

The Most Modern Turnkey Plant Set up by Marcheluzzo Impianti in Algeria

Due to the engineering good results under the label "Made in Italy", Marcheluzzo Impianti has written a new chapter in the turnkey plants field for the heavy clay industry. The new plant engineered for the Algerian market marks a new front line signed by Marcheluzzo Impianti with its experience of more than 45 years in setting up fully automatic plants for the production of clay hollow bricks and wall blocks. Moreover, the plant proves that when a good project matches an enthusiastic collaboration of an ambitious customer, whatever difficulty is surmounted and best technological results are achieved.

The inauguration with the Algerian Minister took place on 23 February 2017.

In Marcheluzzo's philosophy, the word "modern" has the meaning of "simple": to simplify the plants for the customer's easy use by applying newest technologies. The new plant is set up in the industrial zone of Tizi Ouzou, around 100 km far from Algiers, and it will for sure become the starting point for the coming years regarding production capacity and products quality.

The project bears from the will of the family Izerkhef – well-known entrepreneur in other economic fields – guided in particular by Djebbar Izerkhef who has been constantly in front line giving a precious contribution to the realization of modern technical solutions, studied and implemented together with Marcheluzzo's technicians. The turnkey plant has been set up and put into operation in a very short time, short even for the European standard time of realization, that means in 12 months which has been possible due to the great engagement of everybody and the customer's promptness regarding its own works like foundations, industrial buildings, as well as gas and water supply.

Marcheluzzo Impianti s.r.l.
36033 Castelnuovo di Isola Vicentina, Italy

E-mail: info@marcheluzzo.com
www.marcheluzzo.com

Marcheluzzo Impianti had in charge the whole plant from engineering, transport, construction, and commissioning including a two years period of factory management supervision. The plant has a yearly capacity of 350 000 t final products which means that the kiln is dimensioned for a daily production of >1000 t, and consequently all the other production departments are designed to ensure the net needed amount. The preparation line is dimensioned for 1200 t/d with storing silos suitable for one week of production, assuring a uniform humidity of the raw material. The clay preparation is completely independent from the production line in order to make possible any intervention of ordinary and/or



Fig. 1 Giancarlo Marcheluzzo (Supplier), Djebbar Izerkhef (Owner) and Nordine Bedoui (Minister of Internal Affairs) (f.l.t.r.)

extraordinary maintenance without breaking down the daily production.

The factory is placed on a very compacted and covered surface of 16 000 m², the entire equipment of the various departments is set in well-studied locations according to a functional and harmonious design. The technological flow is summarized in the following.

Preparation

The preparation includes a set of box feeders manufactured by Marcheluzzo suitable to feed in constant and precise flow both clay and aggregates assuring the good mixing of the customer's raw material. The raw material runs on modular conveyors set



Fig. 2 Clay preparation line



Fig. 3 Automatic silos excavator



Fig. 4 Cutting line



Fig. 5 Loading with robot

developed by Marcheluzzo, including the storing silos up to the extruder and scraps recovery. The clay storing silo department includes a traditional bucket excavator with cable, made by Marcheluzzo, suitable for maximal exploitation of the silos capacity. The clay preparation machines were supplied by the German company Händle, specifically lumps-breaker, crushing roller mill, wetting mixer, refining roller mill and auger extruder with a diameter of 750 mm. The Italian company Tecnofiliere designed and supplied the special mouth lined up by polymer in order to reduce the friction effect. The dies were developed for the most uniform multi-exit purpose.

Cutting and dryer loading/unloading

The cutting line was realized according to the newest technology that includes control via encoder for optimising the scraps

rate linked to the speed of the clay column. The multi-wire electronic cutter is equipped with a mobile wires system where the critical breaking point continuously changes in order to ensure continuous production, thanks to the independent cleaning system of the wires. The cutting group is assisted by only one conveyor serving the loading robot. At the conveyor extremity there is a special crusher receiving the humid scraps that are then fed outdoor. The wet products are directly set on the drying pallets by a robot equipped with a gripper especially designed for moving the green products from the conveyor up to the pallet, in precise and programmed position, in order to allow the drying air flowing through. Marcheluzzo developed an automatic loading/unloading system for the drying car pallets that are moved through lifters with telescopic forks, useful for a semi-fast drying process including the pallets store. The

whole system is set up in an ergonomic position for granting easy access of the operator. The dryer cars are automatically moved up to the dryer's entry and kept again at the dryer's exit in order to be driven up to the other zone where dried products are off-loaded.

New semi-fast dryer

The new concept of the dryer type DT7 developed by Marcheluzzo is based on the continuous and low-speed ventilation which grants also an important energy saving compared with all other until-now known dryers. The structure consists of 4 lines longer than 94 m, independently operated and controlled. The framework consists of metallic beams with sandwich insulated panels made of mineral wool with a steel internal lining for a long lasting resistance against acid attack. An innovatory concept mostly focussed on consumption



Fig. 6 Dryer car loading



Fig. 7 New dryer DT7



Fig. 8 Kiln cars loading machine



Fig. 9 Robot-based loading kiln cars

saving has been adopted for the automatic control of the dryer.

In addition, the innovative automatic regulation allows to adjust the temperature and humidity inside of each dryer line every 7 m ensuring a precise control of the drying cycle. The entire drying process is managed by PLC which recognizing the product type automatically operates the dryer.

