Häny Mixing and Injection Technology

Complete Overview

Mixing and injection equipment for the preparation of cement and bentonite suspensions, 2-component backfills for TBM and pipe jacking, and wherever soil, rock, anchors, or tunnels need to be reinforced or sealed.

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Mixing and Injection Technology is our competence.
Talk to the experts!

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Convincing systems

Häny AG has been supplying mixing and injection systems for cement-based suspensions for almost 90 years. In addition to development and production in both Switzerland and abroad, Häny's strength lies in advising its customers on the dimensioning of plants and providing technical support as well as on-site training.

Our product range includes components such as colloidal mixers, agitators, injection pumps, and compact grout plants for cementitious grouts. Various degrees of automation are available, from manual to fully automatic systems, alongside state-of-the-art control technology and data recording systems for pressure and flow. Large, containerized mixing plants including transfer pumps for stationary use complement the portfolio.

Häny machines are characterized by simple operation, easy cleaning, robust construction, and extremely low maintenance and servicing costs.

Sabina Häny
CEO

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Areas of application for Häny systems

► **Soil improvement**
- Sleeve pipe injections
- Soil mix processes
- Injection shields

► **Tunnel construction**
- Injections for strengthening and compacting the substrate
- Pipe shield injection
- Grout/2-component backfilling injection
- Contact injection

► **Anchoring**
- Ground and rock anchors
- Soil nailing
- Drilling anchors

► **Trenchless construction**
- Pipe thrusting
- Microtunnelling
- Directional drilling

► **Special civil engineering**
- Diaphragm and narrow wall construction
- Pile foundations

► **Pre-stressed concrete**
- Injection of cable ducts

Häny customers benefit from:
- Individual and cost-effective system configurations
- Competent advice and high flexibility
- Little wear and tear and low maintenance costs
- High-quality and user-friendly products


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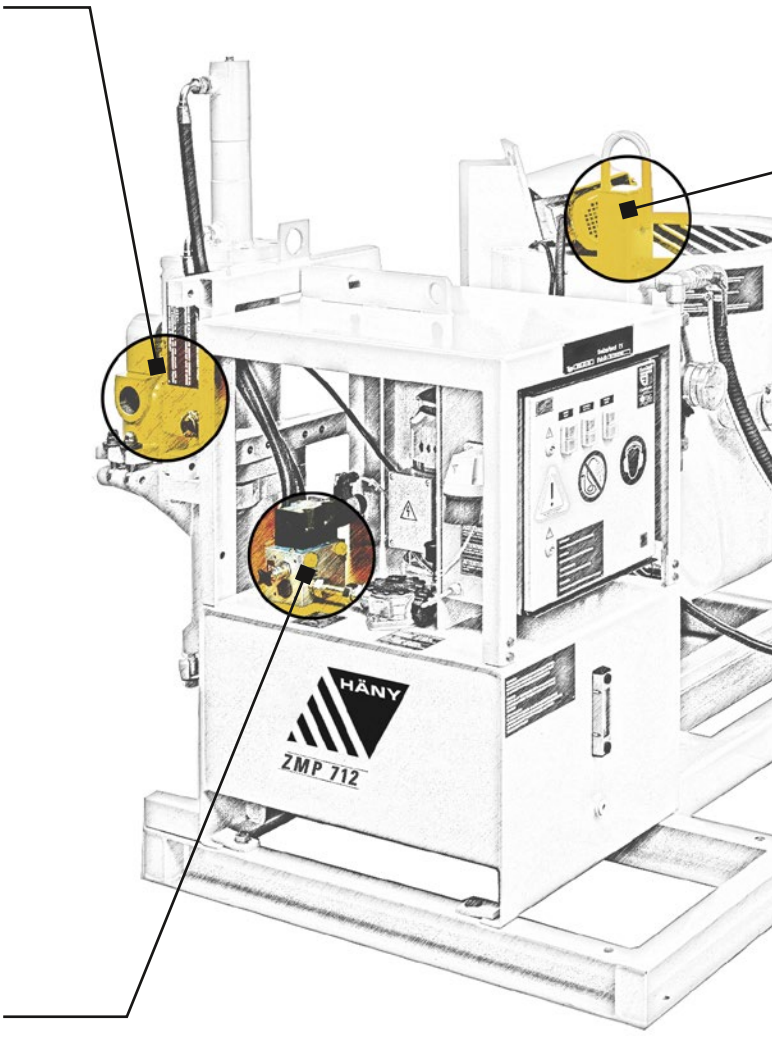
ZMP 726

