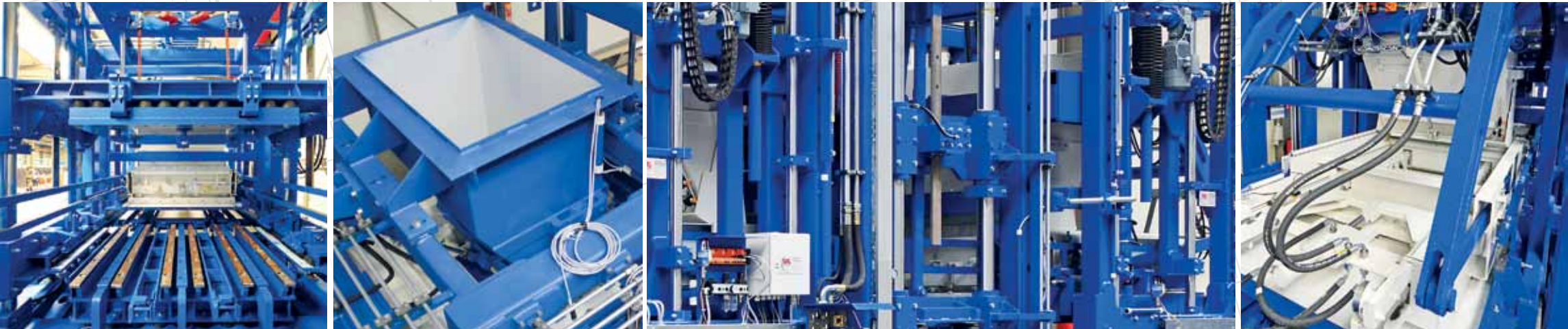


SPECIALISTS IN CONCRETE BLOCK PRODUCTION PLANTS



EFFICIENT · LOW-MAINTENANCE · USER-FRIENDLY

FRIMA

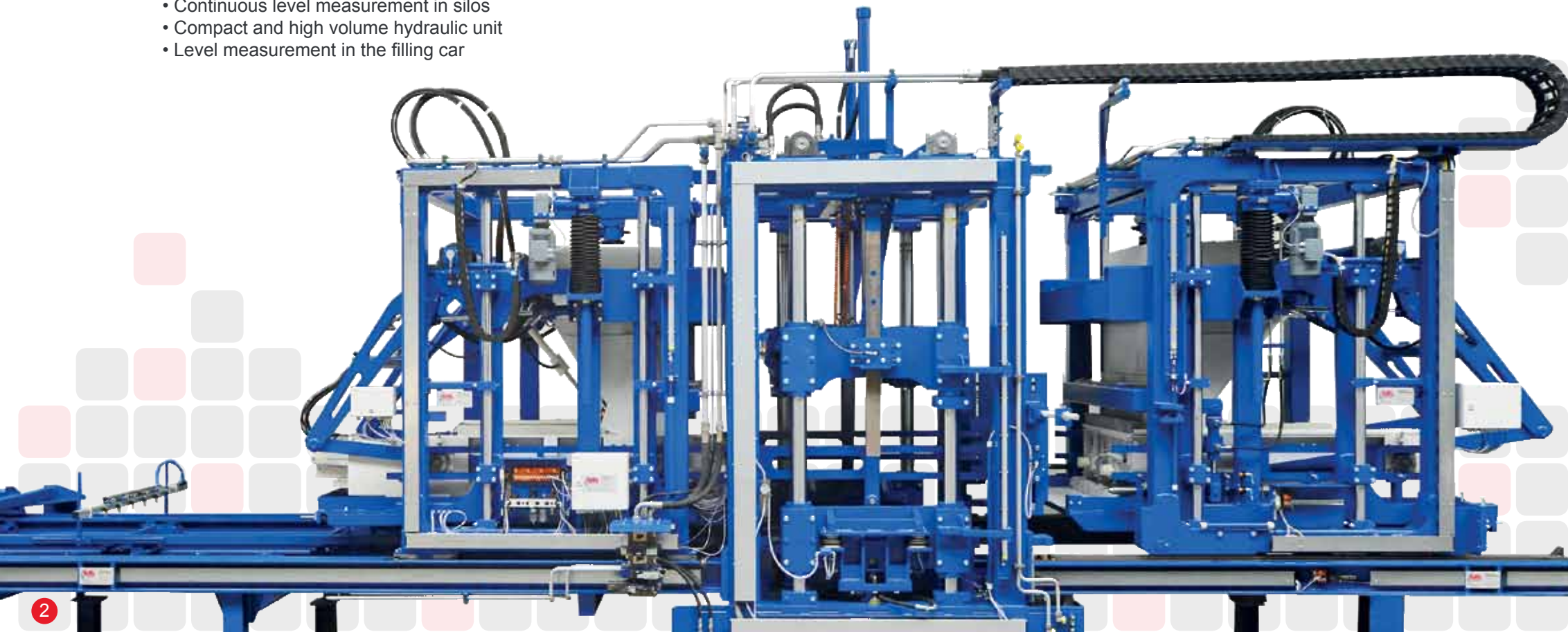
FRIMA HP1400

TECHNICAL FEATURES

- Production Boards: 1400 x 1300 mm min., 1400 x 1400 mm max.
- Production Height: 40 mm to 500 mm
- Guide pillars \varnothing 120 mm
- Automatic vibrating force adjustment
- Principal axes with proportional control valves and position detector
- Extremely heavy mechanical design for high performance
- Latest control and visualization systems SIEMENS S7 and 3D user interface
- Automatic height adjustment of filling device
- Pneumatic scraper
- Proportional pressure setting of the air actuators form bracing
- Continuous level measurement in silos
- Compact and high volume hydraulic unit
- Level measurement in the filling car

