

Manufacturing facilities

at the Körting Hannover AG plant



Körting

HANNOVER AG

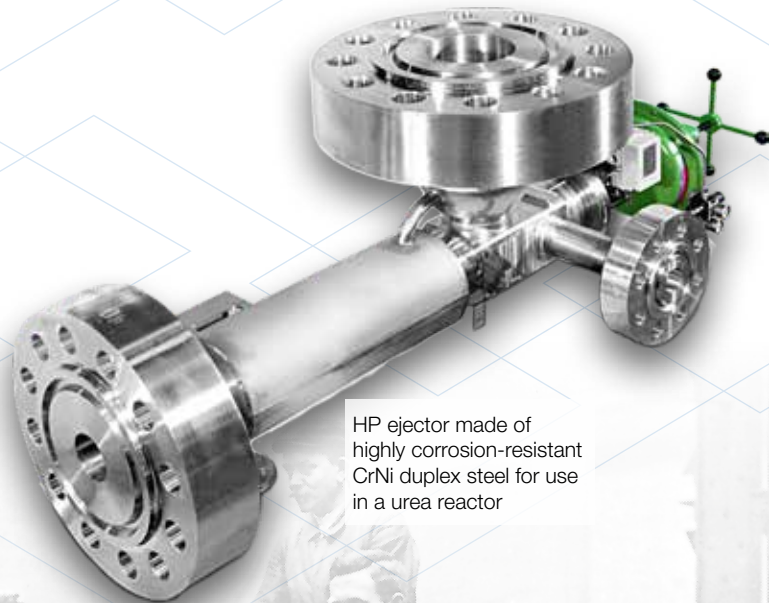
THE
EJECTOR
COMPANY

The company

Körting has established itself as a leading manufacturer of vacuum engineering products and environmental technology. The focus on engineering and key competencies in niche markets worldwide makes the company an important partner in the processing industry. In the ejector/vacuum engineering and waste gas cleaning/environmental technology segments, assignments are analysed and customised solutions drawn up and implemented.

The demand for integrated solutions, combined with close customer collaboration, encourages us to consistently develop our products and services. New, innovative opportunities are enabled through partnership with the worlds of science, research and business. Application-driven research constantly provides the new stimuli required to deliver cutting-edge Körting technology. Körting Hannover AG harnesses its in-depth expertise to deliver future-proof, customer-centric applications and solutions.

With subsidiaries in Brazil, China, India, Malaysia, Poland and Russia, Körting is never far away from its international customers. Körting's Hans Hennig GmbH subsidiary in Ratingen near Düsseldorf offers a full range of expertise on process heat/firing technology.



HP ejector made of highly corrosion-resistant CrNi duplex steel for use in a urea reactor

History

On 1 November 1871, Ernst and Berthold Körting founded Gebrüder Körting in Hanover, Germany. In the same year, Ernst Körting applied fluid mechanics to design and develop the injector, a steam jet boiler feed pump. A year later, the manufacture of steam jets and water jet ejectors for vacuum generation were key products in the range offered by the fledgling company. Körting has been combining its skills and experience in developing, designing, manufacturing and operating jet ejectors since 1872. In 1875, firing technology is included in the product range. Ten years

later in 1885, the company develops and sells the first jet and Venturi scrubbers to clean industrial waste gas.

In 1890, the company moves into a new factory in the Hanover-Linden neighbourhood. It has stayed in this location until today. The first Körting multi-stage steam jet vacuum systems were made back in 1920. Many further successful years followed. Until today, the history and enormous expertise provided by Körting Hannover AG are a pledge of global success.

On-site manufacturing facilities

In conjunction with its comprehensive experience and exceptional engineering skills, Körting Hannover AG provides superior quality thanks to its own manufacturing capabilities. The customer-driven approach means that high-quality materials can be processed with state-of-the-art manufacturing technologies. The whole company is DIN EN ISO 9001 certified and has TÜV-Nord's HPO licence to manufacture pressure vessels.

Its focus on key competencies means the company is constantly striving to make specific improvements. The staff undergoes training on a consistent basis in order to handle highly modern manufacturing processes which play a pivotal role in delivering premium Körting products. By liaising closely with its manufacturing and testing teams, Körting creates fertile ground for top quality and reliability. The quality management system monitors processes in each of the company's departments.