State-of-the-art
mixing and pump technology

The pump

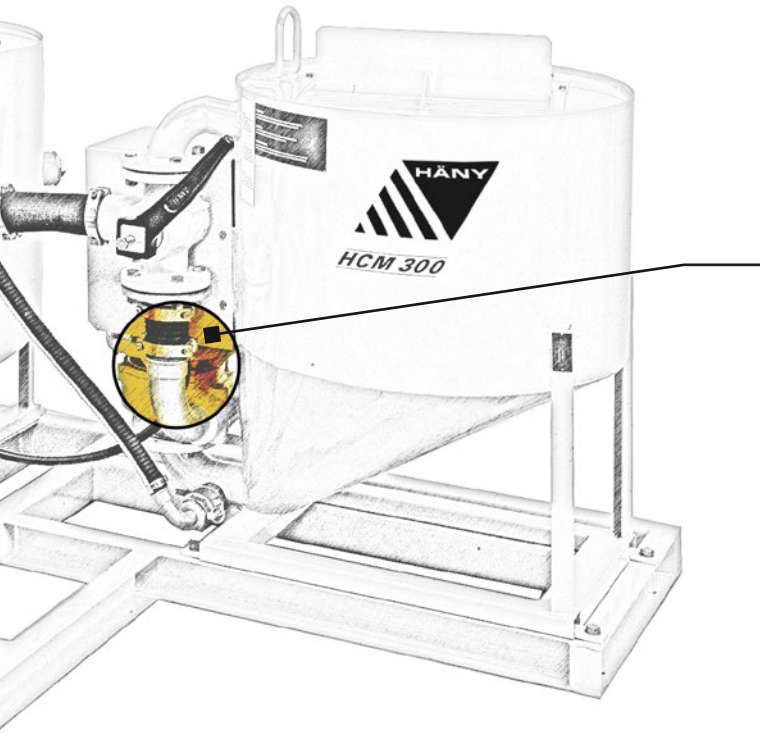
The **plunger** pumps used by Häny have the great advantage of a highly simplistic design, requiring just a single seal that comes into contact with the medium. The diameter of the plunger can be altered, enabling different output volumes and pressures to be optimally adjusted to the specific requirements with the same pump.

The valve ball and high-strength valve seats (reversible) result in an extremely low-wear valve arrangement which has been optimized in terms of access for cleaning and maintenance. In addition, the plunger's return stroke, which is twice as fast, prevents the accumulation of deposits in the suction valve. Thanks to the large openings, suspensions with a low W/C factor as well as a high sand content can be pumped with ease.



The hydraulic system

The hydraulic system has both a flow and a pressure control valve, enabling the maximum injection pressure to be limited and the flow rate to be adjusted to the specific requirements. When the set pressure in the medium is reached, delivery stops and the pressure is maintained.