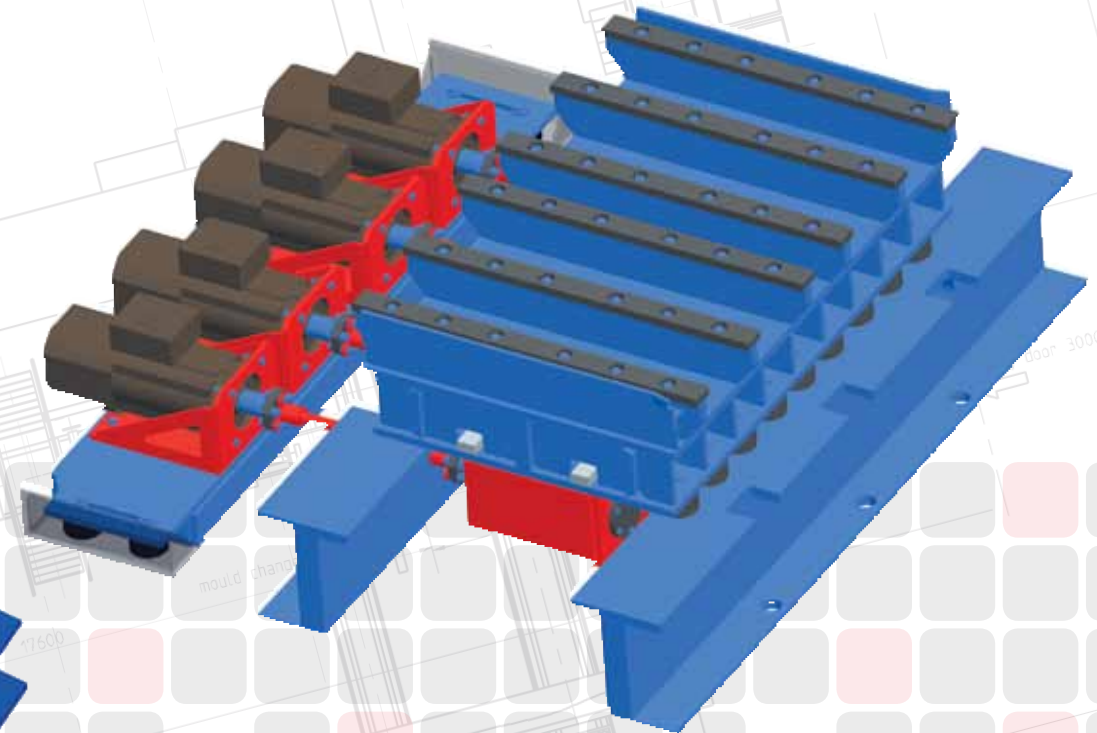
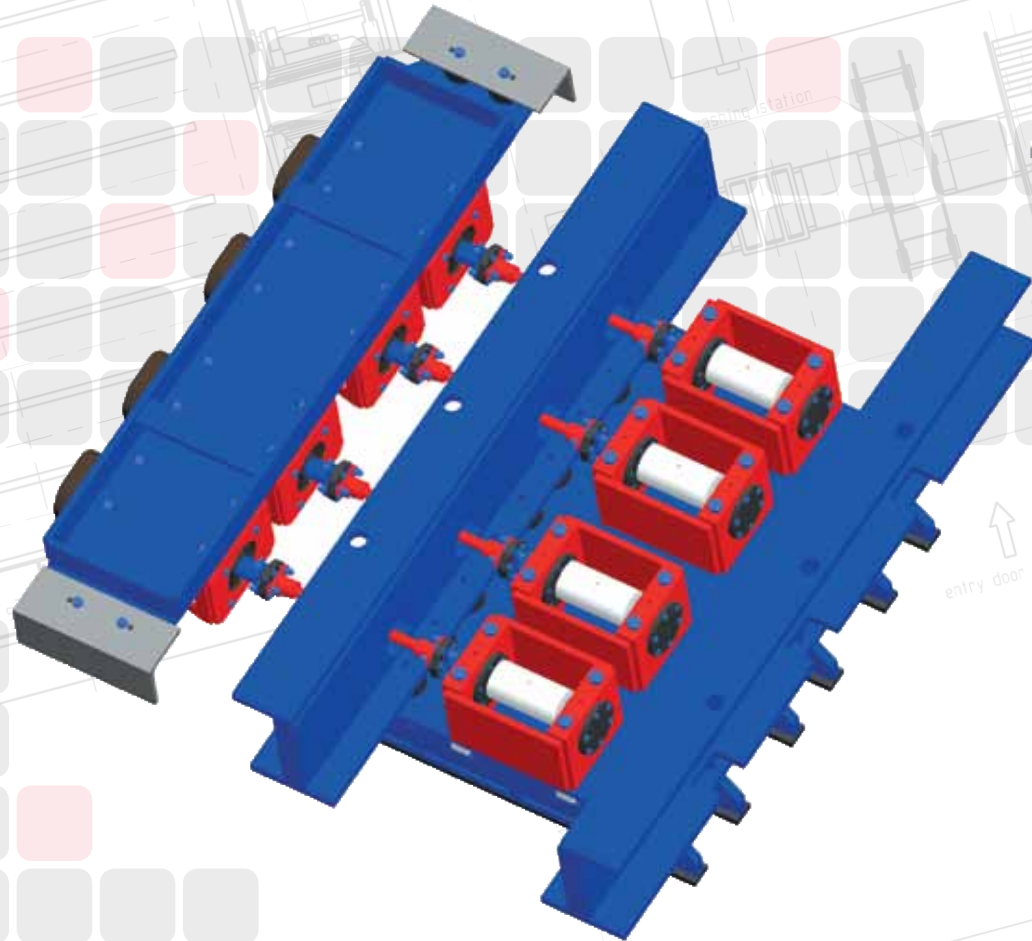
Depending on version:

- 2nd Filling device for face-mix concrete
- Quick mold exchanger
- Cross-cleaning device
- Colour mixer
- Metal sheet pulling device
- Device for insulating brick production
- Mechanical height off with balancing the board thickness difference
- Discharge pit



FRIMA Axis vibration

With the **FRIMA Axis vibration system** we offer to our customers the most innovative solutions for the compaction of semi-dry concrete. The system stands out for its practical simplicity. Through the use of highly dynamic servo drives, angle and speed can be adjusted within milliseconds. Result of this is a precisely accurate vibration. The individual requirements of frequency and amplitude make this system very flexible for any production requirements.



Precise guidelines using 3D control system ensure an effective dose of the vibrating table which can be precisely matched to the product. Optimum density and thus an excellent strength are the result.

And last but not least, the system is equipped with a regenerative power supply unit. The use of power feed back improves the energy balance of the entire system significantly, from energy-efficient drive components are impressive energy savers - and conserves resources and the environment.

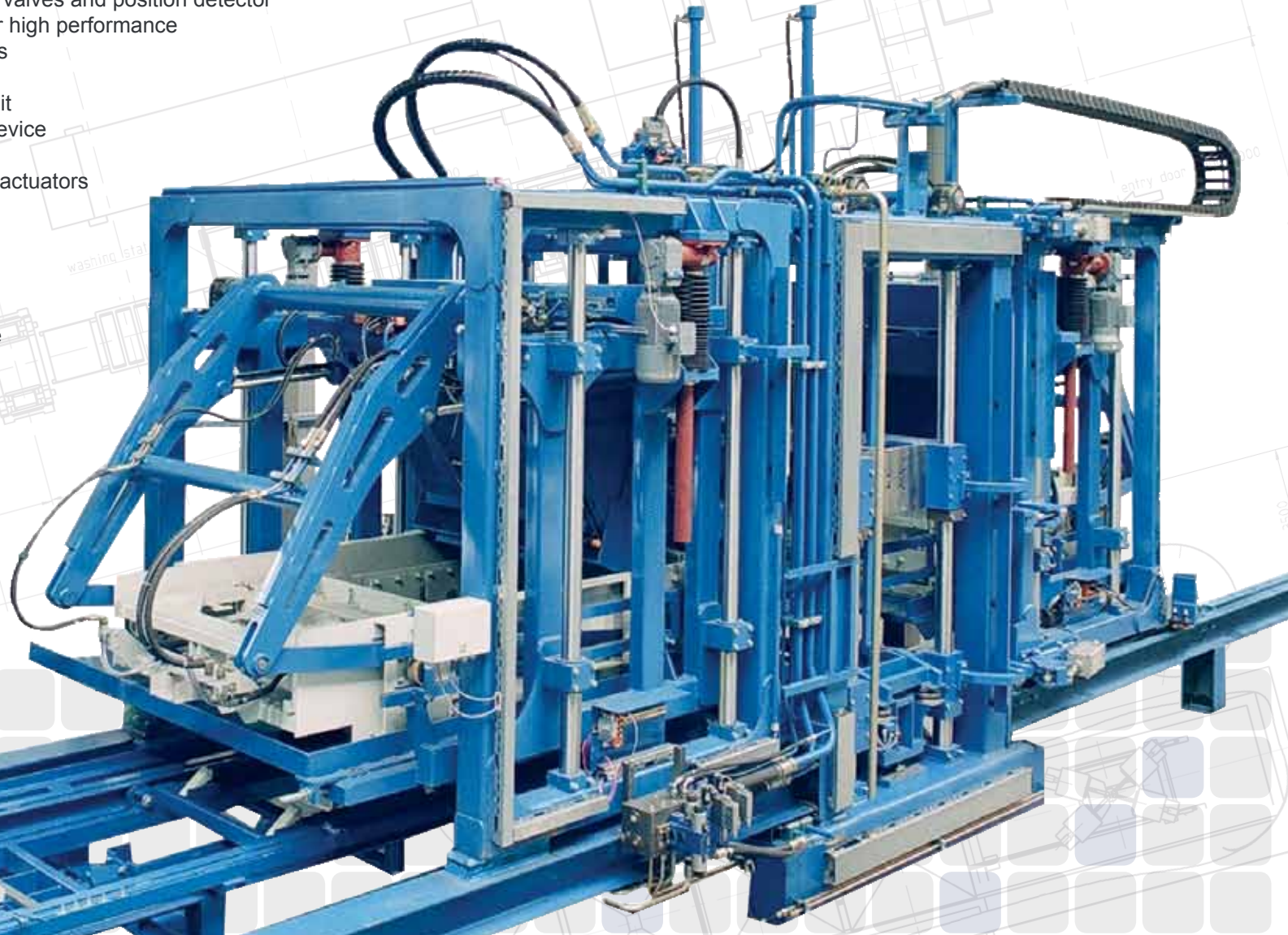
FRIMA HP1200

TECHNICAL FEATURES

- Production Boards: 1400 x 1100 mm min., 1400 x 1200 mm max.
- Production Height: 40 mm to 500 mm
- Principal axes with proportional control valves and position detector
- Extremely heavy mechanical design for high performance
- Latest control and visualization systems
SIEMENS S7 and 3D user interface
- Compact and high volume hydraulic unit
- Automatic height adjustment of filling device
- Continuous level measurement in silos
- Proportional pressure setting of the air actuators
mold bracing
- Pneumatic scraper on the filling car