Certification, which is part of Körting's philosophy, bears testimony to this commitment and indicates the excellence of all areas of the company.

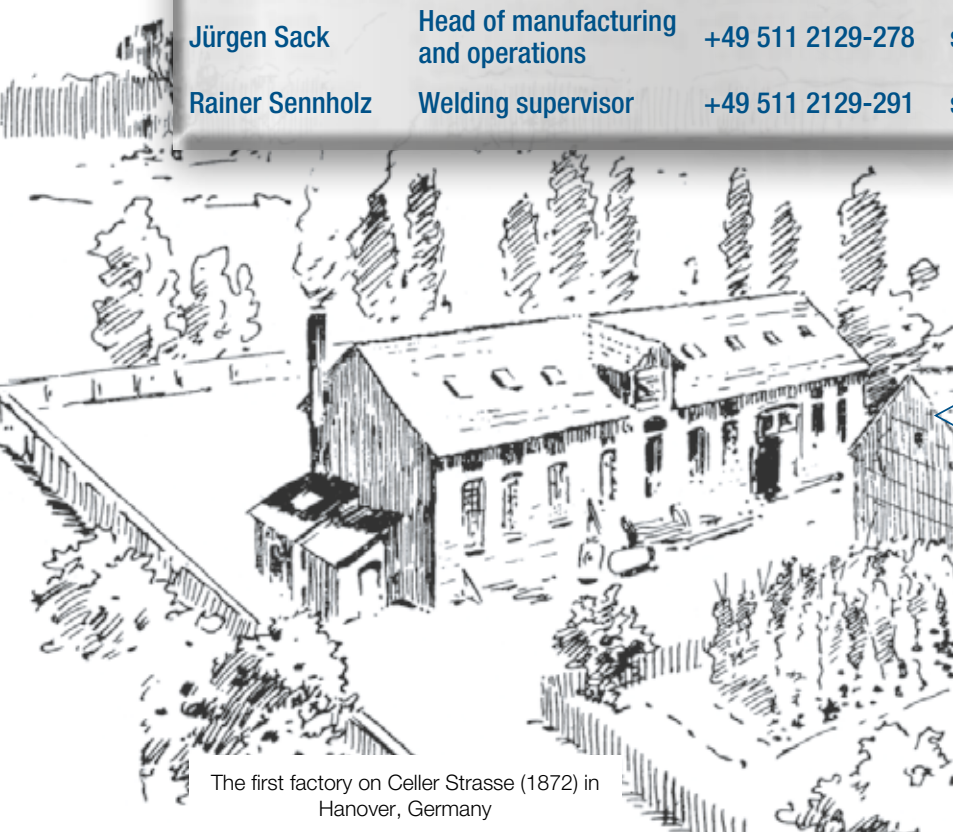
Körting Hannover AG also offers its expertise to the market as a contract manufacturer. This brochure provides an overview of the manufacturing capabilities in the Hanover factory.



People to contact should you have any questions or wish to raise other issues:

Jürgen Sack	Head of manufacturing and operations	+49 511 2129-278	sack@koerting.de
Rainer Sennholz	Welding supervisor	+49 511 2129-291	sennholz@koerting.de

Manufacturing of a surface condenser



The first factory on Celler Strasse (1872) in Hanover, Germany

Our portfolio:

- mechanical processing
- cutting
- sheet metal forming
- welding
- annealing (externally)
- non-destructive testing
- surface finishing

Site



Körting Hannover AG's site and main entrance point



Directions via the A2

Take exist 42 Nienburg/Garbsen Ost, turn left towards Herrenhausen/ Neustadt a. Rbge via the Westschnellweg (B6), take the Linden-Mitte exit, turn right onto Fössestrasse, left onto Bauweg and left onto Badenstedter Strasse

Directions via the A7

At the Hannover-Süd junction, continue on the A37 towards Hannover/Messe, via the Messeschnellweg B6 and Südschnellweg B65 towards Zentrum, turn right on Frankfurter Allee, continue on Friedrich-Ebert-Strasse, Göttinger Strasse and Westschnellweg, take the Linden-Mitte exit, turn right onto Fössestrasse, left onto Bauweg and then left onto Badenstedter Strasse

Capacities on the premises

On request, all products made can be stored temporarily in the warehouse which is 3 500 m² in size.