The agitator

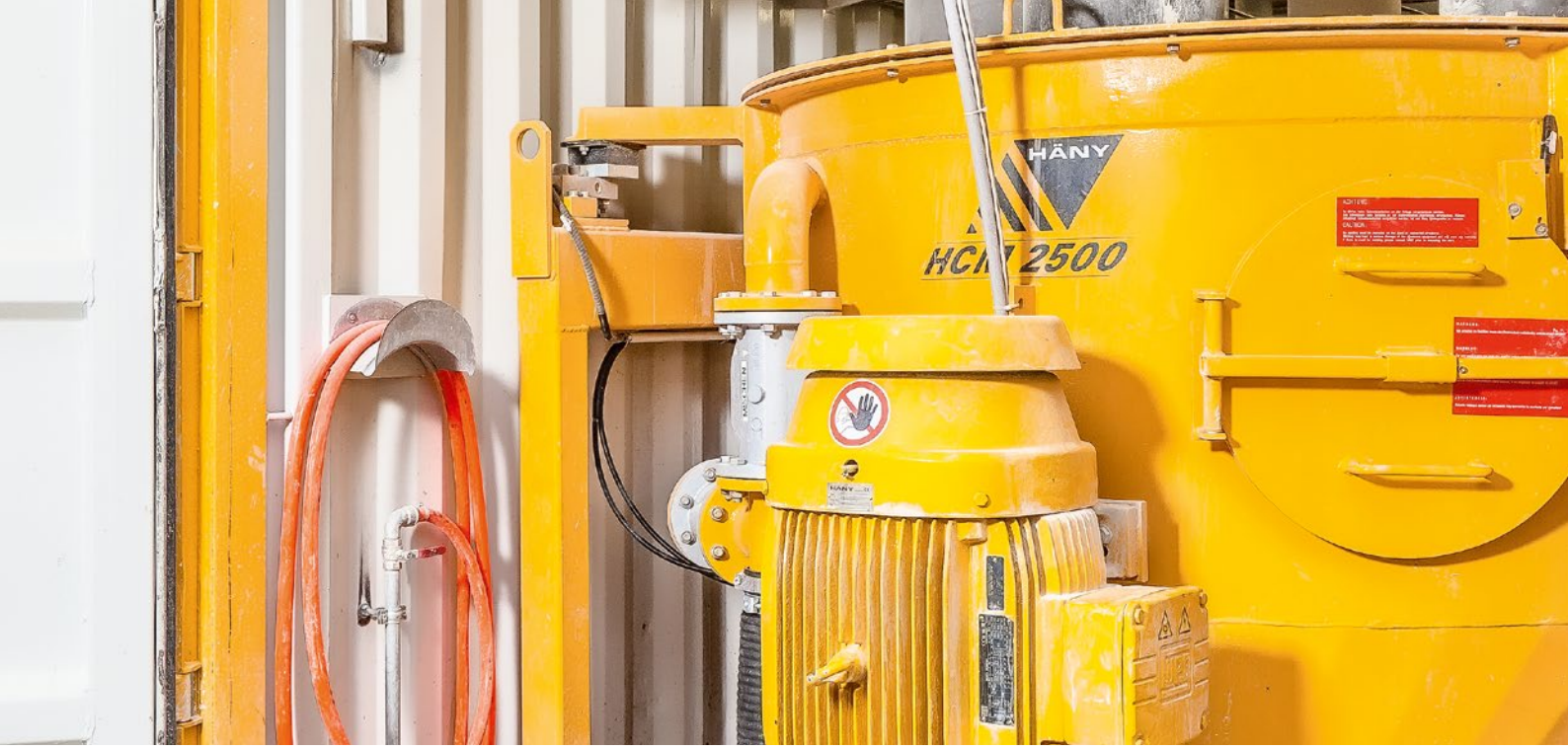
The agitator ensures continuous operation by holding and homogenizing the freshly mixed grout suspension, as well as removing air bubbles with a slowly revolving paddle.

The mixer

Extremely high hydraulic shear forces and turbulence generated in the **colloidal mixer** reliably separate the particles from each other. This results in an optimal suspension consisting of water and various aggregates such as cement, microcement, and bentonite.

The hydraulic generation of the shear force eliminates narrow tolerances in the housing as well as the associated disadvantages, such as higher wear and the risk of clogging due to larger particles. The tough metal alloy used in the vortex wheel guarantees a long service life, while large openings facilitate the mixing of sand with a grain size of up to 8 mm.

The special geometry of the **mixing tank** ensures that the entire tank contents circulates through the powerful mixer pump 2–5 times per minute, dissolving any lumps of dry particles and dispersing them evenly in the suspension.



Mixers

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Häny high-shear colloidal mixers are recognized worldwide for their excellent mixing performance, efficiency, and wear resistance. The vortex impeller generates high shear forces, efficiently separating the particles and ensuring that the mix is thoroughly hydrated. Additional mixing units are available for the mixing of microfine cements.