Depending on version:

- 2nd Filling device for face-mix concrete
- Automatic vibrating force adjustment
- Quick mold exchanger
- Cross-cleaning device
- Colour mixer
- Metal sheet pulling device
- Device for insulating brick production
- Level measurement in the filling car
- Mechanical height off with balancing
the board thickness difference
- Discharge pit



FRIMA HP1000

TECHNICAL FEATURES

- Production Boards: 1400 x 800 mm min., 1400 x 1000 mm max.
- Production Height: up to 500 mm
- Principal axes with proportional control valves and position detector
- Extremely heavy mechanical design for high performance
- Latest control and visualization systems SIEMENS S7 and 3D user interface
- Compact and high volume hydraulic unit
- Automatic height adjustment of filling device
- Continuous level measurement in silos
- Proportional pressure setting of the air actuators mold bracing
- Pneumatic scraper on the filling car

Depending on version:

- 2nd Filling device for face-mix concrete
- Automatic vibrating force adjustment
- Quick mold exchanger
- Cross-cleaning device
- Colour mixer
- Metal sheet pulling device
- Device for insulating brick production
- Level measurement in the filling car
- Mechanical height off with balancing the board thickness difference
- Discharge pit



FRIMA HP800

TECHNICAL FEATURES

- Production Boards: 1400 x 650 mm min, 1400 x 800 mm max.
- Production Height: up to 500 mm
- Principal axes with proportional control valves and position detector
- Extremely heavy mechanical design for high performance
- Latest control and visualization systems SIEMENS S7 and 3D user interface
- Compact and high volume hydraulic unit
- Automatic height adjustment of filling device
- Continuous level measurement in silos
- Proportional pressure setting of the air actuators mold bracing
- Pneumatic scraper on the filling car

Depending on version:

- 2nd Filling device for face-mix concrete
- Automatic vibrating force adjustment
- Quick mold exchanger
- Cross-cleaning device
- Colour mixer
- Metal sheet pulling device
- Device for insulating brick production
- Level measurement in the filling car
- Mechanical height off with balancing the board thickness difference
- Discharge pit



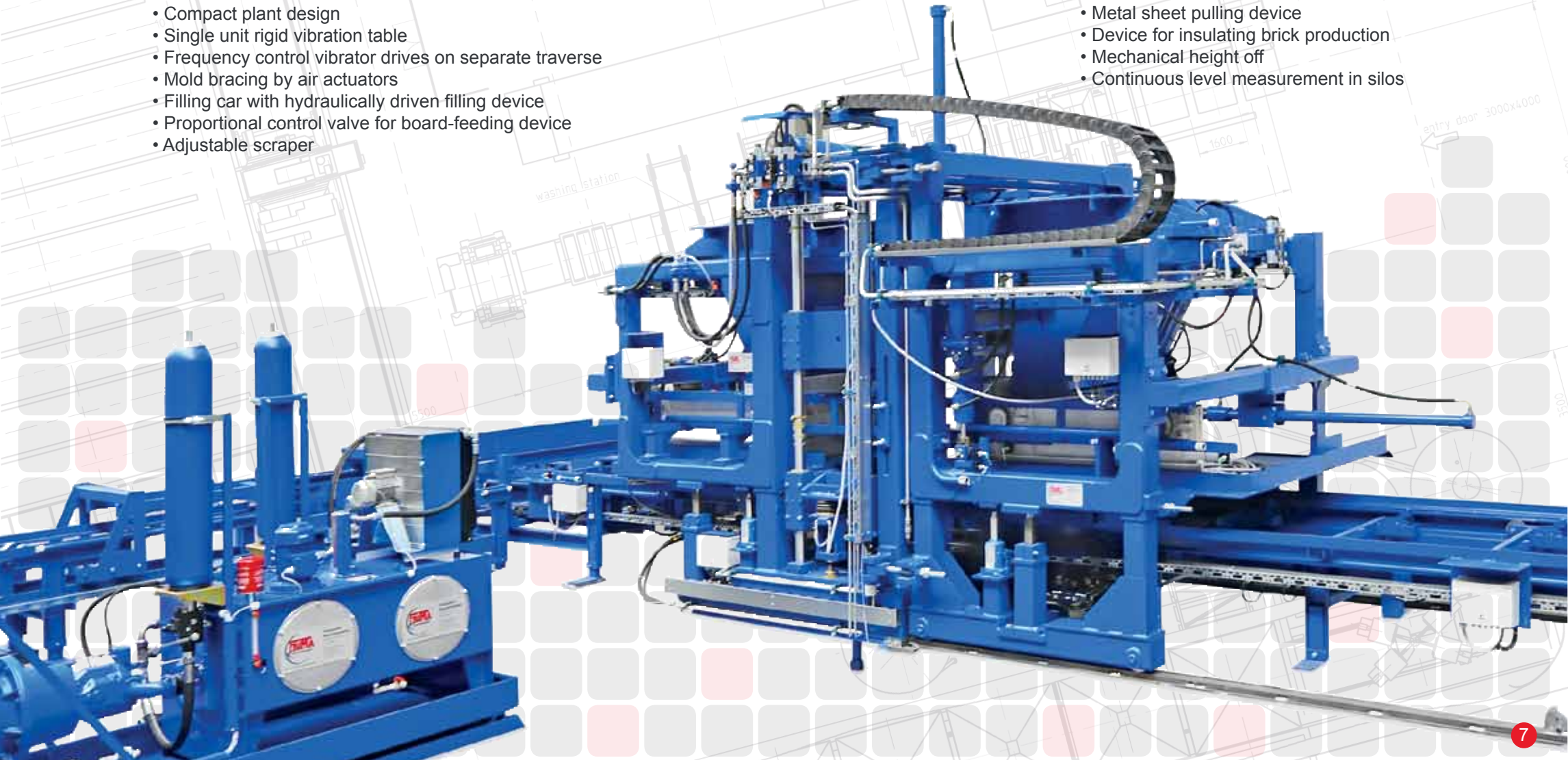
FRIMA P650

TECHNICAL FEATURES

- Board size: 1400 x 670 mm min. or 1520 x 670 mm Max. with feet
- Production Height: 40 mm to 300 mm
- Fully automatic control and visualization systems
SIEMENS S7 and Win CC Flexible
- Compact plant design
- Single unit rigid vibration table
- Frequency control vibrator drives on separate traverse
- Mold bracing by air actuators
- Filling car with hydraulically driven filling device
- Proportional control valve for board-feeding device
- Adjustable scraper

Depending on version:

- 2nd Filling device for face-mix concrete
- Cross-cleaning
- Colourmix
- Metal sheet pulling device
- Device for insulating brick production
- Mechanical height off
- Continuous level measurement in silos



FRIMA E500

TECHNICAL FEATURES

- Board size: 1400 x 550 mm min. or 1520 x 550 mm Max. with feet / support
- Production Height: up to 300mm
- Latest control and operating systems SIEMENS S7-1200 and SIMATIC Basic Panel
- Compact plant design
- Single unit rigid vibrating table
- Frequency controlled vibrating system
- Mold bracing by air bag actuators
- Proportional control valve for board-feeding device

Depending on version:

- 2nd Filling device for face-mix concrete
- Cross-cleaning
- Mechanical height control