Total floor space	(m ²)	Gate sizes (m)	Crane capacities (t)	Hook height (m)
Equipment pre-manufacturing	2 500	4 x 4	20	6,5
Mechanical manufacturing	3 500	4 x 4	5	5
Final manufacturing and dispatch of equipment	7 000	3 x 4	5	4

Loading capacities

The products can be sent by road, shipped overseas or by air.

Type	Max. component sizes	Lifting capacity (t)
Gantry crane	3,5 x 4 x 20	20



Mechanical processing

Machining

Ferrous and non-ferrous alloys, as well as a range of plastics, can be processed by turning, milling and drilling on diverse CNC machines. The CNC lathes with 5 axes can handle all aspects. Furthermore, full processing of welded components is possible on a carousel and boring mill. Further boring and milling centres and conventional processing equipment are also used.



DMG – DMU 125 FD multi-purpose milling and turning centre

X – axis	1 250
Y – axis	1 000
Z – axis	1 000
Turning - Ø external clamping jaw	max. 1 300
Turning - Ø internal clamping jaw	max. 1 300

CNC lathes

CNC lathes	Max. dimensions of workpiece (mm)	
Mazak Integrex e500 HII	Turning-Ø	max. 800
	Turning length	max. 3 000
Okuma Multus B400 - C1500	Turning-Ø	max. 630
	Turning length	max. 2 000
B400II - W1500		
B400 - C2000		



Conventional lathes

Wohlenberg Löw V1000 x 4000	Turning-Ø	max. 1 000
	Turning length	max. 4 000
	Back rest-Ø	max. 800

Plasma and flame cutting

Minimal wastage is achieved thanks to the CNC-controlled flame cutter and optimum positioning of the components via an interlocking system.

Cutting methods

- oxy fuel flame cutting for sheets up to 100 mm thick
- plasma with swirl gas technology: Kjellberg Fine Focus 800 to 40 mm sheet thickness
Kjellberg Hi Focus 160 i to 20 mm sheet thickness