Optional weight-batching systems enable automated mixing of dry products, chemical additives, and water.

- ► **Excellent mixing quality**
- ► **High capacity**
- ► **Low wear**

Mixers

Mixing capacity[1]:	2–40 m^3/h
Circulation capacity:	540–4,800 l/min
Holding capacity:	100–2,500 l
Max. aggregate size:	3–8 mm
Nominal power:	3–45 kW

[1] Water to cement ratio = 1

Agitators

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Häny agitators ensure continuous operation by holding and homogenizing the freshly mixed grout suspension, as well as removing air bubbles with a slowly revolving paddle. The agitators are used as holding tanks between the mixer and the pump.

Optional level sensors and automated valves allow operation to proceed unattended.

- **Slow-running paddle**
- **Level sensors for automatic operation**

Agitators

Holding capacity:	150–3,000 l
Nominal power:	0.55–3.0 kW

Grout pumps

Single

Double

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Häny grout pumps set the standard for low-wear, easy-to-maintain plunger-type injection and transfer pumps. With delivery pressure levels from 1 to 100 bars and flow rates of up to 217 l/min, they cover a broad range of applications. The standard gravity ball valves allow aggregates of up to 8 mm to pass and are at the same time easy to clean.

All models include pressure and flow control valves, which make it possible to limit the maximum pumping pressure and flow in the case of delicate formations. Data recording systems with a display for flow and pressure are also available.

- **High/low pressure grouting**
- **Low wear, easy to maintain**
- **Pressure and flow control system**

Grout pumps

Capacity[1]:	1.5–13 m^3/h
Max. pressure:	100 bar
Max. aggregate size:	5–8 mm
Nominal power:	5.5–30.0 kW

[1] Water to cement ratio = 1

Compact grout plants

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This solution comprises a mixer, agitator, and grout pump arranged in a functional configuration on a frame, forming a compact grout plant that is suitable for a broad range of grouting applications.

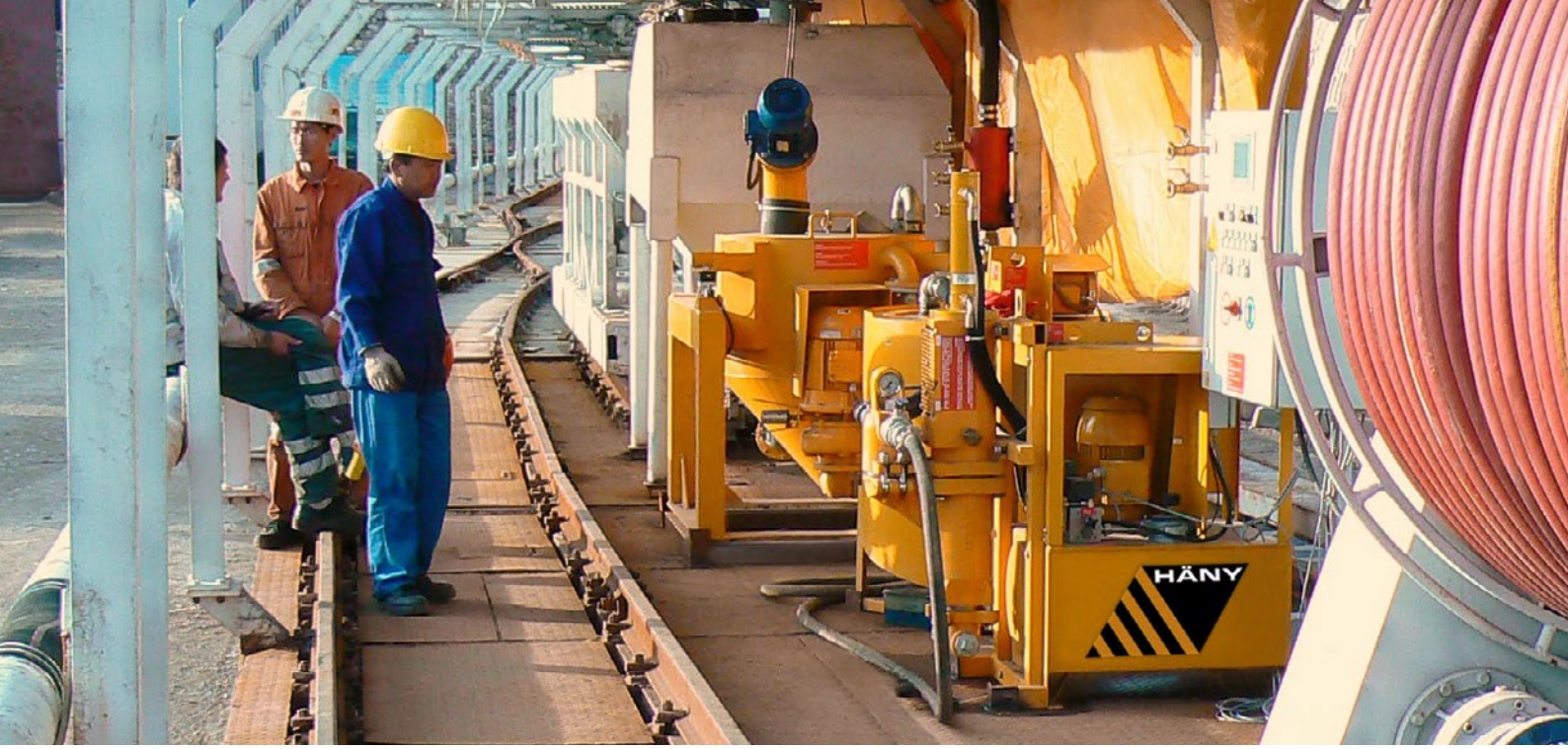
The central lifting point makes transportation extremely easy. The user-friendly arrangement of the components and the high level of mobility reduce labor costs and significantly increase productivity. Data recording systems with a display for flow and pressure are also available.

