



# SPECIAL REINFORCEMENT

Solutions for tunnel construction and wind power

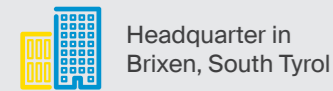
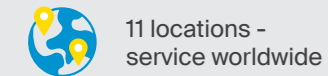
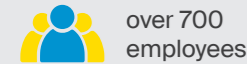
**PROGRESS** **GROUP**

# PROGRESS GROUP

## Innovative from experience

For over 60 years, PROGRESS GROUP has been offering complete solutions from a single source, relying on the latest technology and continuous development.

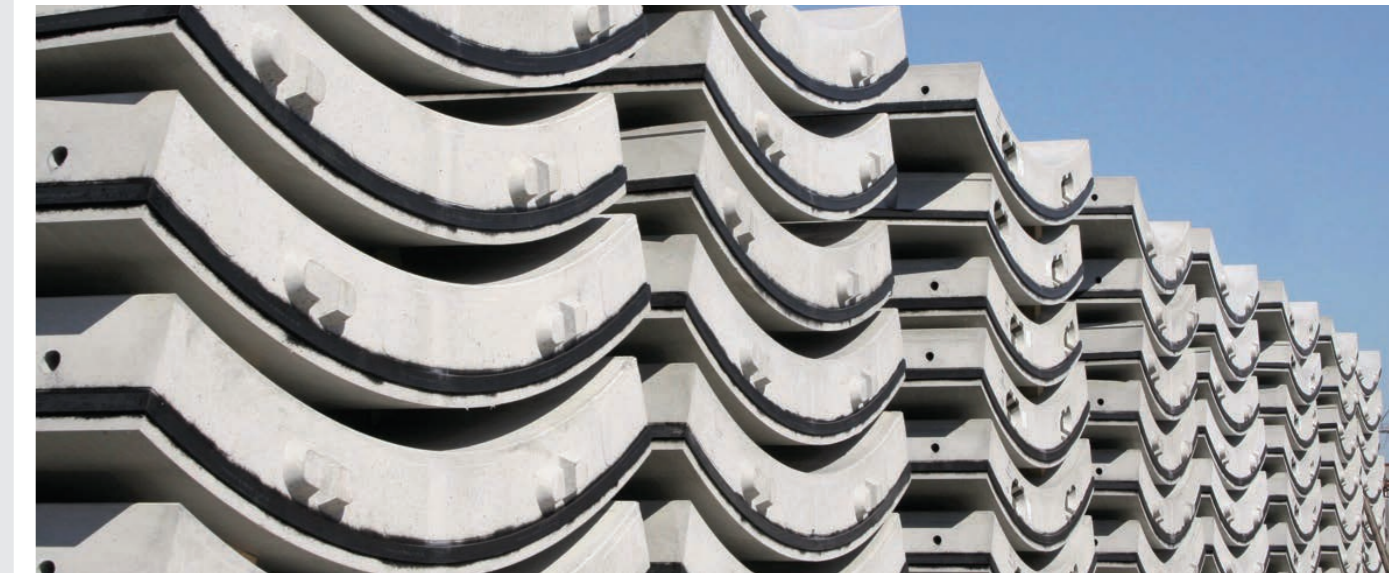
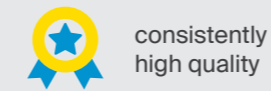
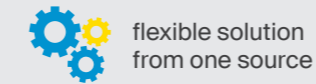
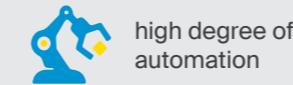
We realize plants, machines and software for precast concrete plants and rebar shops, operate our own precast plant and build with precast concrete elements ourselves.



# Reinforcement machinery for tunnels and wind power

Constructing tunnels and wind turbines are challenging projects, which require specific knowledge. Right from the start the systems and manufacturing processes can be optimised for the efficient production of mesh, ladders and full reinforcement cages.

We offer complete well-engineered solutions, which are designed in accordance with the customer's requirements.