TABLE OF PERFORMANCES

performance data FRIMA-HP 1400

(Output in 8 h production with 92% efficiency / Data's are based on proper materials and grading curves)

product	size of the board 1400 x 1400		work surface 1300 x 1350	
	Hollow blocks	Pavers with facemix	Pavers without facemix	Kerbstones
size	20 x 40 h x 20 cm	rectangle 10 x 20 cm	rectangle 10 x 20 cm	15 x 30 h x 100 cm
units per board	18	72	72	6
cycle per minute	4	4	5	2
output in 1 hour	3.750	313 m ²	400 m ²	663 in linear meter
output in 8 hours	30.000	2.500 m ²	3.200 m ²	5.300 in linear meter

performance data FRIMA-HP 1200

(Output in 8 h production with 92% efficiency / Data's are based on proper materials and grading curves)

product	size of the board 1400 x 1200		work surface 1300 x 1150	
	Hollow blocks	Pavers with facemix	Pavers without facemix	Kerbstones
size	20 x 40 h x 20 cm	rectangle 10 x 20 cm	rectangle 10 x 20 cm	15 x 30 h x 100 cm
units per board	15	60	60	5
cycle per minute	4	4	5	2
output in 1 hour	3.124	265 m ²	332 m ²	552 in linear meter
output in 8 hours	25.000	2.120 m ²	2.648 m ²	4.416 in linear meter

performance data FRIMA-HP 1000

(Output in 8 h production with 92% efficiency / Data's are based on proper materials and grading curves)

product	size of the board 1400 x 1000		work surface 1300 x 950	
	Hollow blocks	Pavers with facemix	Pavers without facemix	Kerbstones
size	20 x 40 h x 20 cm	rectangle 10 x 20 cm	rectangle 10 x 20 cm	15 x 30 h x 100 cm
units per board	12	48	48	4
cycle per minute	4	4	5	2
output in 1 hour	2.500	213 m ²	263 m ²	440 in linear meter
output in 8 hours	20.000	1.700 m ²	2.100 m ²	3.530 in linear meter

performance data FRIMA-HP 800

(Output in 8 h production with 92% efficiency / Data's are based on proper materials and grading curves)

product	size of the board 1400 x 800		work surface 1300 x 750	
	Hollow blocks	Pavers with facemix	Pavers without facemix	Kerbstones
size	20 x 40 h x 20 cm	rectangle 10 x 20 cm	rectangle 10 x 20 cm	15 x 30 h x 100 cm
units per board	9	42	42	3
cycle per minute	4	4	5	2
output in 1 hour	1.875	181 m ²	231 m ²	332 in linear meter
output in 8 hours	15.000	1.450 m ²	1.850 m ²	2.650 in linear meter

performance data FRIMA-P 650

(Output in 8 h production with 92% efficiency / Data's are based on proper materials and grading curves)

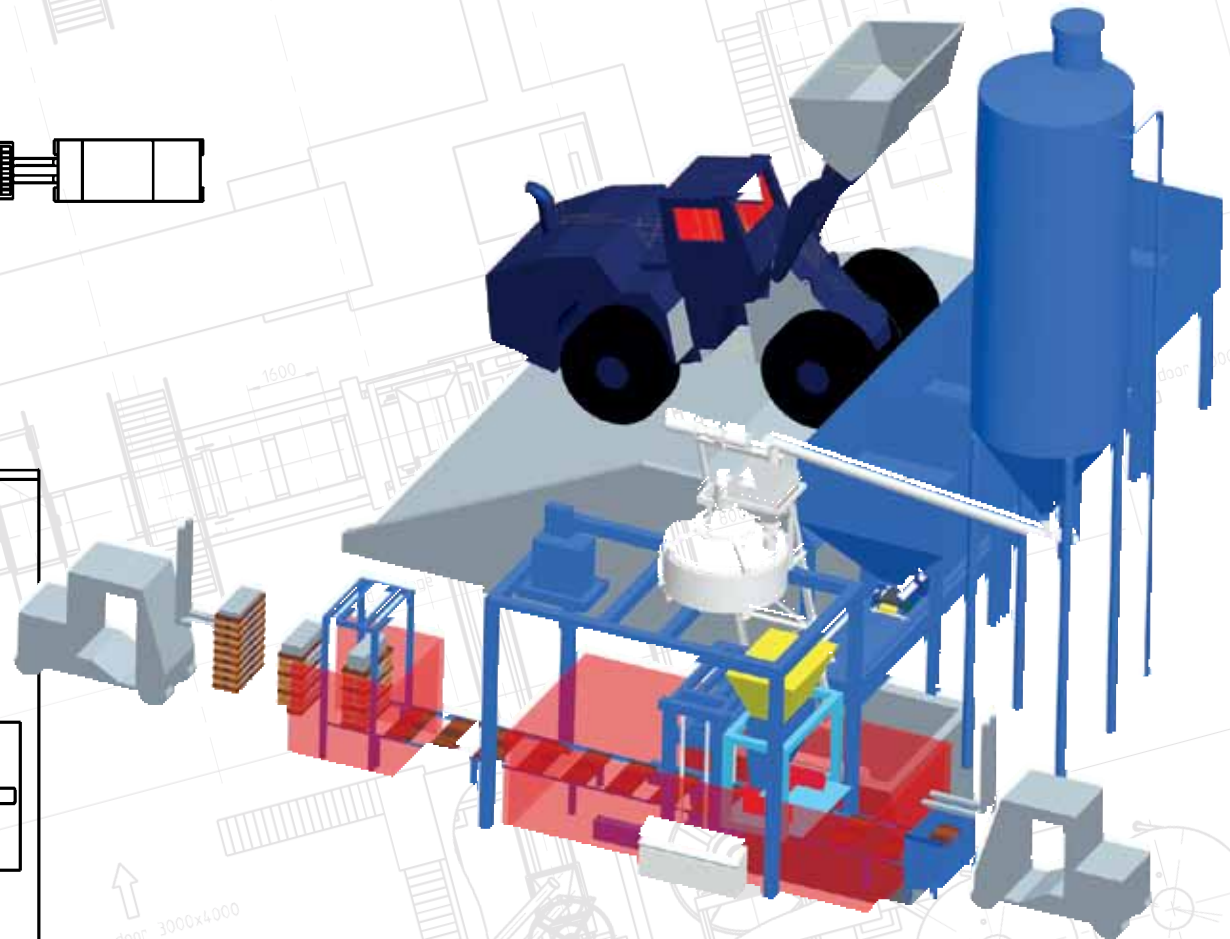
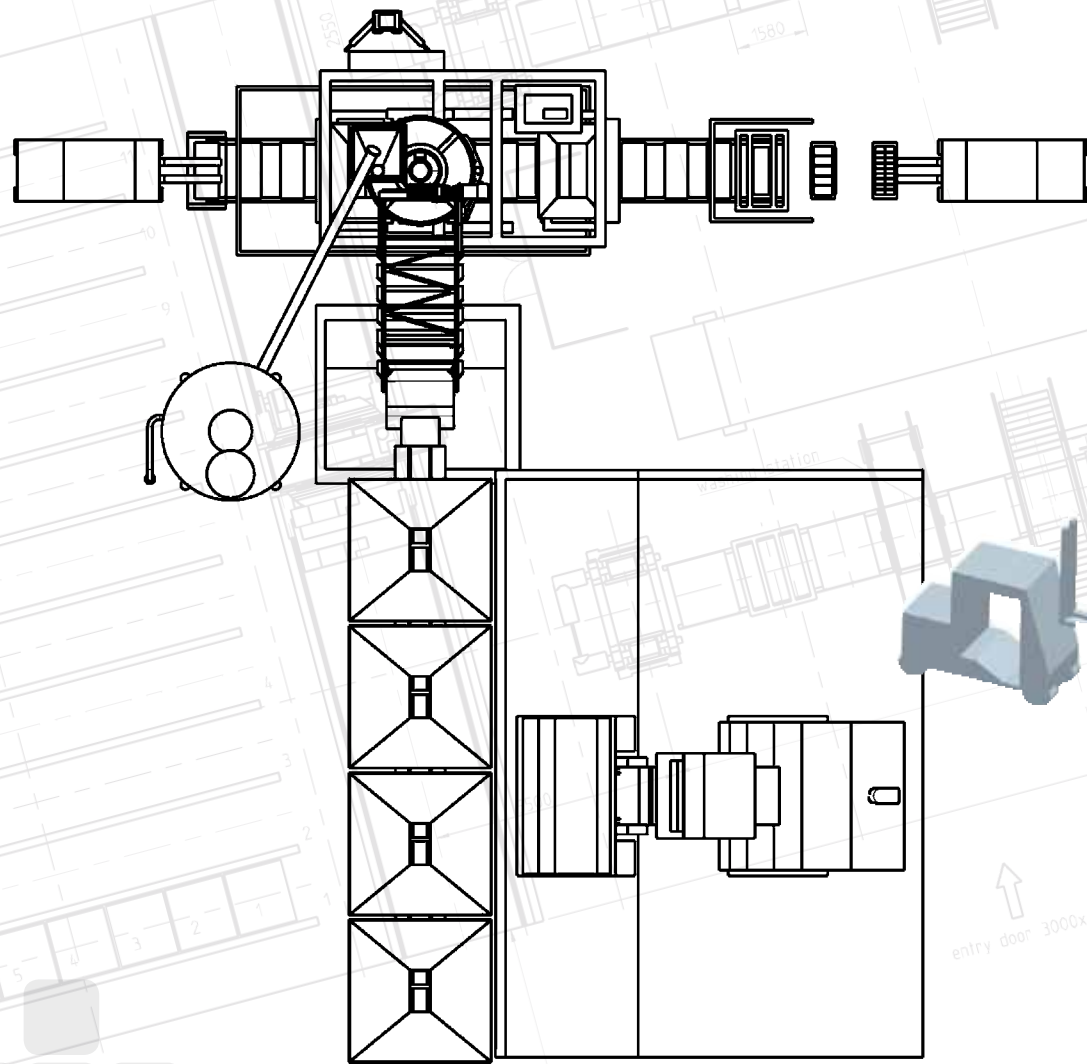
product	size of the board 1400 x 670		work surface 1300 x 620	
	Hollow blocks	Pavers with facemix	Pavers without facemix	Kerbstones
size	20 x 40 h x 20 cm	rectangle 10 x 20 cm	rectangle 10 x 20 cm	15 x 30 h x 100 cm
units per board	9	36	36	3
cycle per minute	3	3	4	2
output in 1 hour	1.438	119 m ²	156 m ²	332 in linear meter
output in 8 hours	12.000	950 m ²	1.250 m ²	2.650 in linear meter

