



# FBE | HFBE

Fully automatic production lines for welded reinforcing elements



Entwicklungs- und Verwertungs-Gesellschaft m.b.H., Raaba-A u s t r i a



# Wire Mesh Welding Lines of FBE | HFBE Series



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# Technical Data



- Highly flexible, fully automatic production line for manufacturing of welded reinforcing elements of different geometry which may contain both openings and bent line- and cross wire overhangs.

Production of different sheet types without changeover times as well as continuous processing of small production lots, even of one single sheet are possible.

Integrated auxiliary machines such as automatic bending stations for cross- and line wire overhangs allow a fully automatic production of reinforcing cages.

### Line wire:

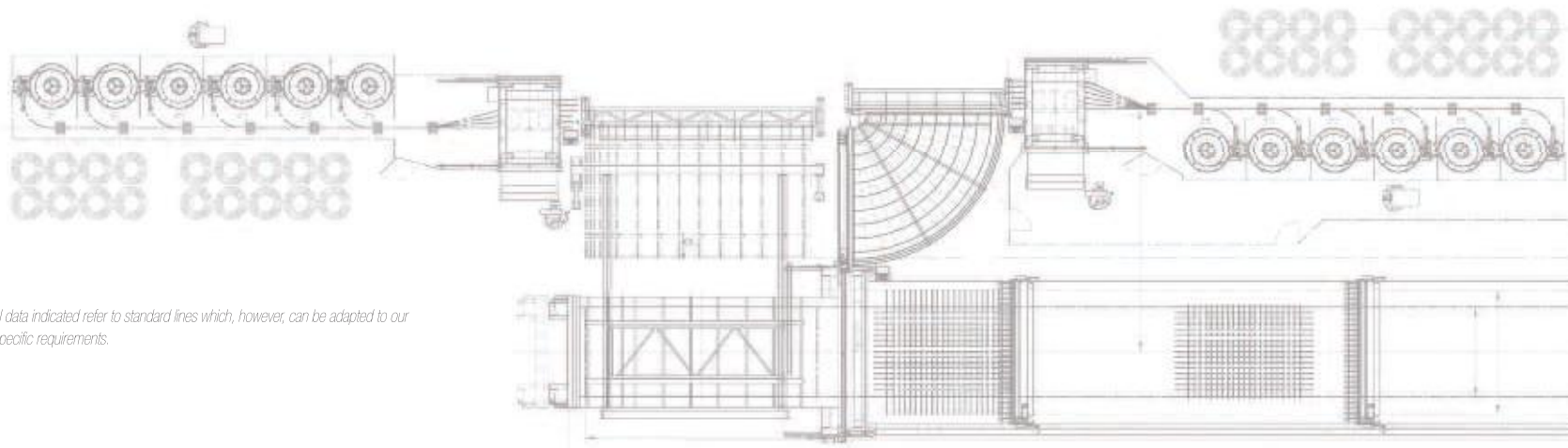
		FBE 118	FBE 138	HFBE 158	HFBE 177
Diameter range	mm	5 - 16	5 - 16	5 - 16	5 - 16
Spacings	mm	50 and multiples	50 and multiples	50 and multiples	50 and multiples

### Cross wire:

Diameter range	mm	6 - 16	6 - 16	6 - 16	6 - 16
Spacings	mm	30 + QD Ø larger spacings steplessly adjustable	30 + QD Ø larger spacings steplessly adjustable	30 + QD Ø larger spacings steplessly adjustable	30 + QD Ø larger spacings steplessly adjustable
Max. total wire size	mm	32	32	32	32