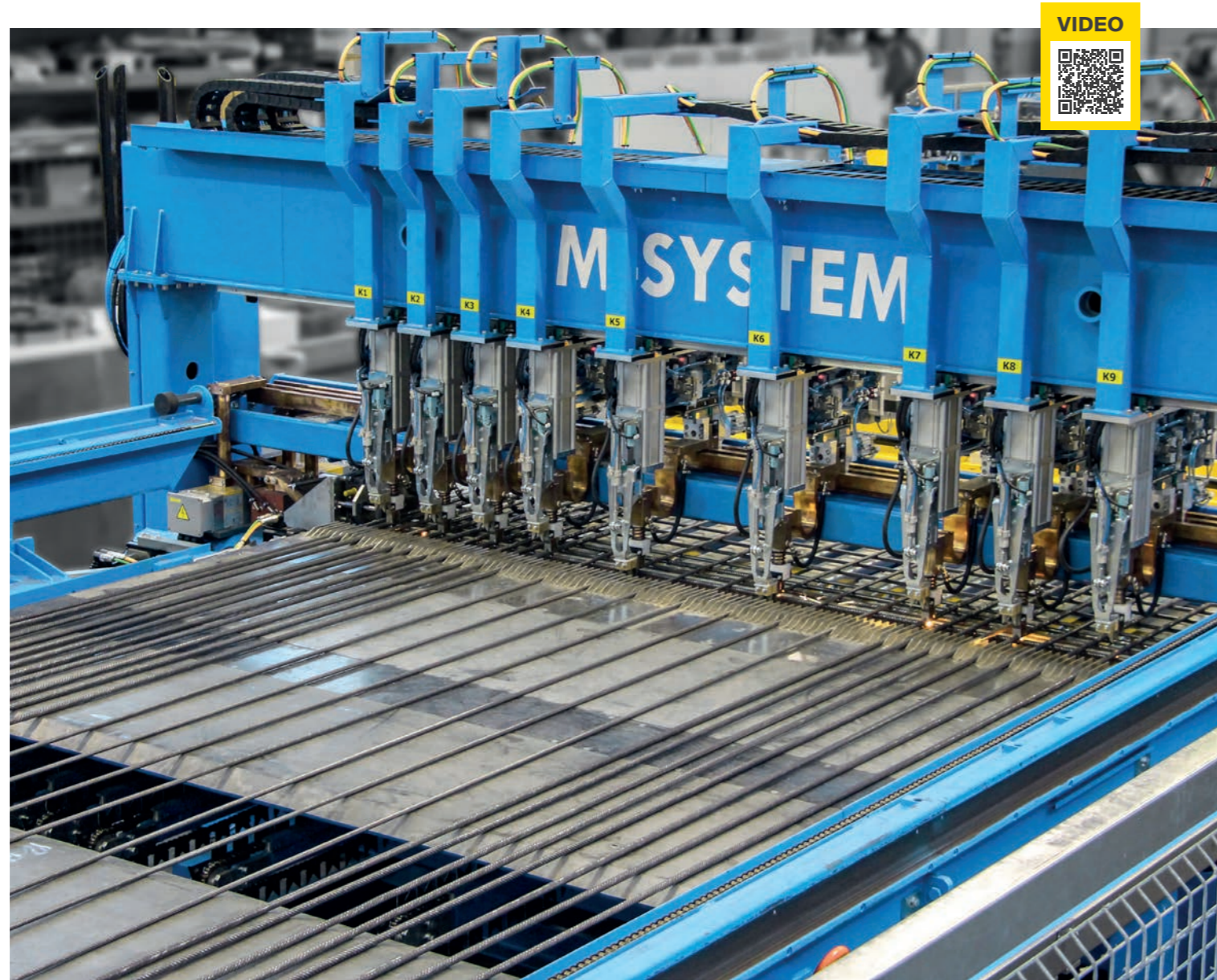
# Mesh welding plant

The M-System product family is characterized through accuracy, flexibility and just-in-time production of custom-made bespoke mesh from coil.

