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Terca Bricks N.V.
Thermal energy-saving production of „snelbouwblocks“ in Belgium

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Thermal energy-saving production of „snelbouwblocks“ in Belgium

From the press through to the packaging station, the new plant of the Terca Bricks N.V. in Zonnebeke, West Flanders, was built completely by Lingl. It produces highly pored backing bricks with a daily capacity of 345 tonnes in a 12-hour single-shift operation on seven days per week.

With extensions to the dryer and the kiln as well as additional production shifts, the works capacity can be increased to 540 t/day.

The use of plane-grinding machines is intended for the production of calibrated bricks.

With a universal cutter for vertical cut, a double clay column (2 x 300 mm wide) or a 600 mm wide single column are cut and the green products placed on the laths.
The loaded drying supports pass through an automatic weighing device, are collected in a lifting frame and then transferred by a loading rack into the waiting dryer cars.

Drying

The continuous dryer, which is fitted with rotary fans and controlled by process computer, is divided into four automatically regulated zones. The control system takes into account the relative humidity, temperature, pressure and production time.
The dryer is 56.8 m long with five forward tracks. With a drying time of 30 hours, the daily capacity amounts to 354 tonnes. Heating of the dryer takes place in a compound thermal operation with hot air from the low-temperature area of the kiln and indirectly from the high-temperature area of the kiln via a thermal oil heat exchanger. Additional heating is possible with a pipe burner for natural gas.

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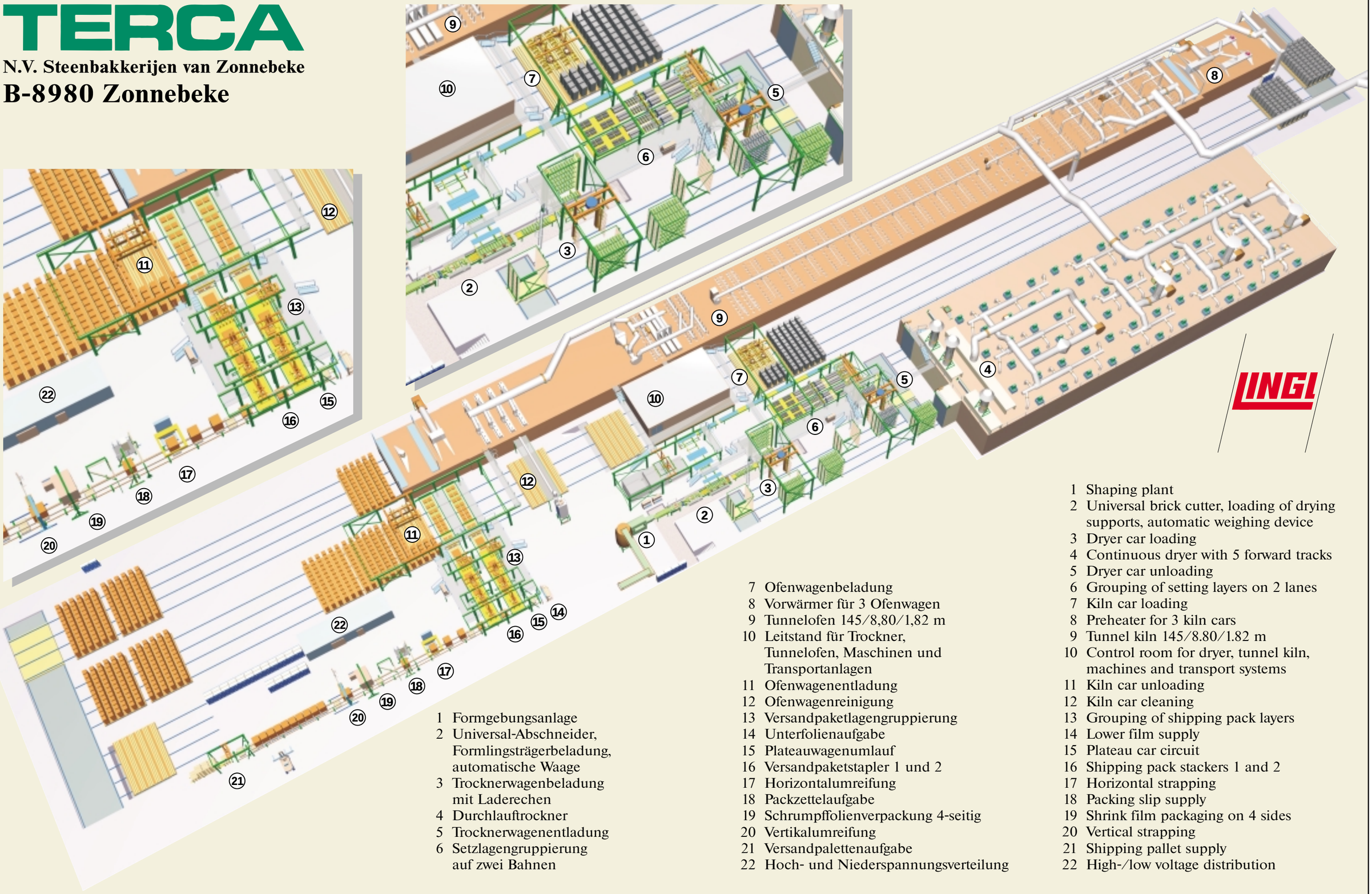
Grouping and setting