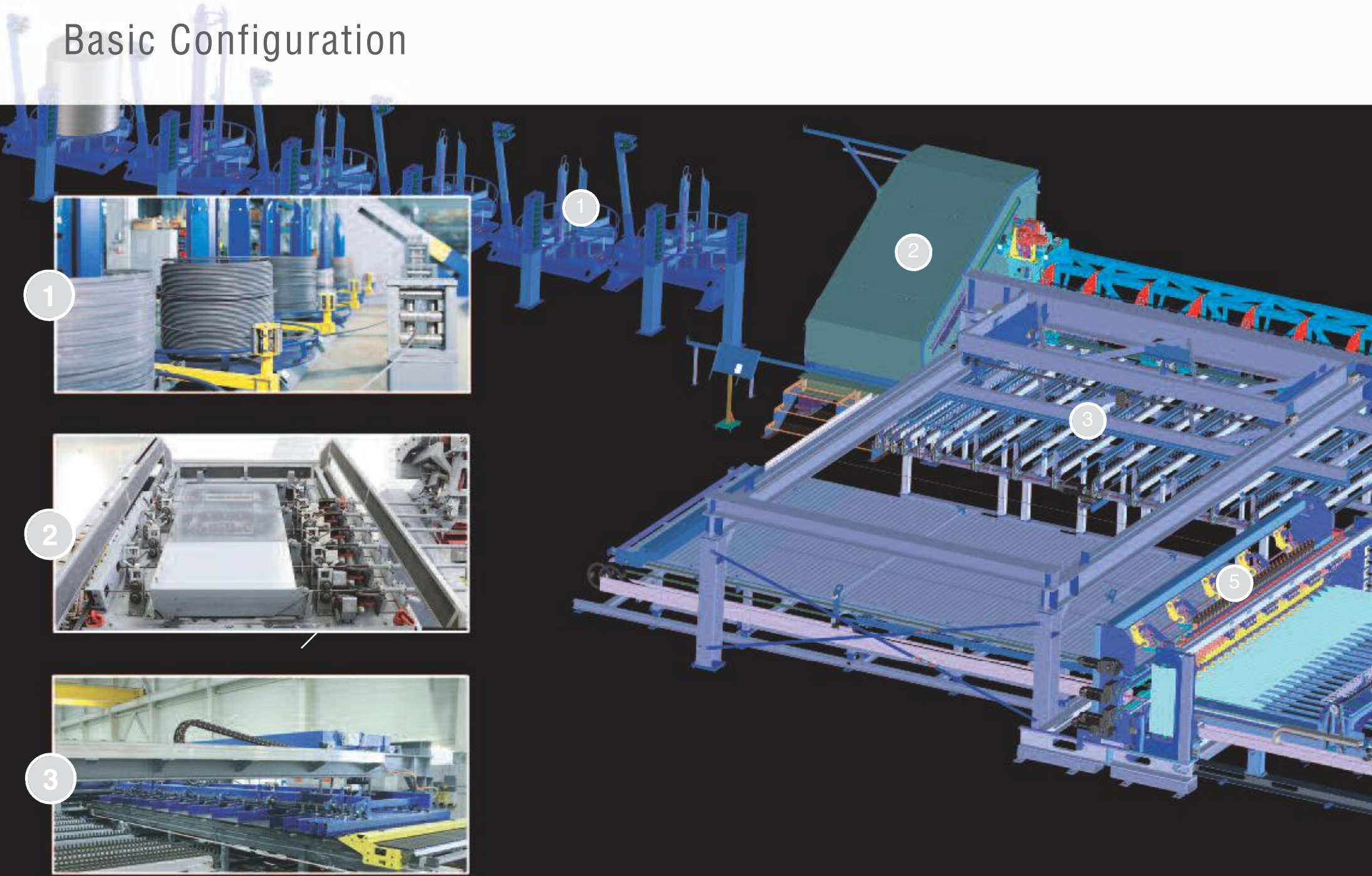
### Reinforcing element

Min. dimensions	mm	500 x 800	500 x 800	500 x 800	500 x 800
Max. dimensions	mm	3.000 x 12.000	3.500 x 12.000	4.000 x 12.000	4.500 x 12.000
Max. welding width	mm	2.950	3.450	3.950	4.450
Number of integrated straighteners		1	1	2	2



*The technical data indicated refer to standard lines which, however, can be adapted to our customers' specific requirements.*

# Basic Configuration



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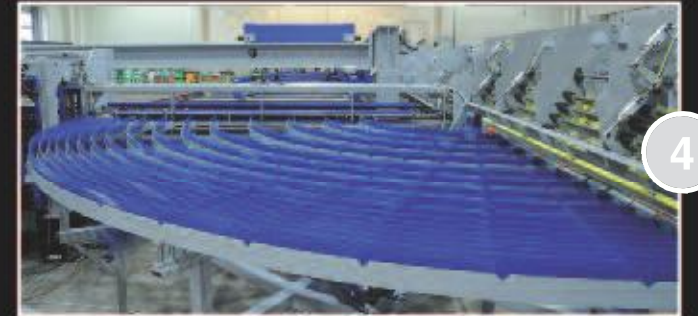
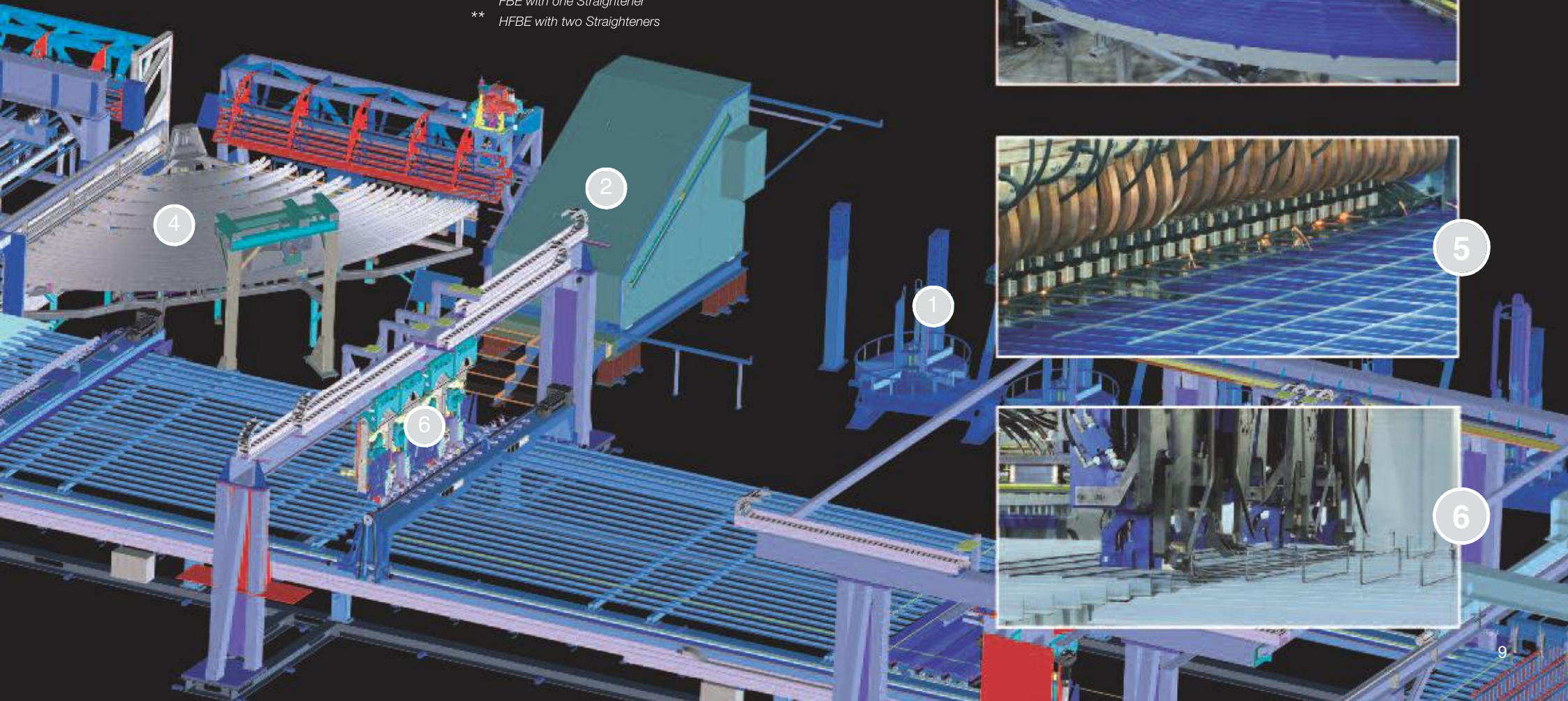
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## Components of the Line