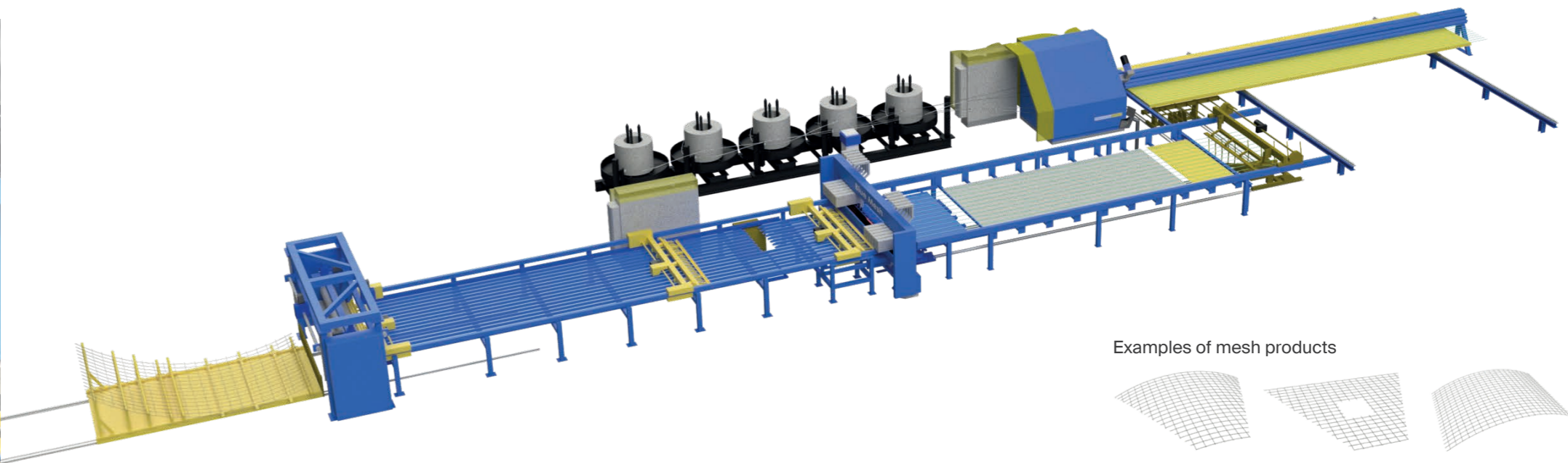
The bending system allows the mesh to be bent upwards as well as downwards.



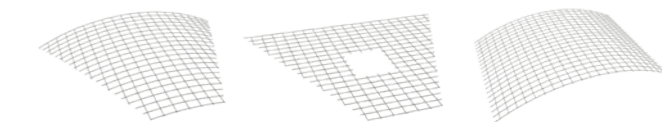
Curved bespoke mesh for precast tunnel and wind turbine elements



VIDEO



Examples of mesh products



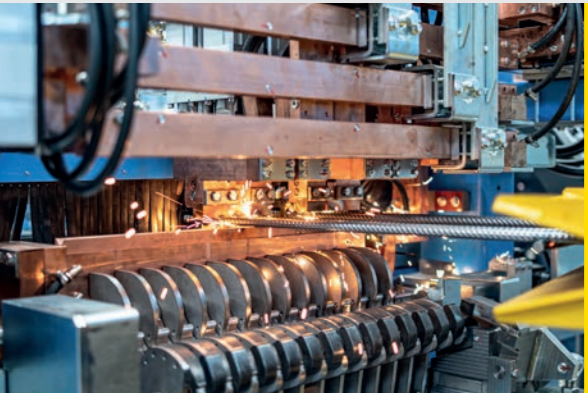
- flexibility with gridless welding
- production of custom-made mesh: special geometry, openings and a variety of diameters
- fully integrated straightening system
- accurate, controlled welding until shear strength 70
- integrated rolling of the mesh
- expandable with different logistics solutions