performance data FRIMA-E 500

(Output in 8 h production with 92% efficiency / Data's are based on proper materials and grading curves)

product	size of the board 1400 x 550		work surface 1300 x 500	
	Hollow blocks	Pavers with facemix	Pavers without facemix	Kerbstones
size	20 x 40 h x 20 cm	rectangle 10 x 20 cm	rectangle 10 x 20 cm	15 x 30 h x 100 cm
units per board	6	30	30	2
cycle per minute	3	2,5	4	1,5
output in 1 hour	1.080	83 m ²	132 m ²	148 in linear meter
output in 8 hours	7.950	660 m ²	1.060 m ²	1.180 in linear meter

SEMI-AUTOMATIC STRAIGHT LINE SYSTEM



BLOCK- AND PAVERPLANT IN I – SHAPE

Plant for boards with legs in I-Design:

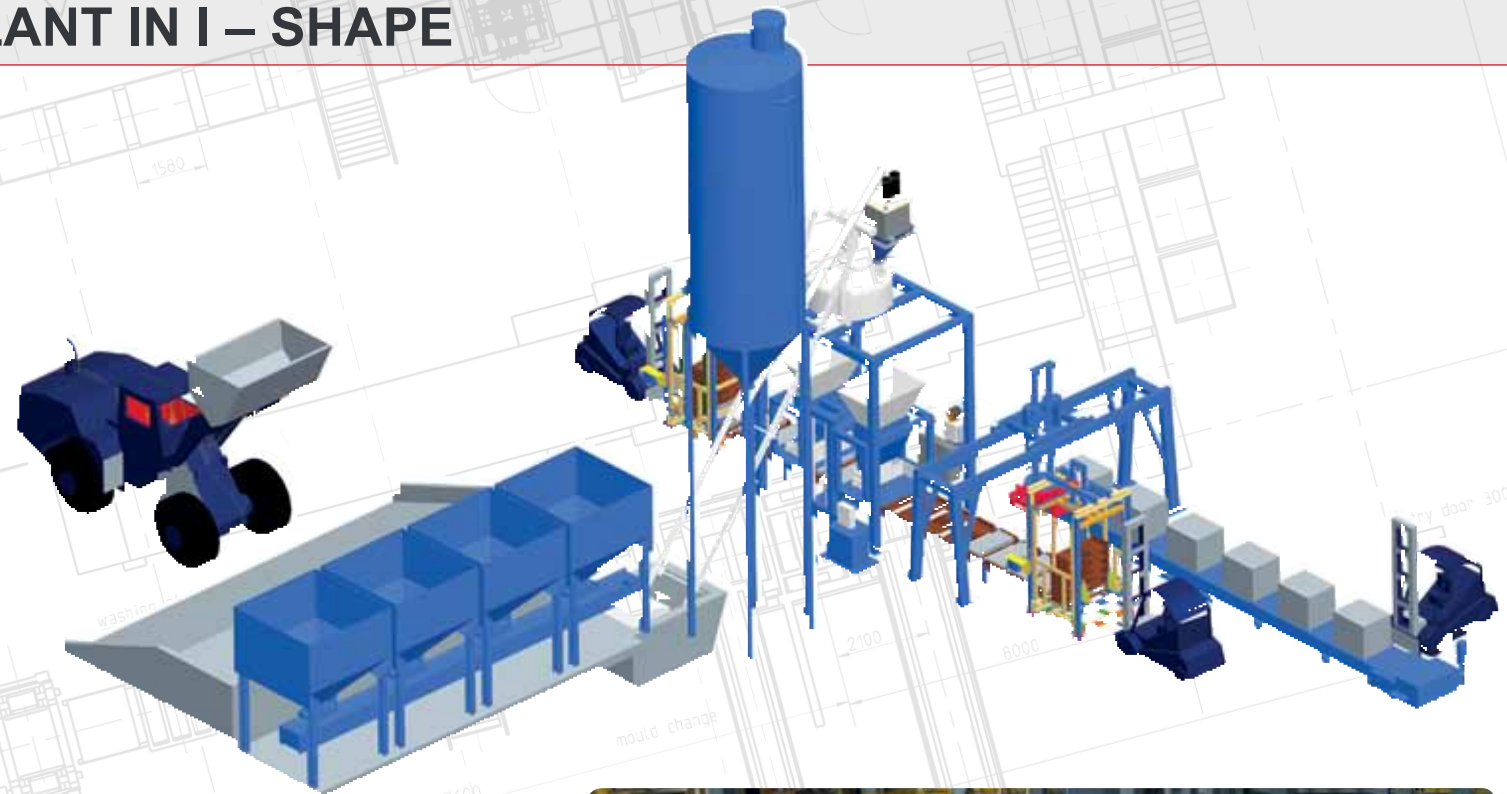
- destacker for boards with feet
- sliding conveyor
- cuber
- slat conveyor
- board brush
- block machine, 1 or 2 filling units
- stacker for boards with feet
- control system for complete line

Advantages:

- cost effective
- no racks required
- no finger car system required
- upgrade to complete fully automatically plant possible

Sequence by production on boards with feet:

- loading destacker by fork lift with loaded pallets
- cuber take products and build up stone bundles on the slat conveyor
- cleaning of the empty pallets and feeding to the machine
- new products on the pallets made by the machine
- transport of the pallets with fresh products to the stacker unit
- unloading stacker unit by forklift
- drying time 1 day (no rack system)



BLOCK- AND PAVERPLANT IN U – SHAPE

Plant for boards with legs in U-Design:

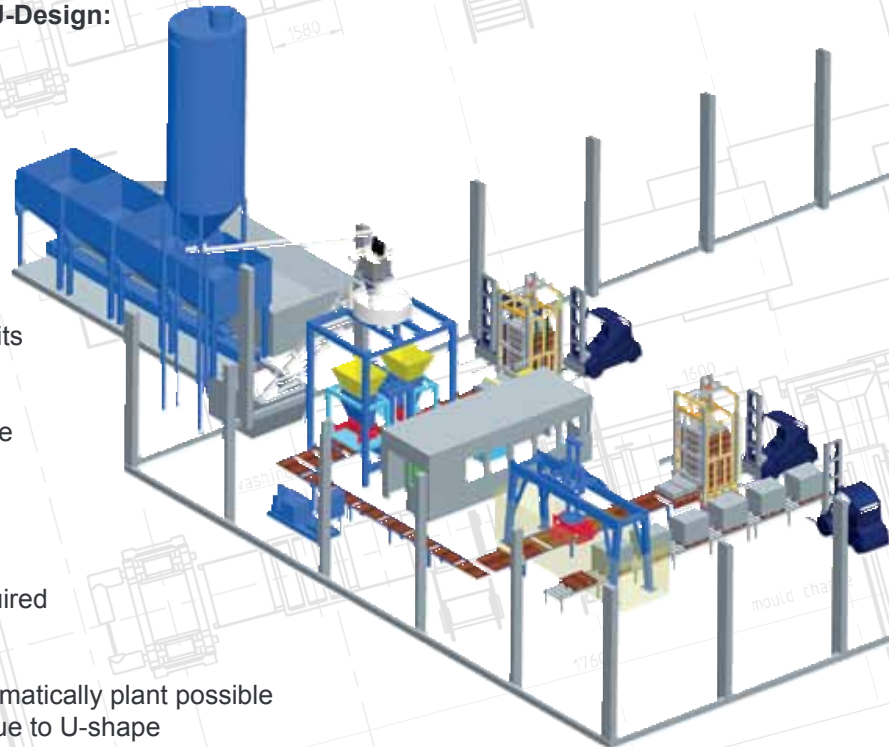
- destacker for boards with feet
- sliding conveyor dry line
- gap closer
- cuber
- slat conveyor
- board brush
- board turner
- cross conveyor for empty boards
- block machine, 1 or 2 filling units
- sliding conveyor wet line
- stacker for boards with feet
- control system for complete line