- 1 Line- and Cross Wire Pay-off \*
- 2 Rotor-type Straightening and Cutting Machine \*\*
- 3 Line Bar Distributor
- 4 Cross Bar Conveyor
- 5 Welding Machine
- 6 Bending Stations

\* FBE with one Straightener

\*\* HFBE with two Straighteners





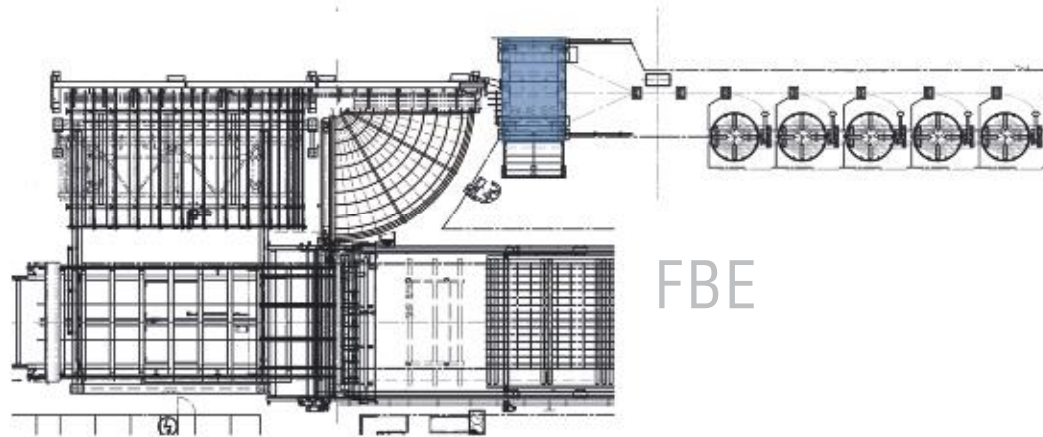
## ■ RA-XE

Multi-strand rotor-type straightening and cutting system for producing line- and cross wire bars from cold-rolled or hot-rolled material off spools or coils.

The rotors, which are equipped with hyperbolic straightening rolls, generate the wire advance without the need for an additional feeding system. These rotors are mounted on a moving rotor table whereby one individual rotor for each wire track and diameter is available in order to achieve best straightening results. Moreover, this moving rotor table makes it possible to change wire diameters without any noticeable system downtimes.

Optional execution of a straightening line with conventional rotor and additional drive for processing of wires with a diameter of 4 mm up.

# FBE | HFBE Configuration



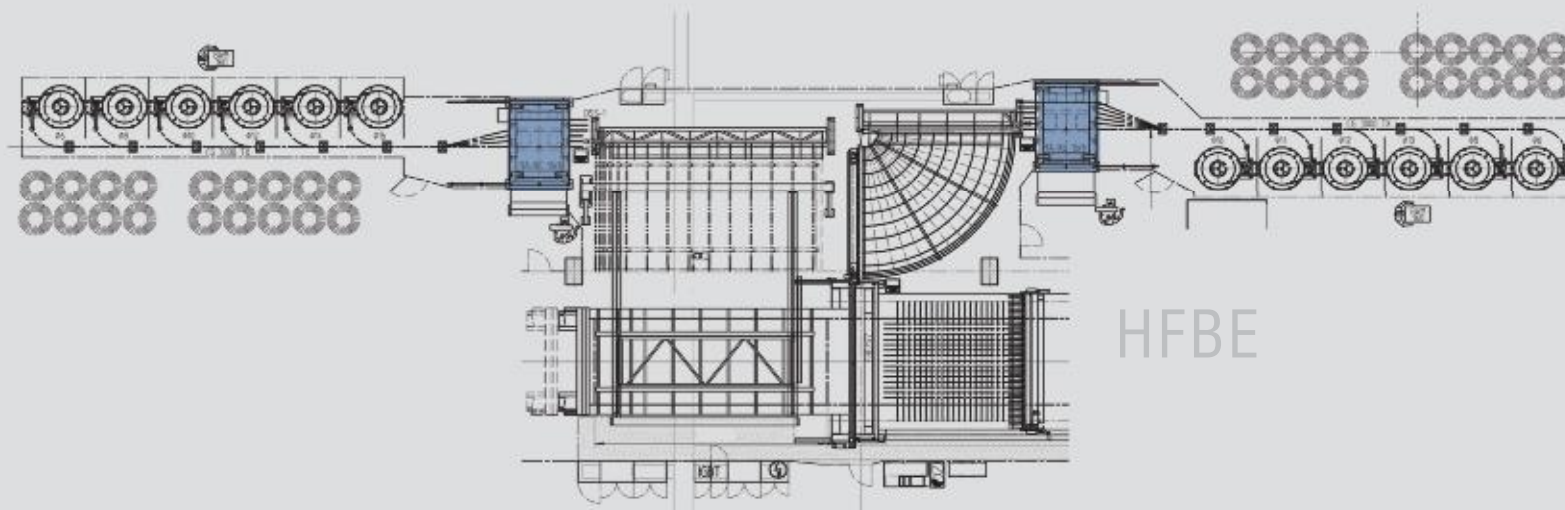
## ■ FBE

Configuration with one single RA-XE straightening machine for the production of both line- and cross bars.

