our production has been tested by the German scientific specialist press “Bild der Wissenschaft”. Thanks to its “Titanium” collectors, it has been defined one of the most dynamic companies on the European market for Research and Scientific Innovations in the sector and for their current applications on serial products, for energy efficiency and quality/price ratio.
- 2) Our solar thermal power plants provide the best performance thanks to a well-calibrated installation that we or our retailers carry out and that too often is neglected.
- 3) The best guarantee we can offer to our customers is our 40 years of activity, know-how and experience.

### PRODUCTS DESCRIPTION

We make a high-end product since our panels have a TITANIUM capturing surface, which allows for the heating of water in winter or in low light conditions, unlike other systems.

**Example of a most common Solar Thermal Power System:  
160lt and 300lt hot water production**

•Brand : INSOL Made in E.U. Solar thermal power since 1978.





**SOLAR SYSTEMS FOR HOT WATER**

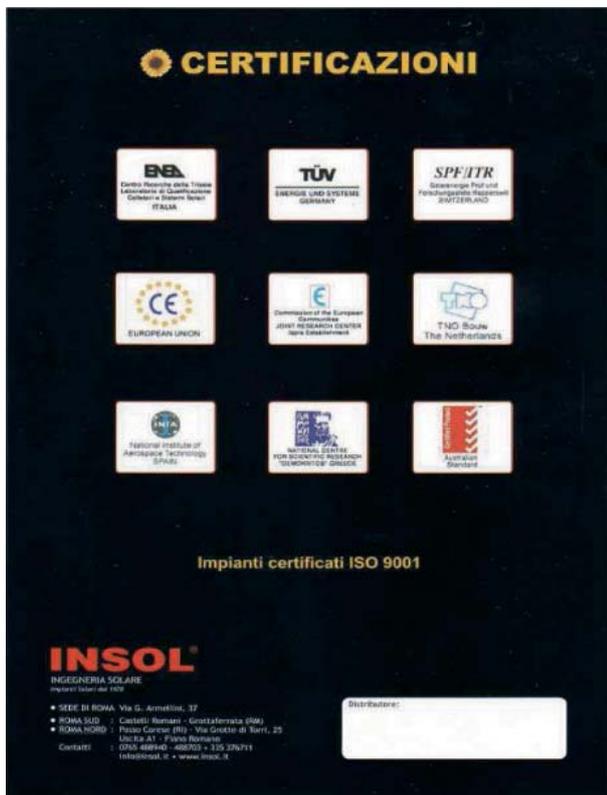


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ON THE ROOF**



**MADE IN ITALY**

**INSOL®**  
IL LEADER DEL SOLE



•Models : ST 160 or 300 Gold Titan (The data for the ST 300 are shown in red.)

**PLANT DESCRIPTION**

The solar thermal power system consists of n. 1 (2) solar collector(s), with a total gross area of 2.10 sqm (4.20) and from a 160 Lt (300) tank. For the best performance, the system should be pointing South. In any case, the proximity to the East or West also allows a good performance. A supporting frame (hot-dip galvanized to avoid any type of corrosion and rust) will be provided for fixing the system to the roof and, if desired, for giving the roof a different inclination. In case of installation on a terrace, a different frame must be used (with a small additional cost in comparison to the above-mentioned frame).

**SOLAR COLLECTORS USED**

Attention: Our panels are of the “FLAT” type and not of the “VACUUM TUBE” type. We have stopped producing vacuum tube panels because they are not suitable for hot latitudes but more suitable for cold temperatures (e.g. Northern Europe, Canada, etc.). In Italy, the tubes, being made of glass and suffering from our strong solar radiation, after a few years tend to crack and the vacuum is lost, becoming no longer functional.

The collectors have the following characteristics:

- Panel with perimetric metal parts and frame in anodized aluminium with high anodization thickness for high protection against atmospheric agents. Also suitable for seaside houses (affected by saltiness).
- Capturing plate made of copper tubes and copper plate, treated with TITANIUM, for a performance higher by 30% compared to traditional collectors.
- Ultrasonic welding to optimize heat transfer between the tubes and the capturing plate.
- Back insulation made of mineral wool.
- Multiprismatic, tempered, anti-hail and non-reflective crystal cover to improve the diffraction of sunlight and improve the greenhouse effect inside the collector obtaining the highest heat output.

This crystal complies with the New Safety Regulations and is designed as non-reflective, to avoid annoying reflections banned by municipalities. **N.B. These collectors have the necessary certification to apply for State Incentives.**

#### **SUPPORTING FRAME**

•Supporting frame made of hot-dip galvanized steel, to contain the collector(s) and to provide them with the necessary inclination, if necessary.

#### **SOLAR TANK / BOILER**

•N.1 160 (300) lt solar tank/ boiler with double internal enameling of 80/120 microns, with flanged copper tubes exchanger, complete with anode and perfect thermal insulation in polyurethane foam up to 55 mm of thickness. In the boiler, the water stored in the absence of sun (for example in winter) is kept warm for 3-4 days.