Advantages:

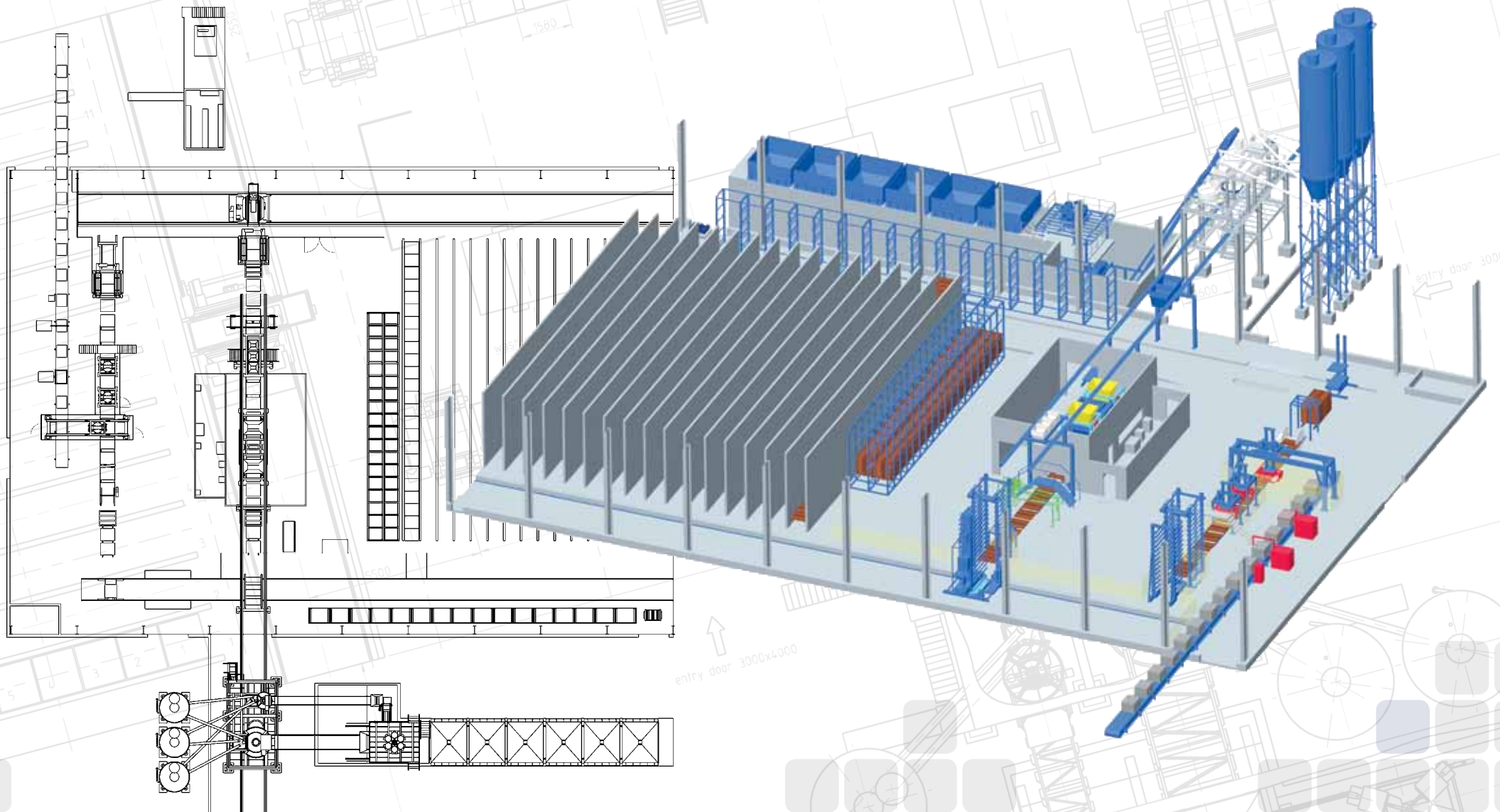
- cost effective
- no elevator and lowerator required
- no racks required
- no finger car system required
- upgrade to complete fully automatically plant possible
- less drive way for the forklift due to U-shape

Sequence by production on boards with feet:

- loading destacker by fork lift with loaded pallets
- cuber take products and build up stone bundles on the slat conveyor
- cleaning of the empty pallets and feeding to the machine
- new products on the pallets made by the machine
- transport of the pallets with fresh products to the stacker unit
- unloading stacker unit by forklift
- drying time 1 day (no rack system)



BLOCK- AND PAVER PLANT IN FULL EXPANSION STAGE



HANDLING SYSTEM

Technical Features CUBER

- variable-speed asynchronous motor
- Digital Position Detector
- 4 sides Clip effect
- Clip can either be in electrical, hydraulic or pneumatic version
- Main and side clip with mechanical synchronization
- Main and side clip disabled/ switched off
- Adjustable clamping forces
- Terminal strips with easily replaceable rubber profiles
- Terminal strips with optional steel cam trays
- Latest control and operating systems SIEMENS S7 and 3D user interface

Technical features lowerator/elevator:

- Maximum lifting capacity 20 tons
- single or double layer

Optional:

- maintenance platform
- buffer car

Palettes and bars trailer

Combination device for wood strips and shipping pallets. With magazine for wood strips Placing the selectable two / four layers of wood strips for the stacking of kerb products



CAR GROUP

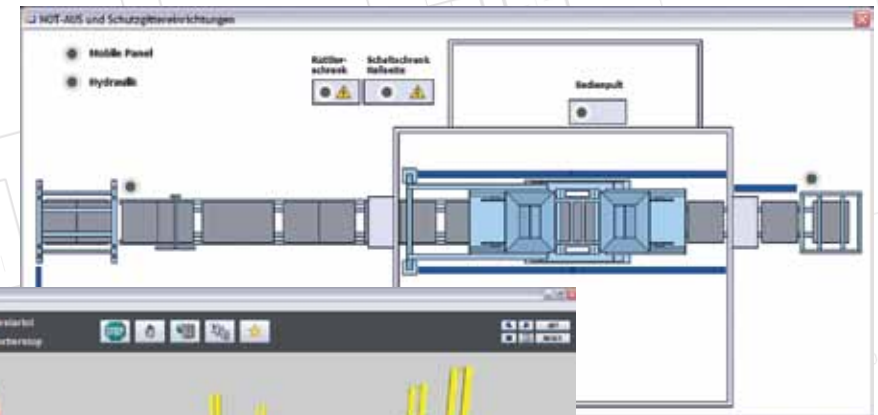
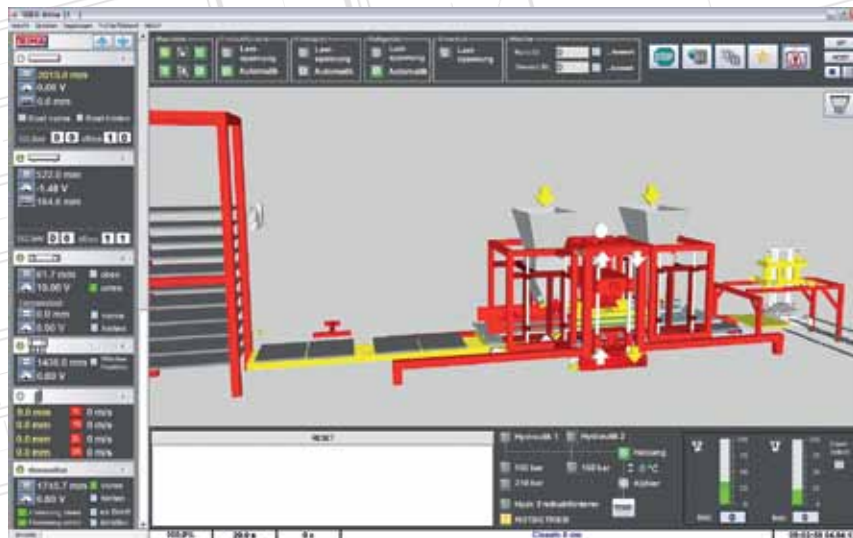
The **FRIMA finger car** can be set to optimize the product. This is the stage where all the production data such as: Product name, form number, time stamp, etc. are supplied along the production network with the inscription archived in the lifting frame. Upon delivery of the dry product in lowerator, the dry side provided with this data is then available. Thus, a complete production data tracking becomes possible through labeling.