## ■ HFBE

In this configuration, the line- and cross bars are produced independently of each other on separate RA-XE straightening machines.

This doubled straightening capacity allows for higher outputs.





## ■ Line Bar Distributing and Feeding System

The line bars are set down in comb strips according to the spacing of the sheet to be produced. Once all the bars are in place, a line bar transfer system moves the bars crosswise to production flow and transfers them to a supporting table with feeding system.

The line bars can be fed into the welding line and positioned individually and independently of each other.

# Line- and Cross Bar Feeding System

- The multi-strand rotor-type straightening and cutting machines integrated into the overall system serve to pull off, to straighten and to cut the line- and cross wire bars. After this, they are fed into the welding machine by means of bar handling systems just-in-time and according to the sheet geometry.

The production line is equipped with one or two integrated straightening machines, depending on the output required.



## ■ Cross Bar Feeding

A sectional bar conveyor is used to position the cross bars, they are prepared for feeding into the welder via a manipulator for shifting and a paternoster.

These cross wire bars are fed and welded underneath the line wire bars or on top of the line wire bars in an optional machine configuration.





# Welding Machine



## ■ Welding Units

A welding machine consisting of a laterally moving welding frame equipped with individually controllable welding units at a distance of 100 mm from each other. The welding current is supplied via busbars that provide these welding units with the exact welding power levels they need.

The laterally moveable welding frame allows to produce sheets with spacings of 50 mm without shifting individual welding units. This, in turn, makes it possible to fully prevent any soiling on the contact surfaces with the busbars.

Welding can be performed with a cascaded sequence and each welding unit can be activated individually in order to ensure optimized energy usage and reduce the connected electrical load. This prevents load peaks on the supply network.

The moving upper and lower welding units are automatically adjusted to the individual diameter combinations, ensuring that wires will not be deformed.

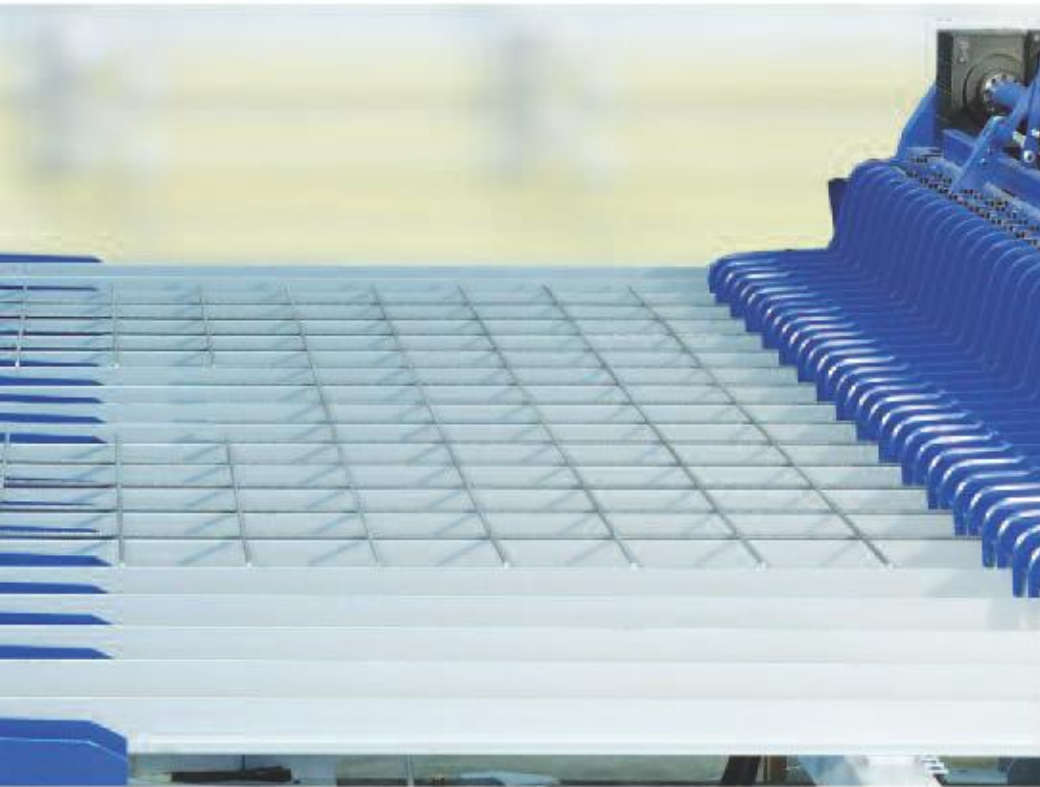
An optional execution to weld the cross wire bars on top of or underneath the line wire bars is available.



# Sheet Transport and Depositing Systems

- One or more sheet conveyors are used to produce the desired cross bar spacing and to convey the sheets from the welding machine area to the semiautomatic or fully automatic unloading stations or to integrated auxiliary machines (such as bending stations).

Electric servo drives guarantee high production speeds and accurate positioning.



- **Sheet Transporter**

Sheets are conveyed with a precision advance system that also serves to produce the desired cross wire spacings.



- **Sheet Deposit on Lifting Table**

Optionally, sheets can also be stacked and discharged by means of motorized roller conveyors.





## ■ Sheet Handling with Crane

Used to pick up and convey one or more sheets that have been deposited one after the other. This process is fully automatic and is integrated into the production flow. Sheets are discharged crosswise to production flow and are then set down at stacking areas or directly on pallets of a circulation system.

If the welding line is integrated into a pallet circulation system, all the mesh sheets of a pallet will be lifted and put down together.