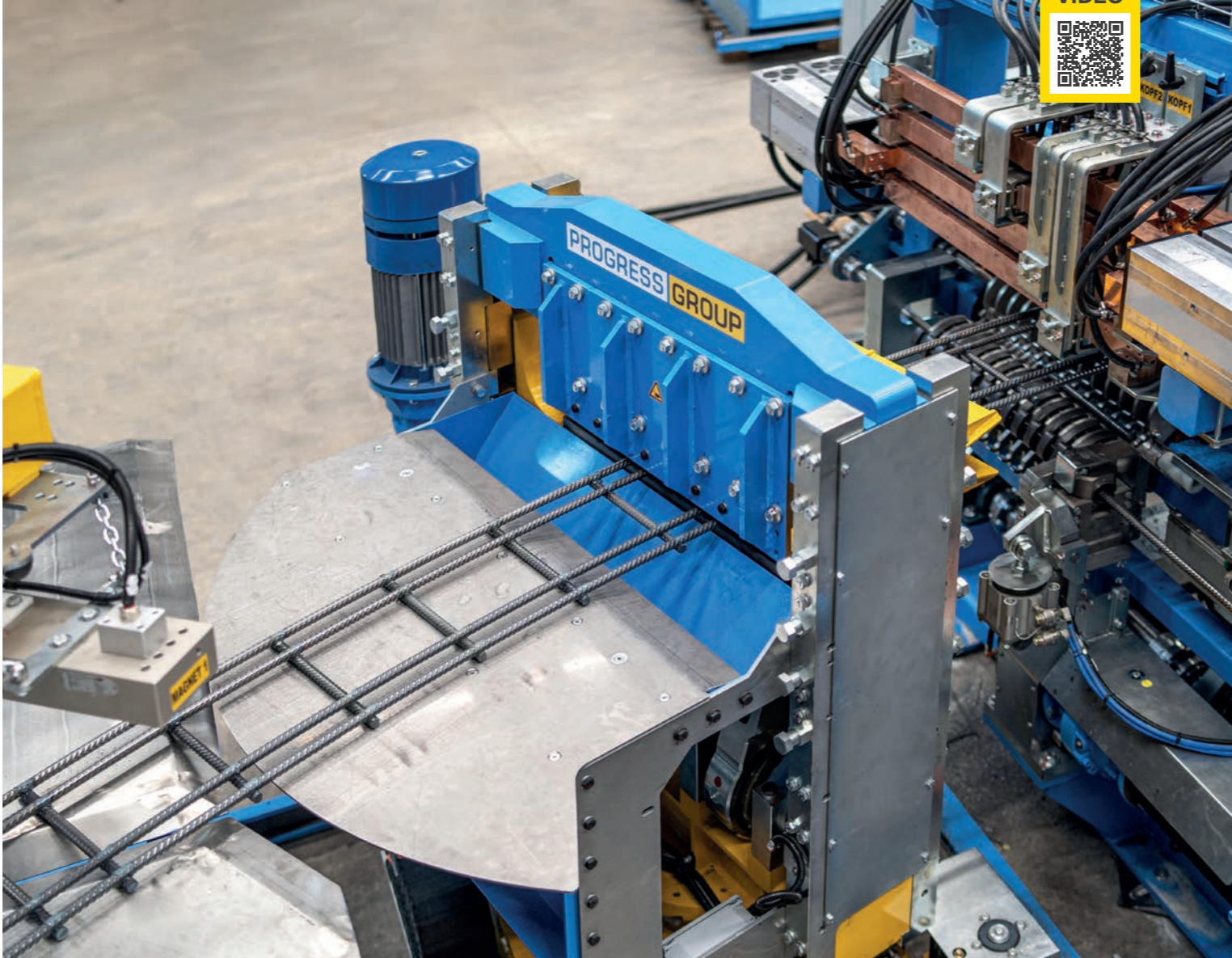
# Ladder welding machine

The ladder-shaped welding machine is used for the production of straight and curved ladders from coil.

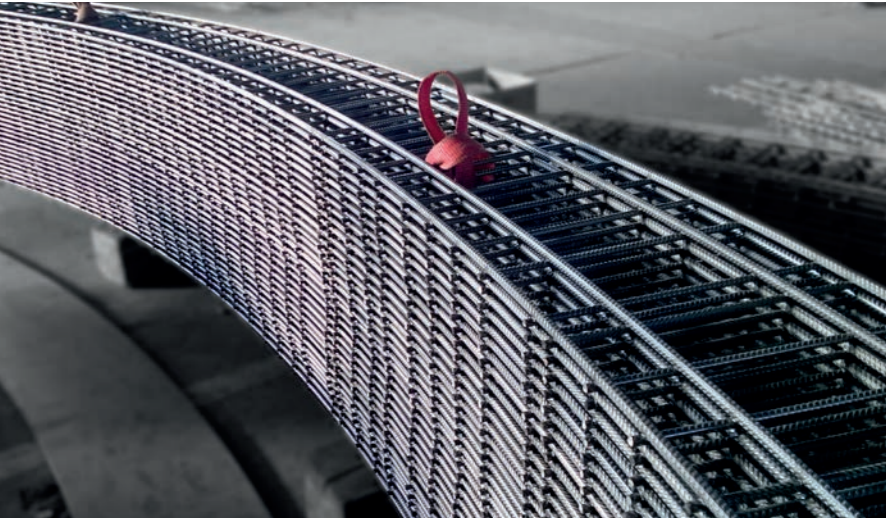
This robust, low-maintenance welding machine permits fast, cost-saving production of tunnel and wind turbine elements.