- ► **Suitable for a broad range of grouting**
- ► **User friendly and highly mobile**
- ► **Central lifting point for easy transportation**

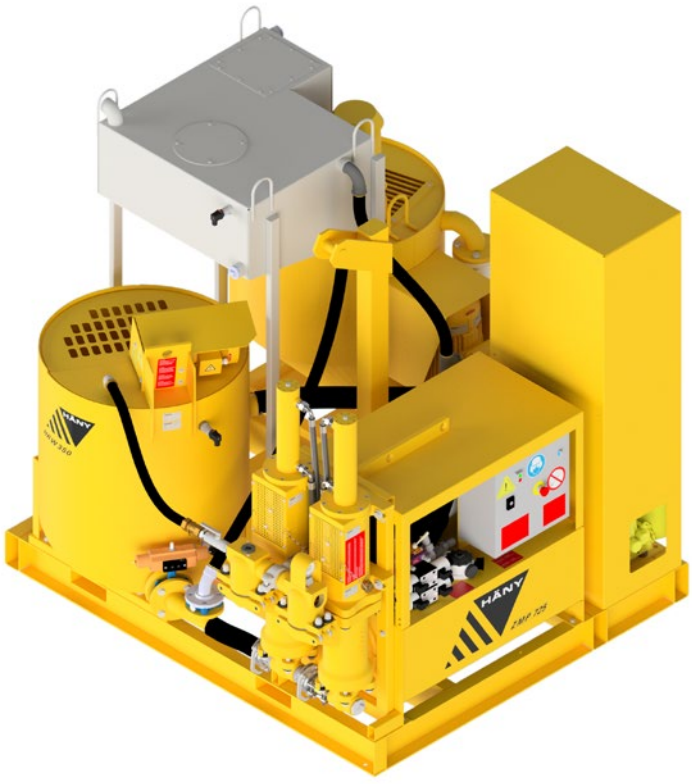
Compact grout plants

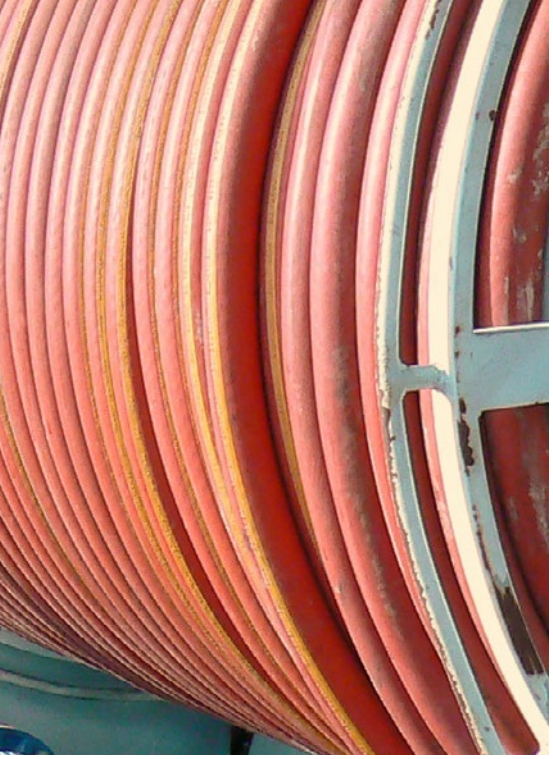
Capacity[1]:	1.5–8.0 m^3/h
Max. pressure:	100 bar
Nominal power:	9.1–39.8 kW

[1] Water to cement ratio = 1



Automated grout plants





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A fully automatic plant, designed for stationary or mobile use, offers excellent productivity, enables quality control, and reduces laboratory costs.

The automated feeding of the dry components by means of screw conveyors, a water tank for fast feeding of the mixing water, and a high-precision weighing system combine to give a fully automatic system.

The PLC records both the individual batches and consumption quantities, with the additional option of recording the pressure and pumped quantities for several injection lines. This information is made available via a USB interface.

- ► **Excellent mixing quality**
- ► **High productivity**
- ► **Data recording and logging (batch, pressure, and flow)**

Automated grout plants

Capacity:	5–12 m^3/h [1]
Batching accuracy (weighing):	< ±3 %
Nominal power:	17–40 kW [2]

[1] Depending on the type and composition of the mix

[2] Without screw conveyors

Containerized grout plants

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Mixers, agitators, and grout pumps are installed in a standard sea container, providing a solution that is not only highly portable, but also offers protection against harsh environments and vandalism.

PLC controls featuring a touch-screen panel and data logging ensure a consistently high level of quality at maximum throughput. The components are intelligently arranged, allowing easy access for operation and maintenance.

External connections to silos and integration into higher control levels enable complete system supervision and remote control of the plant.[1]