In order to compensate speed differences between the sheet production and circulation production systems, or to prefabricate the necessary mesh sheets for multiple pallets, sheets can also be put in a temporary storage system by pallet and fully automatically.

Special execution for conveying reinforcing elements with bent wire overhangs is available.





■ Automatic Bending Station for Cross Wires

# Bending Stations



- **Automatic Bending Station for Cross and Line Wires, Bending Shape 5**

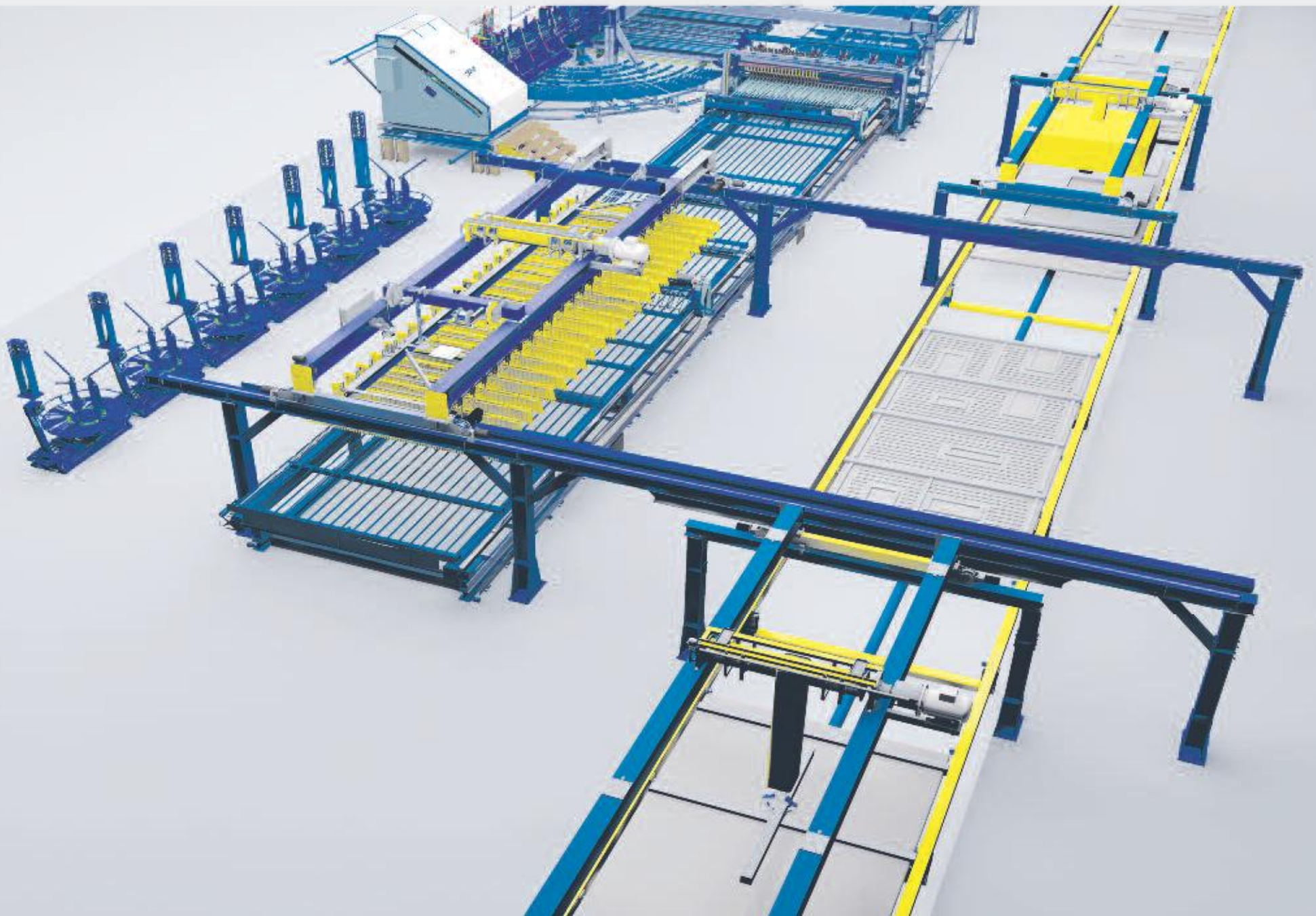
Cross wire overhangs at the edge of the sheet, as well as in the area of openings for windows or doors, are bent 2 x 90°. Optional execution with two or four hydraulic bending tools working simultaneously.

Exact positioning and conveying of sheets is ensured by a servo-electrically driven sheet transporter.