Computer-controlled welding system and welding power control



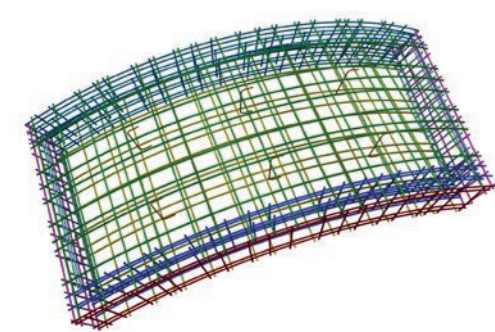
- flexible screening (line wire and cross wire)
- flexible diameter up to 16 mm with up to 4 longitudinal bars
- accurate, controlled welding until shear strength 70
- no hydraulics
- automatic radius change and short changeover times
- adjustable cutting angles and automatic quality control
- automatic stacking unit



## Welding station

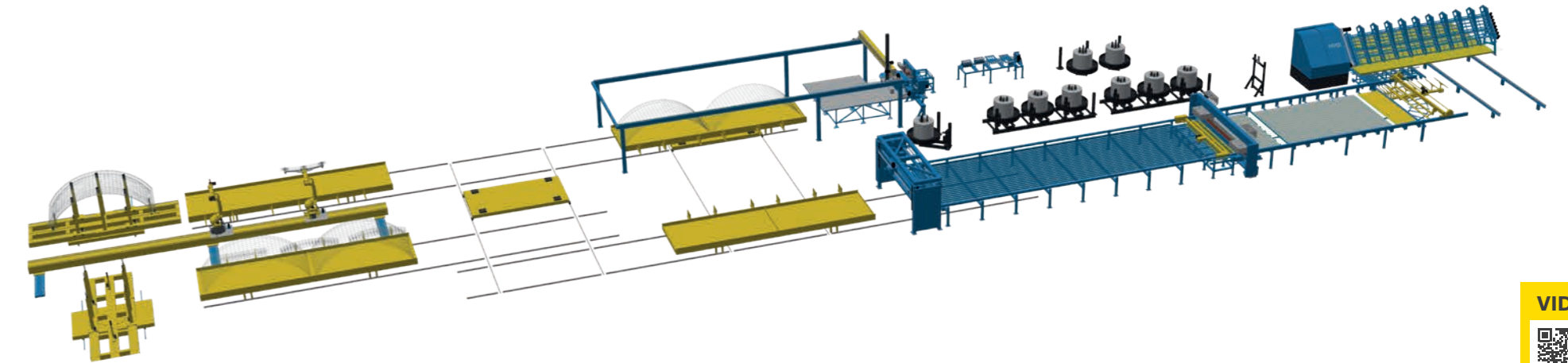
The individual components (curved mesh, straight and curved ladders and additional reinforcement) are welded together fully automatically with special robots to form the finished reinforcement cage.

The production output is scalable according to customer needs and the logistics systems can be individually adapted.



Reinforcement cage made with different elements

## Complete solution



- fully automated production process
- assembly of all the components into a finished reinforcement cage
- shear strength 70 within all production steps
- individually adjustable logistics solutions
- complete software package



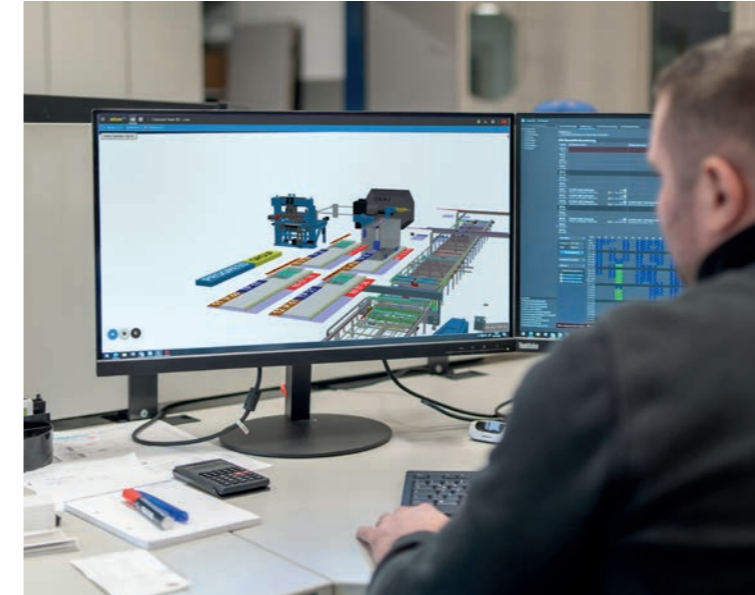
# Software solutions



## Design and planning phase

With *profit<sup>yc</sup>*, you can quickly and easily create standard elements for your tunnel or wind power order with predefined templates.

- production control and monitoring with real-time data
- prediction of production time
- optimal production planning and utilization
- automatic data adaptation for the machine



## Logistics

The *steelbos* logistics module is a feature that supports planning, production and logistics.