FRIMA – VISUAL SYSTEM

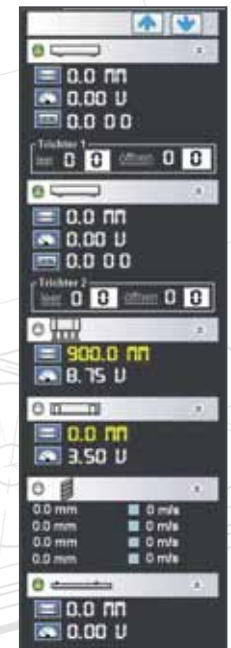
The jobs of visual system are:

- graphic presentation of machines or complete production lines
- indication and recording of all reasons for product interruption in plain text
- indication and setting of all variable parameters
- saving all variable parameters as recipe
- acquisition of production parameters like cycle time and produced quantity



The visual system is connected to the PLC by the fast Profinet (Ethernet).
The machines are graphic represented in 3D and are free rotating and zooming.
The representation shows the actual positions and reports in real time.

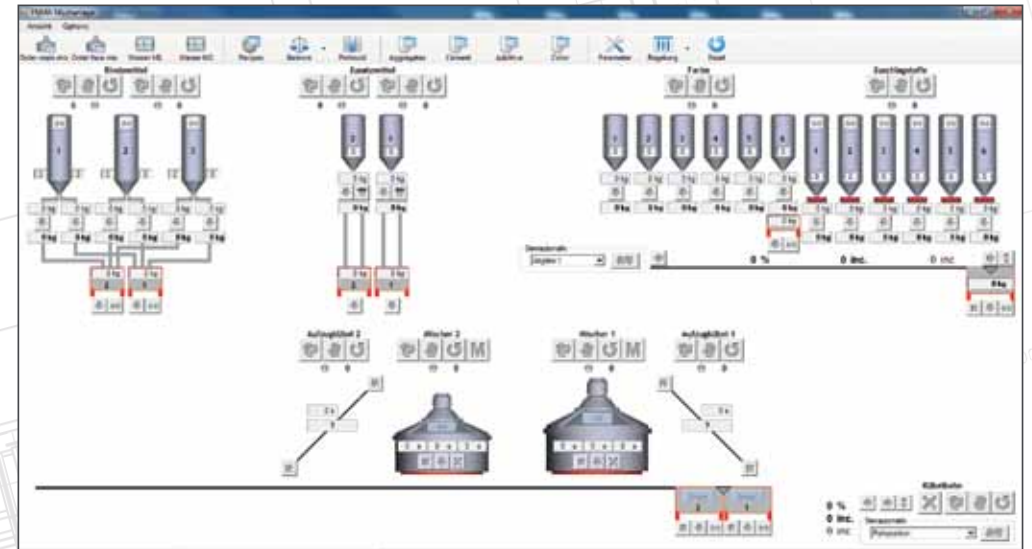
For production needed parameters are represented clear and free changeable for fast adjustments to produce different products.
The visual system records user inputs and allows saving complete machine settings as recipes.
The number of recipes is unlimited.



MIXING AND BATCHING PLANT

Individual solutions for customized systems

- suitable for all FRIMA block- and paver plants
- with one mixer for base mix and one mixer for face mix
- base mixer up to 2,5 cbm output
- all mixers in planetary design
- with own independent control- and visualization system
- dosing by travelling weight hopper
- concrete transport to the machine by bucket or by belt
- water dosing by microwave and electronically water meter
- with admixture pumps
- with color dosing as option



PRODUCTION OF MULTI-COLOURED PAVERS

The 4-color bucket conveyor for COLORMIX will be filled up from the mixer with 4-color concrete mixtures.

Each bucket is designed as a weigh hopper.

With the rotating dosing feeder the fresh concrete is fed into the machine hopper.

Said variable dosing rate is determined by the outlet width, through which two separate height slide and by the frequency-regulated rotational speed of the metering roller.

Transferring the colored fresh concrete left and right, or simultaneously from both outlet sides - the concrete is pre-selected amount in kg.

The stored recipes for colors, weights, and delivery positions are always reproducible.

Specifications COLORMIX-bucket conveyor:

Number of color bucket:	4
Color concrete quantity:	4 x 1200 kg
Dosing:	1 liter to 28 / s
Driving speed:	0.1 - 0.8 m / s



PRODUCTION OF WASHED PAVERS

The washing station exist with following technical details:

- Lifting devise driven by electrical gear motor
- Radial pump 100l/min; max pressure 16 bar
- Electrical gear motor driven oscillating nozzle carrier
- Drive traveller via electrical gear motor incl. frequency drive
- Height and angle of drive individual adjustable
- One nozzles bar for drying
- Washing station for single- our double pallet
- Suitable for pavers and kerbstone washing
- All parts with direct water contact are made in stainless steel
- The control system allows independent speed- and regulation settings for the functions

Option:

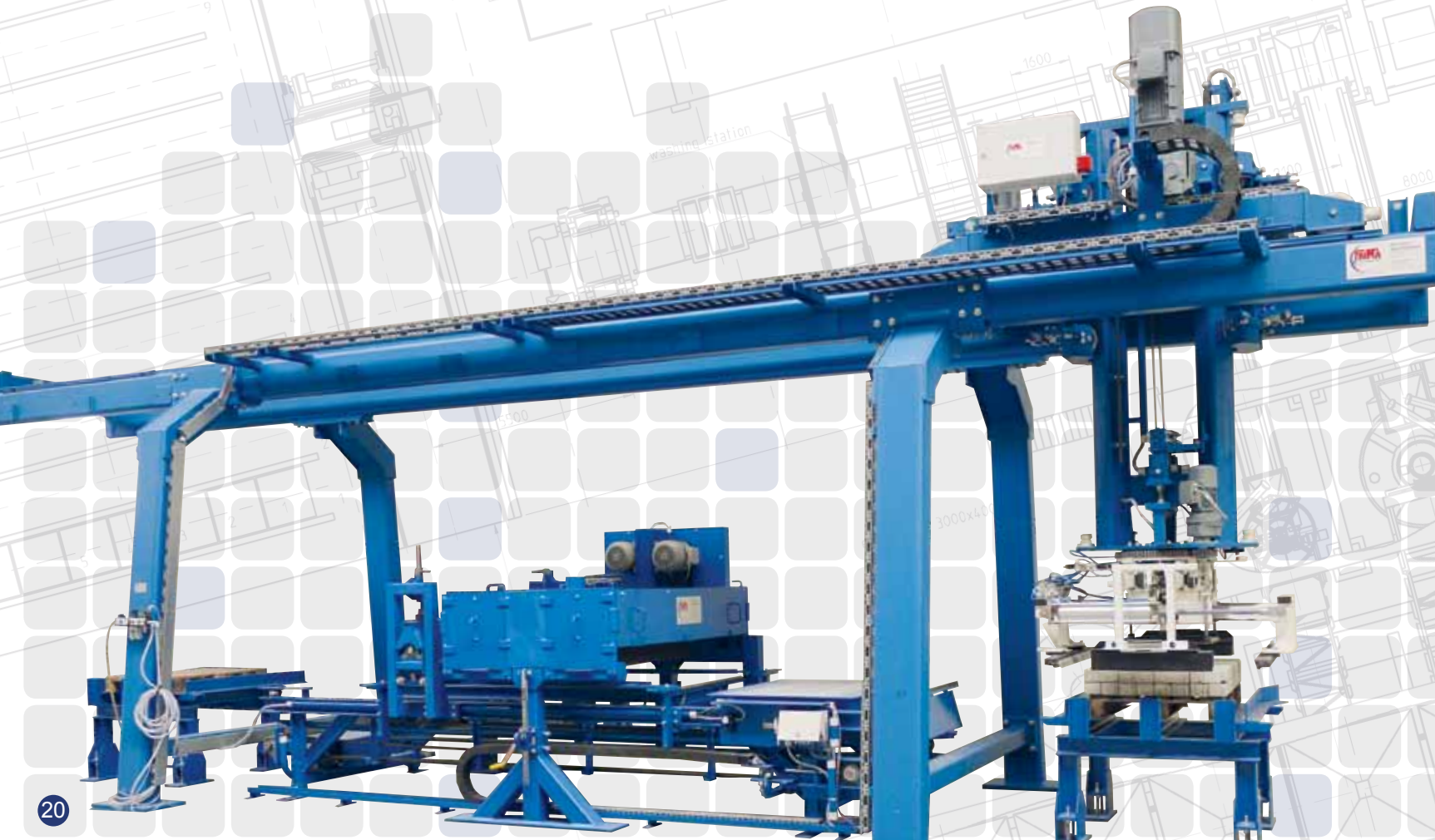
- waterfall trough
- nozzles bar for kerbstones