#### **SANITARY WATER DISTRIBUTION**

The distribution of sanitary hot water, coming from the solar system, can happen in four ways:

•“CONNECTION 1”. DIRECT (included in the installation price)

It connects the water coming out of the tank-boiler to the nearest hot water connection in the apartment (sink, shower, etc. ...) and uses the boiler as a huge high-temperature water heater. It manually switches, with ball valves, in case all the hot water produced by the panel has been used.

•“CONNECTION 2”. WITH MANUAL SWITCHING

In the event of consumption of the entire hot water tank, you can manually switch the system, by using the ball valves located under the boiler. These will send the water to the boiler (at the entrance of the sanitary water), which will switch on and heat the water, then send it to the apartment.

•“CONNECTION 3”. FOR AUTOMATIC SWITCHING WITH SOLAR CONTROL UNIT

With this solution, the system can be connected to the input of the boiler itself, connecting the water coming out of the tank-boiler to a solar control unit on the line of the system of production of sanitary hot water, thus automating any integration.

•“CONNECTION 4”. FOR BOILER INSTALLATION IN PLACE (NOT ON ROOF) AND AUTOMATIC SWITCHING WITH SOLAR CONTROL UNIT

If the boiler is to be installed elsewhere, not under the solar collector, then the following items must be installed as it is no longer a natural circulation system:

-Heat resistance probes for temperature  $\Delta$  (Delta) control

-Circulator for the continuous transport of high-temperature glycol from the panels to the boiler

-Electronic solar differential control unit for the control of resistance thermometers, which can activate the pump.

-Electrical connection system from the probes to the control unit

-2 expansion tanks of the primary and secondary circuit of 24 lt.

-Miscellaneous accessories for hydraulic connections

-3-way solenoid valve motorised for switching to the boiler.

These elements also automate the automatic integration of the boiler and do not require the installation of the control unit under the boiler (“CONNECTION 3”). Installing these elements also automates the automatic integration of the boiler and therefore the extra cost of “CONNECTION 3” is no longer required.

N.B. Keep in mind that in connections 2-3-4, the boiler will provide the integration with the water heating, not by taking the water at the temperature of the aqueduct (especially in winter when it is at very low temperature), but by the solar circuit whose water, even if at non-optimal temperature, will always be between 25 and 35° and therefore the boiler will only have to raise the temperature up to the required one. Therefore, even if all the hot water has been consumed, gas consumption will be very low.

#### **QUALITY AND PANEL CONSTRUCTION DESIGN**

Our special technological innovation allows our collectors to capture infrared radiation, even in the

**CARATTERISTICHE TECNICHE DEL BOLLITORE**

- Involucro esterno
- Coibentazione antiscalfio
- Manicotto cilindrico interno
- Materiale inotropedine (jackel)
- Trattamento protettivo interno del serbatoio
- Protezione antiruggine
- Resistenza elettrica
- Termocosti
- Potenza della resistenza

**CARATTERISTICHE TECNICHE DEL COLLETTORE**

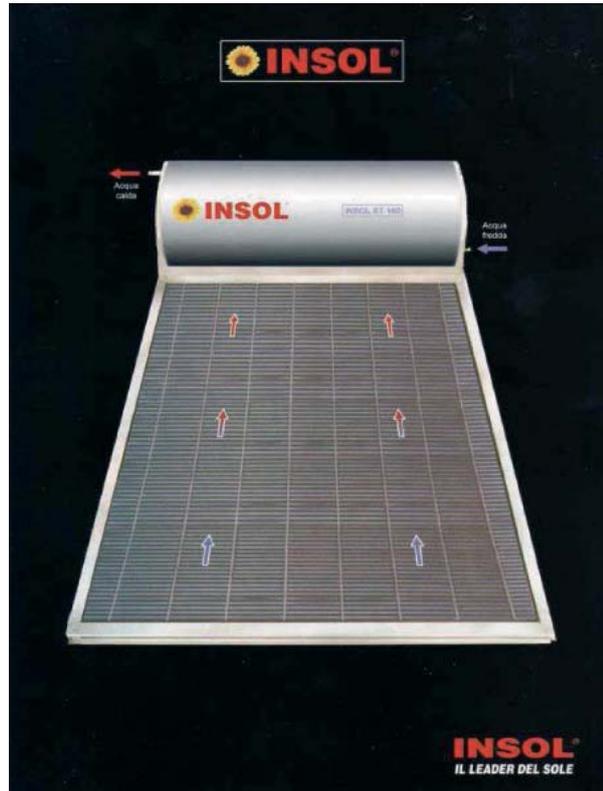
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**DIMENSIONI ESTERNE DI TUTTI I MODELLI**