- control of driverless transport systems
- real-time updates for the logistics process
- 3D production overview for performance analysis
- tracking of elements and simple warehouse management

## Production

With targeted visualization of production data on the Smart Production Screens, your employees receive directly the necessary information about the work steps.



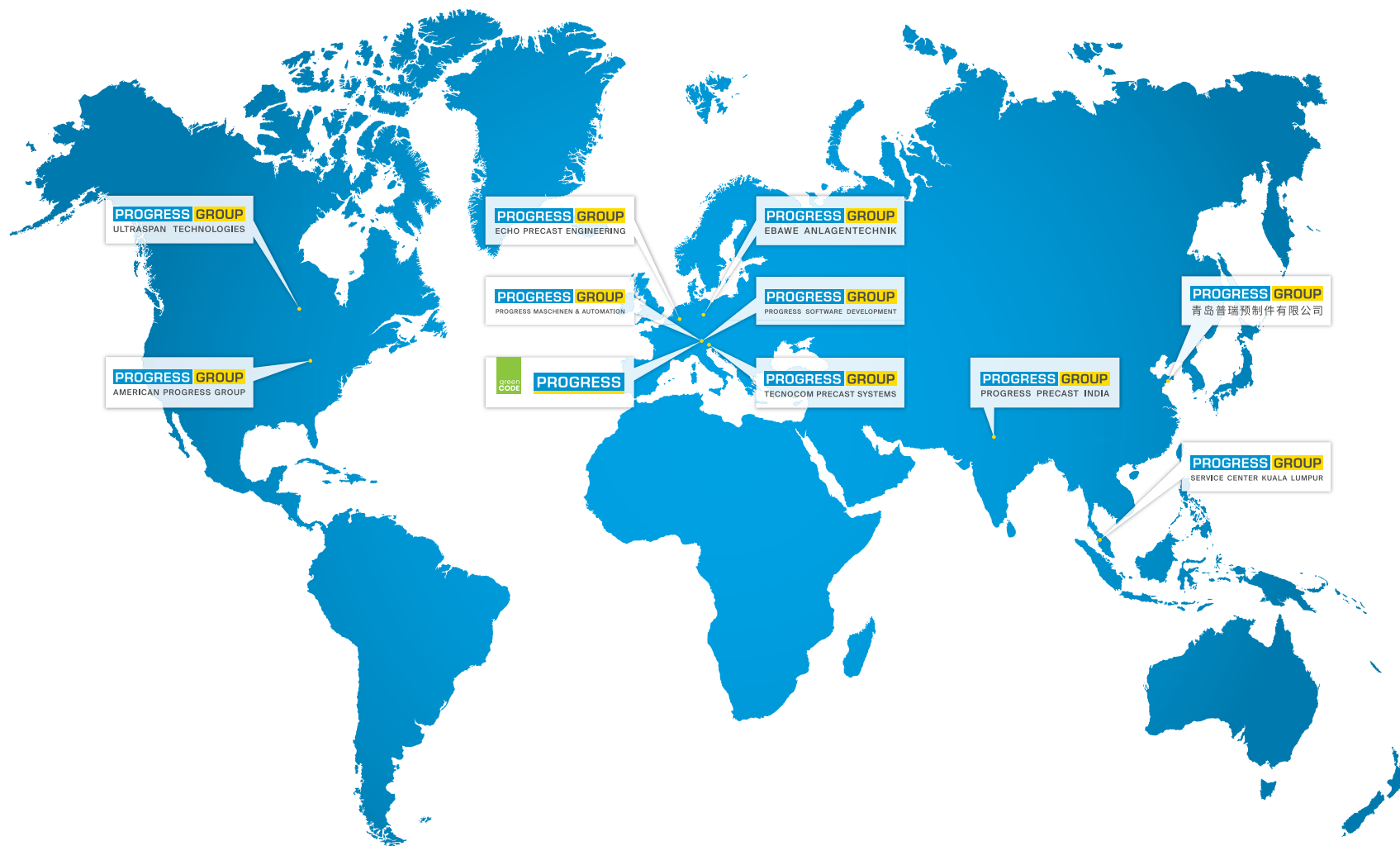
## Material traceability and monitoring

*stabos*: evaluation of production status, material traceability, automated maintenance suggestions through machine learning

**Vision Technology**: automated monitoring of the bending e.g. of the reinforcement ladder using an integrated camera system with 3D recognition and AI software logic.



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