- **Automatic Bending Station for Line Wires, Bending Shape 4**

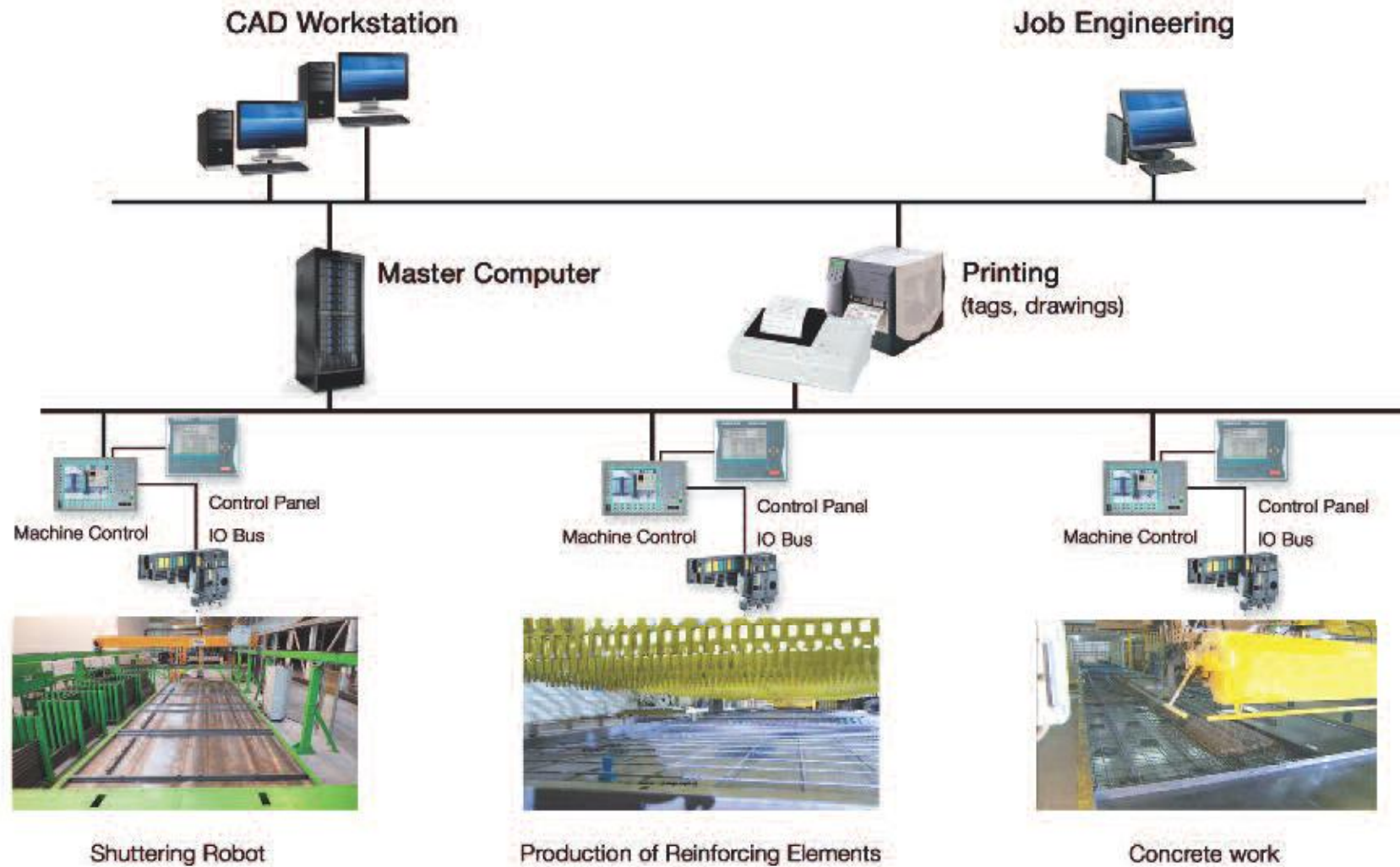
Optional bending device for line wire overhangs for reinforcing sheets used in slab elements. Hydraulic bending tool, swiveling and displaceable crosswise to production flow, for bending up the front and rear line wire overhangs.

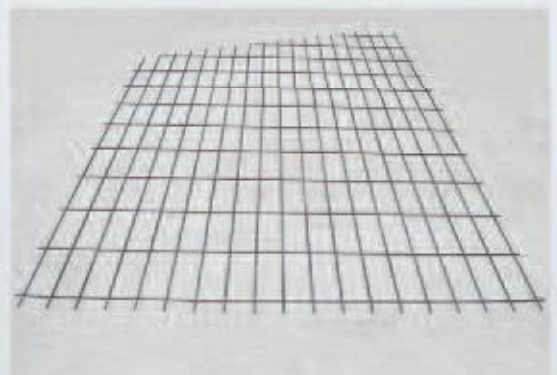
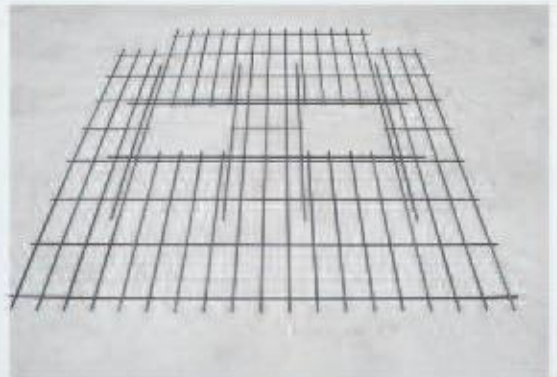
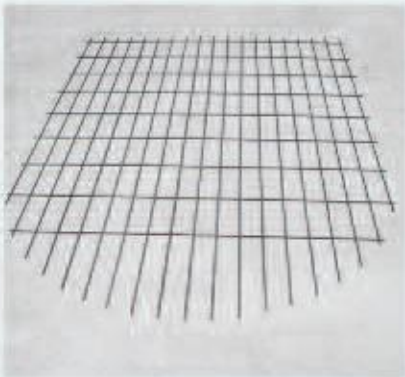
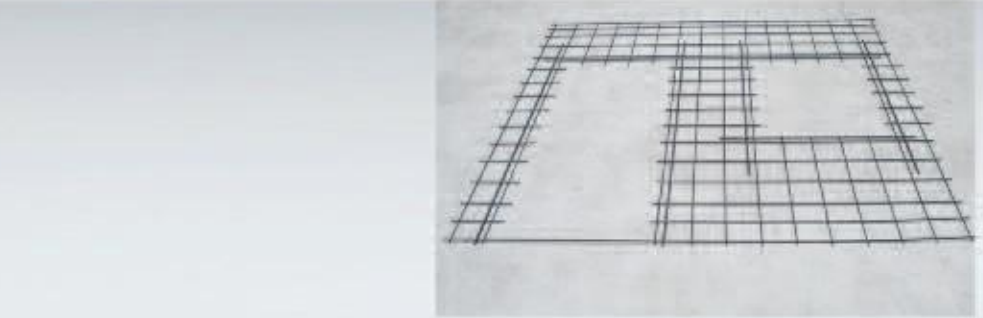