OFFLINE STONE TREATMENT SYSTEM

Process for treatment of surfaces

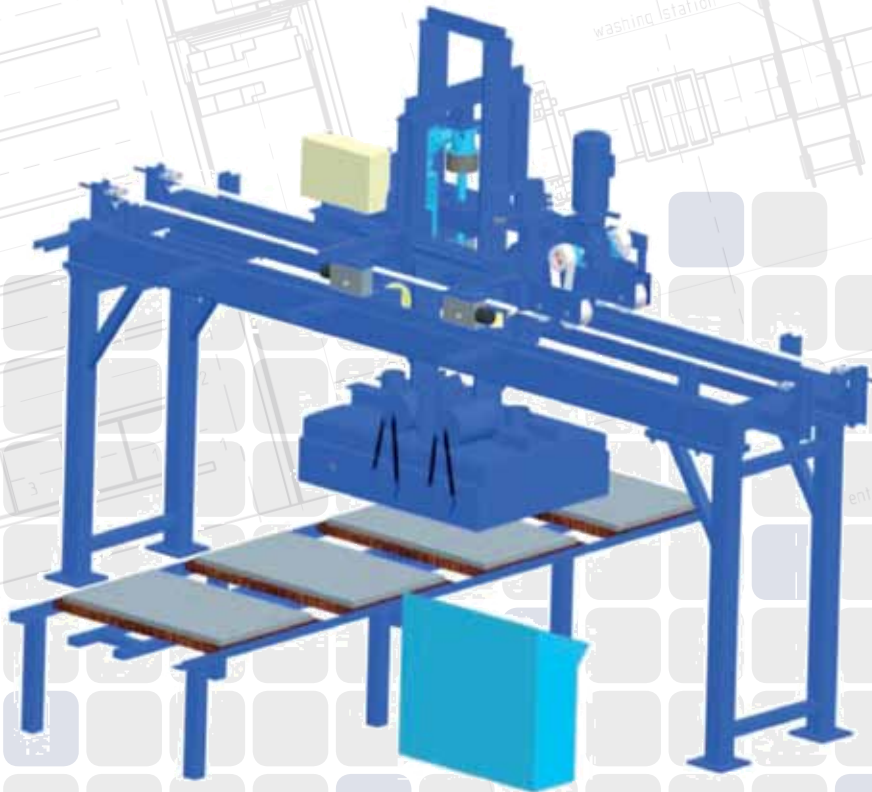
The FRIMA stone aging plant is used for finishing the surface of pavers. The pavers will get an antic looking surface. Two counter-rotating shafts with special tools will editing the surface of the pavers. Due to the speed and the adjustment of the shafts and due to the speed of the conveyor the finishing can be controlled.



ONLINE STONE TREATMENT SYSTEM

Process for treatment of surfaces

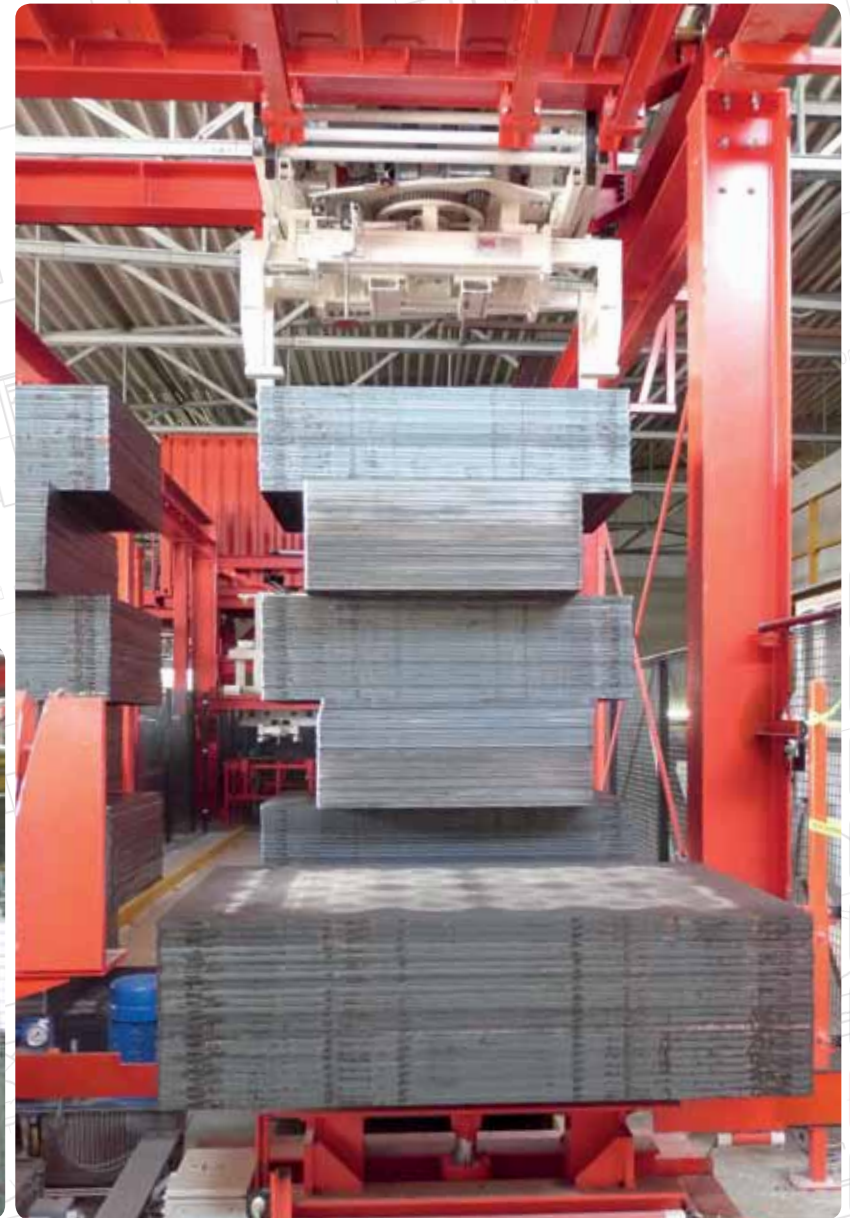
Another technique is operating online similar to the principle of a washing machine, however not on the fresh concrete side but on the dry side. The embossing process is directly integrated in the production line. The compactness of the unit makes not only conventional embossing possible. This method allows the implementation of many other finishing techniques in a highly efficient way in one production step



PALLET BUFFER SYSTEM

Pallet buffer system with stacker unit, pallet stack crane and destacker unit.

The capacity of the buffer system only depends on storage capacity of pallet stack rack system or the storage area for the stacks.
Wet side and dry side can run totally independent.
Pallet buffer system is equipped with own separate control system.
Pallet stack finger car can also be used in the mould management and mould changing system.



PALLET BUFFER

Pallet buffer for 280 empty pallets

pallet staker/-destacker unit forms stacks up to 40 pallets.
7 stacks can be stored. Wet side and dry side can run app.
1 hour independent.

Pallet buffer system for 2.000 or more empty pallets

Pallet buffer system with stacker unit, pallet stack finger car and destacker unit.
Capacity of buffer system only depend on storage capacity of pallet stack rack system
or the storage area for the stacks.
Wet side and dry side can run totally independent.
Pallet buffer system is equipped with own separate control system.
Pallet stack finger car can also be used in the mould management and mould changing
system.





FRIMA GmbH & Co. KG
Stedinger Straße 12 · D - 26723 Emden
Telefon (+49) 4921/ 584-0
Telefax (+49) 4921/ 584 128

www.frima-emden.de · post@frima-emden.de