- **Protected against harsh environments and vandalism**
- **Consistently high level of quality at maximum throughput**

Containerized grout plants

Mixing capacity:	12–90 m^3/h
Circulation capacity:	2,400–9,600 l/min
Holding capacity:	800–25,000 l
Max. aggregate size:	No sand / 3 mm
Nominal power:	25–140 kW

[1] Data recording system available

Installation examples

1 Tunnelling

Equipment for backfilling, contact, and consolidation grouting

2 Microtunnelling / pipe jacking / directional drilling

Mixing and injection plants for bentonite and cement suspensions

3 Anchoring

Mixing and injection equipment for cement suspensions and mortars

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4 Dam construction

Compact grouting units, fully automated mixing and grouting plants

5 Diaphragm walls / slurry walls

Fully automated mixing plants for bentonite, cement, and slurry wall suspensions

6 Soil mixing

High-volume mixing and pumping

After-sales service

From the smallest component right through to a fully automated container plant – our goal is to ensure that your plant runs perfectly. Together with our customers, we develop spare part proposals and organize training courses either at our factory or on the construction site. Along with the plant itself, we provide well-structured and comprehensive documentation for easy troubleshooting and quick location of spare parts.

The Häny subsidiaries in the USA, Switzerland, Austria, and Bulgaria operate spare parts stocks to quickly supply the required components to our customers, and prepare cost estimates for revisions and upgrades of existing plants.

Häny works with more than 30 sales partners around the world to provide our customers with the best possible local service.

- Häny headquarters
- Häny subsidiaries
- Distribution partners

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is our competence. **Talk to the experts!**“

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