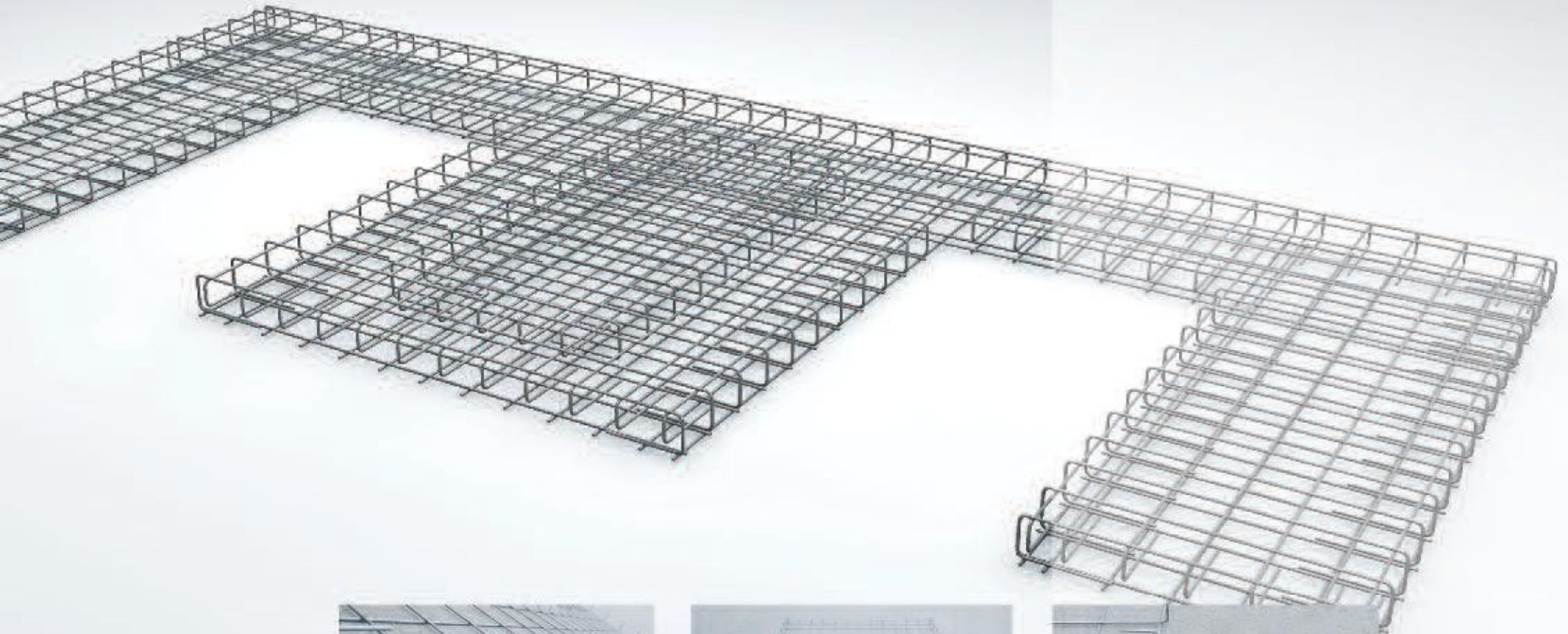
# Integrating the Welding Line into a Pallet Circulation

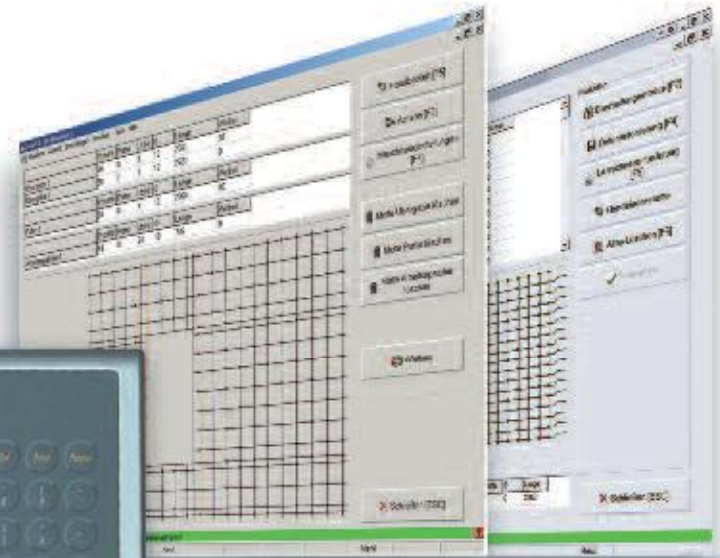
- By connecting the system to the master computers used in precast concrete plants with pallet circulation systems, the automatic and on-time production of the required reinforcing elements for each pallet can be ensured (the diagram below is just an example).





# Examples of Reinforcing Elements





# Line Control



## ■ Control Unit

The control system of the line ensures the fully automatic operation of the entire production line. The individual sheets defined in a CAD system are either transferred directly to the control system of the production line or are requested and received via a central computer with a network connection, all through an intelligent interface that transmits the geometry and reinforcing data.

Sheets can either be fully welded or partially welded, and the weld points will be calculated automatically in both cases.

Meanwhile, a visualization program makes it possible to enter and edit production data by hand.

Finally, the integrated network connection makes it possible to remotely service the system computer.





# Competence



## ■ Group of Companies

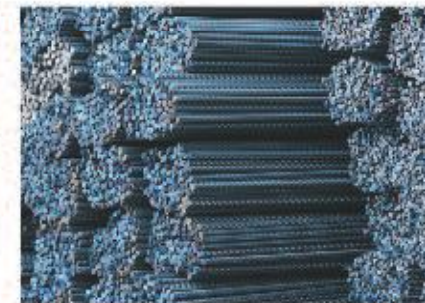
The group of companies EVG - AVI - MARIENHÜTTE with its complete program for the production of reinforcing steel and welded mesh is your reliable and experienced partner when it comes to reinforcement of concrete, wire products, production equipment and knowhow.