Kiln cars loading and handling

The straightforwardness concept is the added value of the loading lines realized by Marcheluzzo in tens of plants in Algeria giving prove of their efficiency and reliability. From the programming bench, the dried products are transported via conveyors up to the working area of two robots equipped with a set of twin grippers especially designed to precisely manipulate dried products. The same robots also load the layers of dried products in size of 1200 mm × 1200 mm forming 6 piles on kiln cars with a frontal height of 1600 mm.



Fig. 10 Plant view

The kiln cars automatic handling system is designed to take up the cars from the setting machine and to drive them up to the kiln entrance, then the cars are kept again at the kiln exit for being driven up to the off-loading area.

A car storing line is situated outside the kiln for satisfying the production need at the kiln in case of an eventual stop somewhere in the up-stream production.

Tunnel kiln

The new kiln, entirely engineered and manufactured by Marcheluzzo, has a width of 8,2 m and is equipped with a new recycle high-pressure system in the pre-heating zone, useful to assure products firing with homogeneous temperature from top to bottom of the load.

The firing system consists of high-pressure burners placed at the ceiling, dimensioned



Fig. 11 Tunnel kiln view



Fig. 12 Kiln exit



Made with Italy

MARCHELUZZO

— IMPIANTI —

HEAVY CLAY & CERAMIC TECHNOLOGY

SINCE 1971

You imagine, we create.

The Company Marcheluzzo Impianti founded in 1971 is a family company with great experience and a comprehensive program of production, from the design to the construction of complete plants for the production of any type of material for the heavy clay and ceramic industry.

La Société Marcheluzzo Impianti fondée en 1971 est une entreprise de caractère familiale de grande expérience pouvant offrir un programme de fabrication complet à partir du projet, jusqu'à la réalisation des usines complètes pour la production de tous types des produits en terre rouge cuit et céramique.

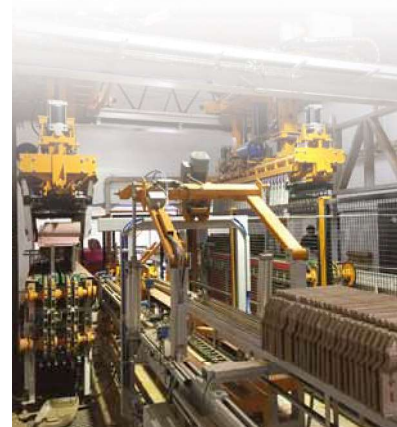




Fig. 13 Final packaging



Fig. 14 Packaging line



Fig. 15 Packaging line exit

(Figs.: Marcheluzzo)

for a daily firing capacity of 1200 t. The tunnel kiln is equipped with an automatic control system for the various products developed to adjust consequently the speed of the cars passing through the tunnel kiln, also keeping into consideration the number of cars with dried products standing outside. The fast cooling system coupled with the energy recovery system supplies the dryer with the necessary thermal energy for efficient operation. This circuit allows an important consumption reduction.

Fired products unloading and packaging

Once more, the simplicity matches the high performance of these lines. Two robots take

up the fired products from the kiln cars through a couple of especially-developed grippers.

The fired products are transported on two lines of chain conveyor being programmed to form packs with proper free spaces allowing the fork lift to take them up directly – wooden pallets are not necessary. The lines include a set of electronic vertical and horizontal strapping machines developed by Marcheluzzo according to new and advanced concepts focused on the reduction of stops number for granting continuous production.

The packs can be covered by a thermo-retractable film allowing their further transport on an outdoor chain conveyor for being

directly taken up and loaded on lorries for deliveries or conveyed to the yard.

Conclusion

This factory can be managed by a restricted number of technicians thanks to the automatic control systems that allow a continuous check on the production flux regarding each manufacturing step.

As already outlined, the straightforwardness is the keyword of this plant thus putting it in an avant-garde position. Family Izerkhef has also a great merit for the professional job and enthusiastic effort put in the fast and punctual realization of the civil works which lead Marcheluzzo Impianti to set up the factory in a very short time, even shorter than the European standard.

The familiar company Marcheluzzo Impianti, founded in 1971, achieved these results thanks to the long experience of its engineers staff joined to the company's philosophy of continuous research and development for technological innovations focused to ensure best efficiency and most possible energy consumption reduction.

Marcheluzzo Impianti welcomes anybody visiting the company at the Algerian fair Batimatec 2017 from where daily tours can be directly organized together with the owner for visiting this new plant.

Zschimmer & Schwarz
offers you

- ▶ appropriate rheological additives for your individual application field
- ▶ compatible products for specific glaze adjustment
- ▶ printing mediums for all application techniques
- ▶ a consistent quality starting with the purchase of raw materials through to the despatch of the final product

WE UNDERSTAND YOUR BUSINESS

Rely on our extensive knowledge and long standing experience with glazing and decorating additives tailor made to your individual requirements.

Invest in reliability! Ask us for more information:

keramik@zschimmer-schwarz.com

Please visit us: **CERAMICS CHINA@UNIFAIR**

JUNE 1-4, 2017, HALL 3.2, STAND K 232



ZSCHIMMER & SCHWARZ

zschimmer-schwarz.com