plasma gases: Air, O₂, Ar/H₂, Ar/H₂/N₂

swirl gases: Air, N₂

O₂ = oxygen

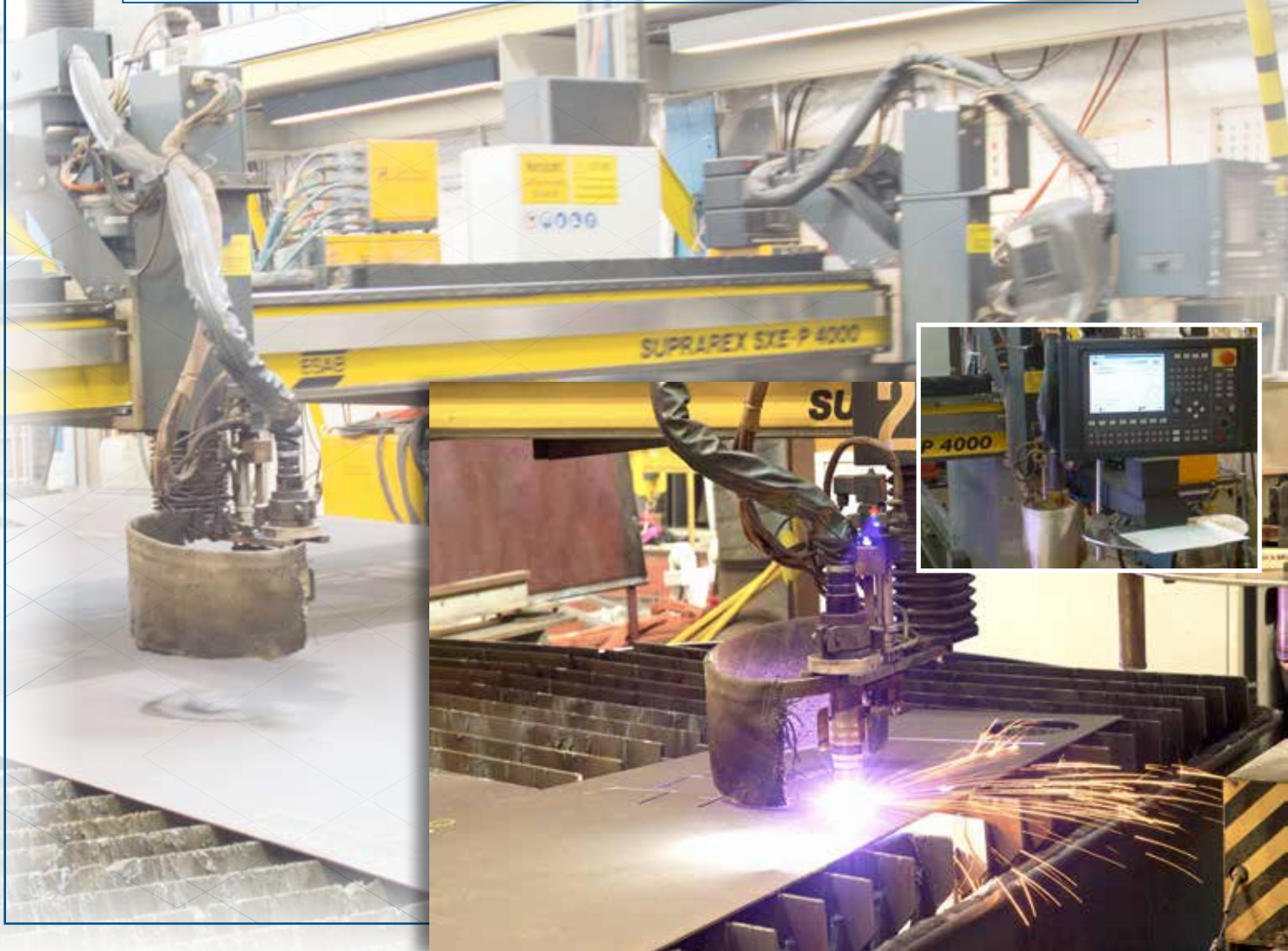
Ar = argon

H₂ = hydrogen

N₂ = nitrogen

Cutting section

- width 3 000 mm
- length 6 000 mm



Sheet metal forming

Presses and bending machines are used to make cylinders (e.g. vessel shells) and cones with different tapers

Swing bending machine	Sheet size: max 1 500 mm · Sheet thickness: max. 3 mm
Hydraulic presses	Press force: 200 t
3-roller roll bending machines with exchangeable cylindrical and conical top roller	Wall size: where $L_{max} = 2\,500\text{ mm}$ with $Di > \varnothing 2\,000\text{ mm}$ → $t = 50\text{ mm}$ thick where $L_{max} = 2\,500\text{ mm}$ with $Di > \varnothing 440\text{ mm}$ → $t = 32\text{ mm}$ thick where $L_{max} = 3\,000\text{ mm}$ with $Di > \varnothing 385\text{ mm}$ → $t = 12\text{ mm}$ thick where $L_{max} = 1\,000\text{ mm}$ with $Di > \varnothing 385\text{ mm}$ → $t = 16\text{ mm}$ thick



Welding

Körting Hannover AG has qualified and experienced welders and several specialist welding engineers, technicians and foremen. Numerous procedural tests are used for the most diverse of materials.

Due to its HP0 licence, Körting Hannover AG can weld pressure vessels and test them itself.

Welding methods

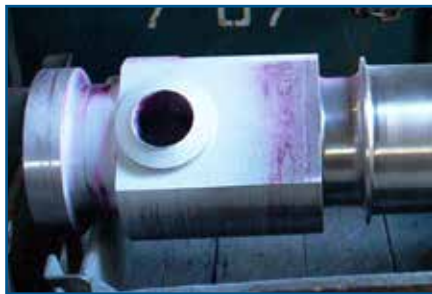
- automatic welder (submerged arc welder)
- manual metal arc welding
- MAG
- WIG + WIG hot wire welding
- submerged arc welding
- hot gas extrusion welding
→ for polypropylene (PP)



Non-destructive testing

Testers (up to level 3) can check the weld seams by using DIN EN ISO 17636-1-certified radiographic testing. The Körting testing department inspects the products made based on the guidelines and specifications and by applying the methods stated below. To do so the company collaborates with the TÜV-Nord Group and other service providers.