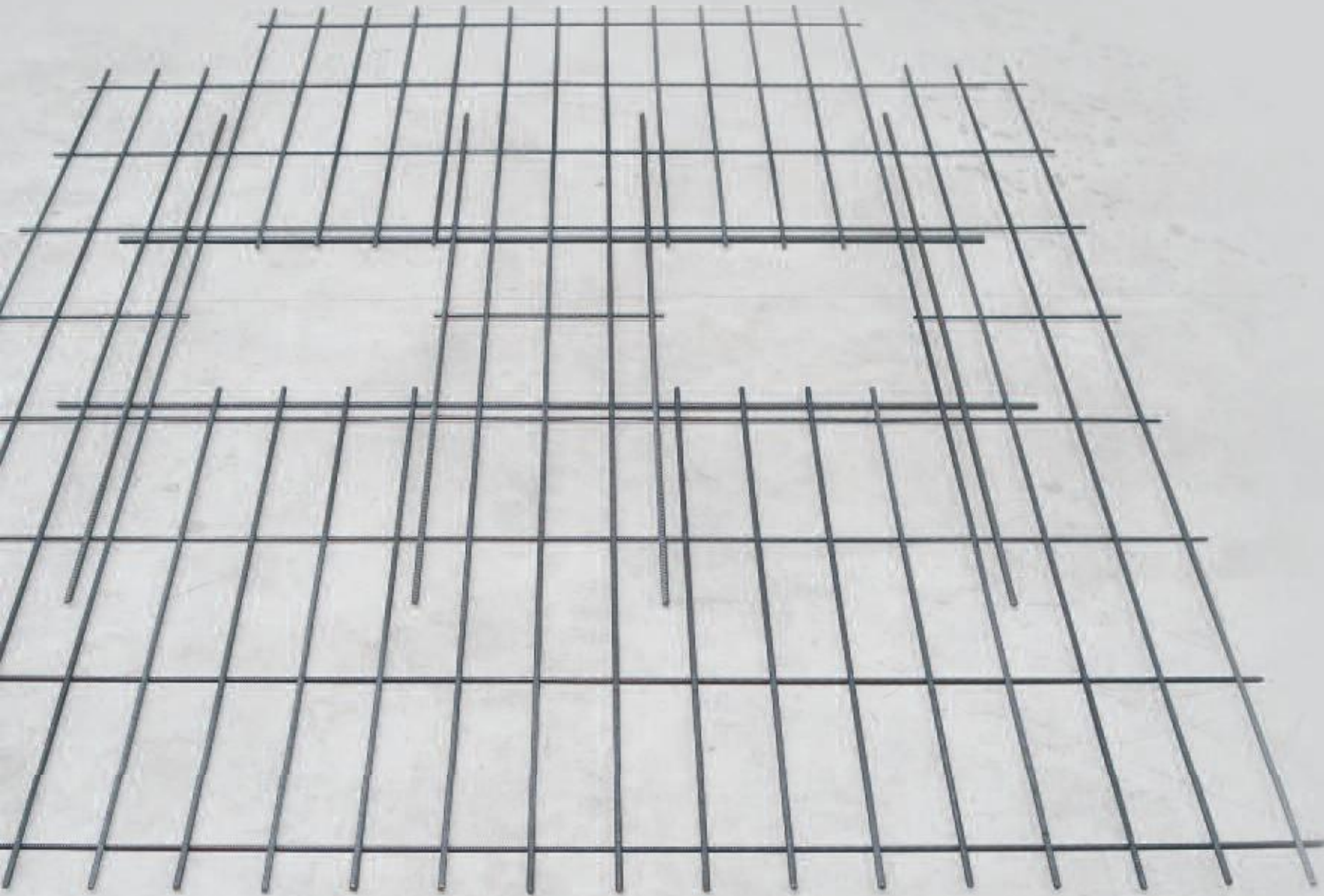
- EVG and FILZMOSEER as suppliers of complete production lines
- AVI and BSTG as producers of reinforcing steel sheets, cold-rolled reinforcing steel, truss girders, spacer strips and reinforcing cages
- Steel and rolling mill MARIENHÜTTE as producer of reinforcing steel
- H&S Zauntechnik as supplier of industrial and fencing mesh as well as complete fencing systems

The cooperation within our network of companies allows EVG to become aware of all major challenges inherent in the production and application of mesh and reinforcing products also from a machine operator's point of view.

Any knowledge gained this way is constantly introduced in our new projects.

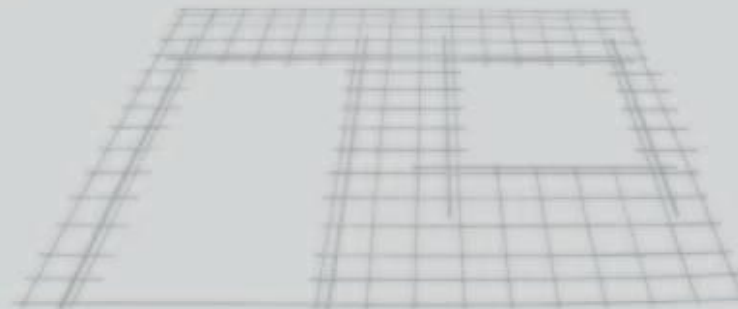
The most important foundations of our success are close cooperation with our customers based on partnership, highly-qualified staff and ongoing innovations.







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

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Subject to modifications.

„The figures shown are of exemplary nature and do not allow to draw any conclusions on the configuration of the line acquired by the buyer.“