The dried bricks, after unloading of the dryer cars with another loading rack, are cleared from the laths by a transfer gripper and placed on two supply belts. Here they are tilted and grouped to setting layers, which are set on the kiln cars in a crosswise bond in square stacks as two-brick turrets.

TERCA

N.V. Steenbakkerijen van Zonnebeke

B-8980 Zonnebeke



1 Formgebungsanlage
2 Universal-Abschneider, Formlingsträgerbeladung, automatische Waage
3 Trocknerwagenbeladung mit Laderechen
4 Durchlauftrockner
5 Trocknerwagenentladung
6 Setzlagengruppierung auf zwei Bahnen
7 Ofenwagenbeladung
8 Vorwärmer für 3 Ofenwagen
9 Tunnelofen 145/8,80/1,82 m
10 Leitstand für Trockner, Tunnelofen, Maschinen und Transportanlagen
11 Ofenwagenentladung
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13 Versandpaketlagengruppierung
14 Unterfolienaufgabe
15 Plateauwagenumlauf
16 Versandpaketstapler 1 und 2
17 Horizontalumreifung
18 Packzettelaufgabe
19 Schrumpffolienverpackung 4-seitig
20 Vertikalumreifung
21 Versandpalettenaufgabe
22 Hoch- und Niederspannungsverteilung

1 Shaping plant
2 Universal brick cutter, loading of drying supports, automatic weighing device
3 Dryer car loading
4 Continuous dryer with 5 forward tracks
5 Dryer car unloading
6 Grouping of setting layers on 2 lanes
7 Kiln car loading
8 Preheater for 3 kiln cars
9 Tunnel kiln 145/8.80/1.82 m
10 Control room for dryer, tunnel kiln, machines and transport systems
11 Kiln car unloading
12 Kiln car cleaning
13 Grouping of shipping pack layers
14 Lower film supply
15 Plateau car circuit
16 Shipping pack stackers 1 and 2
17 Horizontal strapping
18 Packing slip supply
19 Shrink film packaging on 4 sides
20 Vertical strapping
21 Shipping pallet supply
22 High-/low voltage distribution

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Firing

The natural gas fired tunnel kiln is 145 m long and has a very low energy consumption. The atmosphere and temperature gradient in the kiln are controlled and automatically regulated via process computer. With a firing temperature of 1020° C, the passage time through the kiln amounts to 35 hours, whereby firing can be carried out in oxidizing or reducing atmosphere. The raw material has a high carbon content, so that special precautions have to be taken for the oxidization of the opening materials.

Unloading

The fired bricks are unloaded in layers by a transfer gripper and placed on two chain conveyors.

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Pack-forming and packaging

The supplied bricks are regrouped to form shipping pack layers by layer compensating and aligning grippers.

On a plateau car circuit, rotary transfer grippers stack the brick layers in a crosswise bond or header-stretcher bond, with or without shipping pallet, on a base foil to form shipping packs. Three different types of shipping pack can be formed: with works pallet, with Euro pallet, and without pallet but with grip holes for the fork-lift truck.

In the subsequent packaging plant, several combinations of horizontal and vertical strapping , insertion of packing labels, and shrink-film wrapping with the film on four sides are possible. Vertical strapping serves to secure the finished packs on the shipping pallets.

Technical Data

Product:	Backing bricks (snelbouwblocks), 41 formats
Capacity:	345.5 t/calendar day
Reference size:	288/138/138 mm, 4.28 kg fired weight
Working time:	12 hours on 7 days/week
Personnel:	3 men (from press to packaging)

Continuous dryer

Air recirculation by rotary fans

Dryer length:	56.8 m
Tracks:	5 forward, 1 return track
Drying time:	30 hours

Tunnel kiln

Kiln length:	145 m (23 cars)
Preheater/lock:	18.9 m (3 cars)
Exit lock:	6.35 m (1 car)
Firing channel:	8.80 m wide, 1.82 m high
Fuel:	Natural gas
Firing temperature:	1020°C oxidizing/reducing
Passage time:	35 hours

Plant control

The machines, transport systems, continuous dryer and tunnel kiln as well as the adsorption filter and thermoreactor plants are controlled automatically by a Simatic S5-155 U process computer as a central unit, the Fix-DMACS visualization system based on Windows NT and joint Terca/Lingl software.

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