Testing methods



Dye penetration inspection methods

Radiographic methods with X-ray tubes or isotopes



Hydrostatic tests up to 1 000 bar

Ultrasound testing procedures



Surface finishing

Pickling

To prevent corrosion, the welded CrNi steel components are pickled and passivated.

Immersion pickling in a solution of sulphuric acid and hydrofluoric acid

Composition:

20 - 25 % vol. HNO₃ (67 %)
 3 - 4 % vol. HF (75 %)
 (Remaining H₂O)

Pickling duration: 30 to 60 minutes depending on the material at room temperature



Pickling bath	Length (mm)	Width (mm)	Height (mm)	Average fill height (mm)
	4 000	1 800	1 600	800

Blasting

In the blast machine workpieces are blasted with corundum or with glass beads. The purpose is to prepare the material for further surface coating, such as for example spray painting or surface treatment with CrNi steel components.

Blast machine	Length (mm)	Width (mm)	Height (mm)
	8 900	2 800	2 500



Spraying

Manual and spray painting rust protection priming and coating with paint while complying with the layer thicknesses required.

Spayer	Length (mm)	Width (mm)	Door w x h (mm)
	6 000	4 000	2 450 x 2 980

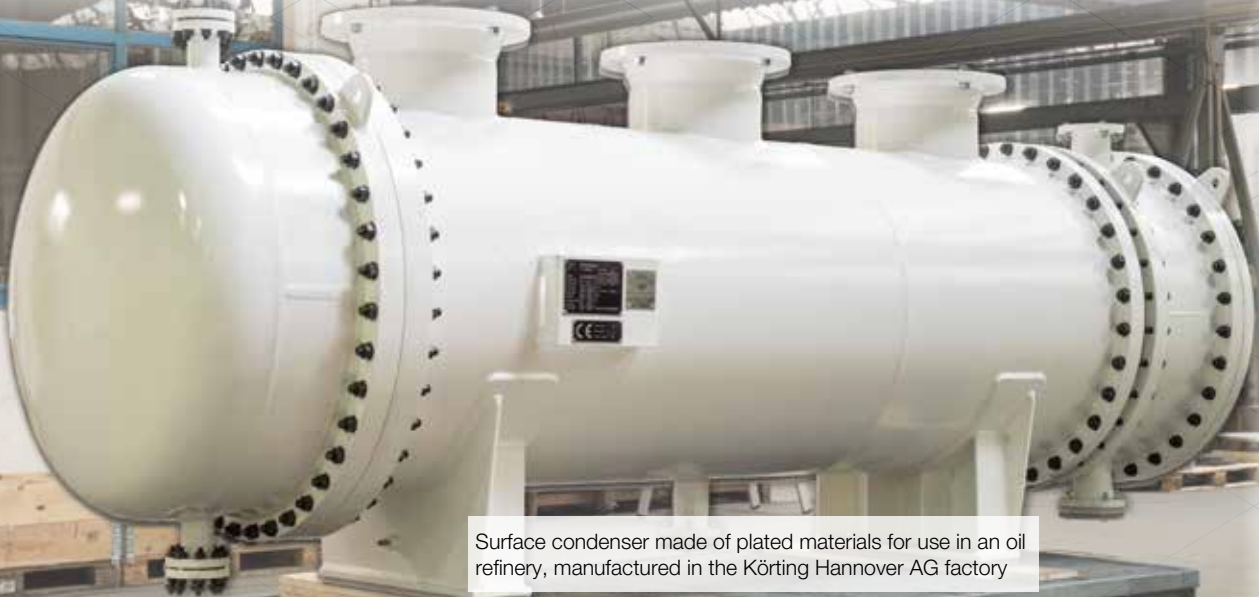


Certificates and licenses

- TÜV-Cert DIN EN ISO 9001 : 2015
- AD 2000 HP0
- DGRL 2014/68/EU
- ASME-U-Stamp
- Manufacture License of Special Equipment People's Republic of China



And many others on request or visit
www.koerting.de



Surface condenser made of plated materials for use in an oil refinery, manufactured in the Körting Hannover AG factory



FED s.r.l.

Via dei Valtorta, 2
20127 MILANO
Italy

Tel.: +39 02 26826332
Fax: +39 02 26140150
E-mail: fed@fed.it

www.fed.it