**CARATTERISTICHE TECNICHE E DIMENSIONI DEI VARI MODELLI**

SERBATOIO			COLLETTORE			STRUTTURA		PESO TOTALE	
Dimensioni (mm)	Peso (kg)		Dimensioni (mm)	Barre (n°)	Superficie (m <sup>2</sup> )	Peso (kg)	Struttura (kg)	Acqua (kg)	Peso (kg)
530x1100	52		2000x1010x60	1	2,10	42	26	121	231
530x1200	62		2000x1270x60	1	2,60	51	27	140	260
300	70		2000x1270x60	1	2,60	51	27	140	238
300	70		2000x1010x60	2	4,20	43	28	134	232
200	103		2000x1010x60	2	4,20	43	30	119	400
300	114		2000x1010x60	3	6,30	41	30	220	540
300	114		2000x1270x60	3	8,40	51	30	246	536



event of not too heavy cloud cover. This is due to our patents, the excellent design and the high-quality of the system.

**THERMAL PERFORMANCE**

Our panels are glazed and the internal capturing surface has a TITANIUM treatment, capable of capturing a range of higher solar frequencies, including those that filter even in the presence of light cloud cover. They have a performance higher by 30% than “paint” collectors, i.e. black painted collectors, and 40% higher than traditional solar panels. This feature is also reported in some tests compared to other European productions of the German magazine specialized in the sector, of which we enclose the final report, where our collectors proved to be those with the highest thermal output compared to the other collectors tested.

**Easy system operation**

The water coming from the water network inside the tank (which works like a large and highly insulated water heater) heats up in the coils where the glycol liquid of the sealed solar circuit circulates at a very high temperature. The heat exchange between the coils and the water inside the tank has a high efficiency since in summer the glycol can reach temperatures close to 120/130°C and in winter even 50/60°C. The hot water obtained will serve the home user, using the existing pressure of the aqueduct or autoclave. So the pressure on the taps at home will remain the same.

**WEIGHTS :**

The total weight of the system on the roof is kg. 140 (230) when empty and kg. 290 (520) when full. Our plants are exported to 48 countries and some of the certifications obtained in those countries are listed in the attachment, which we invite to review.

## Orascom Construction Achieves Major Safety Milestone at Burullus Power Plant in Egypt Orascom

Dubai, UAE 8-03-2018- Construction Limited (NASDAQ Dubai: OC; EGX: ORAS) is proud to announce that it has exceeded 40 million man-hours without Lost Time Injury (LTI) at Burullus Power Plant in Egypt. This major milestone highlights the Group's commitment to the highest levels of safety and training while setting a new global benchmark for the fast-track execution of power projects.

Construction of the project commenced in October 2015 and is progressing ahead of schedule despite several challenges ranging from immense site preparation to severe weather conditions due to the project's location. Once complete, Burullus Power Plant will be one of the largest natural gas-fired combined cycle power plants in the world with a capacity of 4,800 MW.

Safety is at the forefront of Orascom Construction's performance strategy. The Group continues to focus on achieving leadership in quality, safety, health and environmental standards in its markets, and prides itself on emphasizing these principles across the organization.



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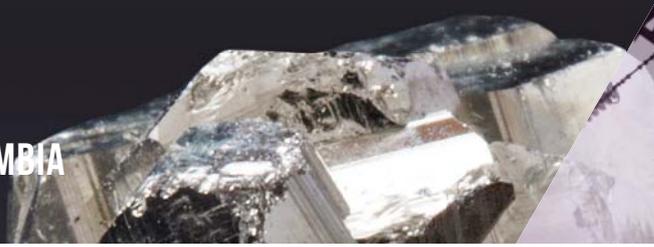
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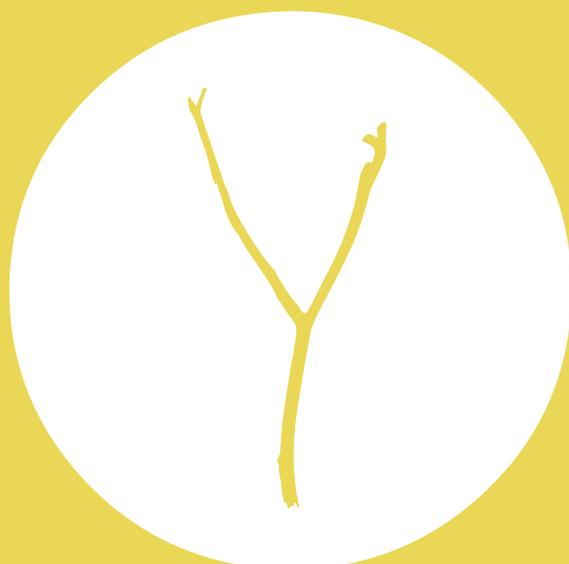
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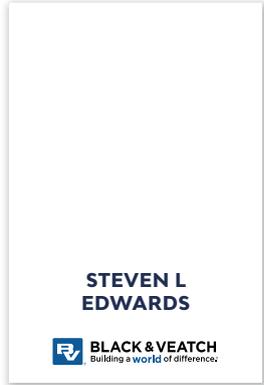
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