

Just one source.



PLANTS APPARATUS ERECTION



family owned since 1965.



- Company
- Technology
- Manufacturing
- Service
- Market - Reference

Company: Key figures

EBNER is an independent, medium-sized and family-managed company that is active in the field of plant- and apparatus construction, with its own future-oriented Know-How.

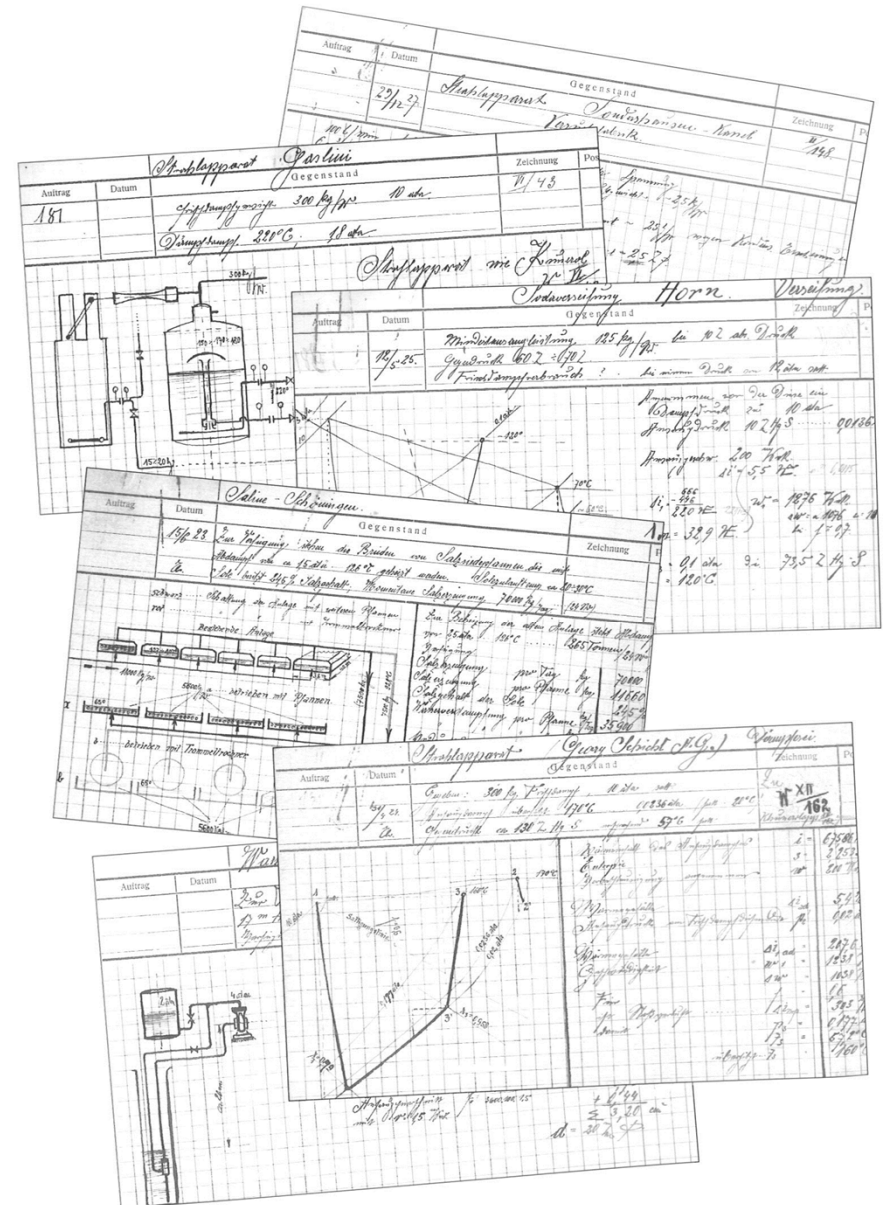
JUST ONE SOURCE.

For more than 50 years we plan, manufacture and sell worldwide.

Our market is the environmental and finishing technology, with particular emphasis on the treatment and evaporation of industrial waste waters and process media as well as the production of crystalline products. We provide economic processes, plants and apparatus for the benefit of our clients and improving the environment.

Company area: about 60.000 m²

Production area : about 6.000 m²



Company: History

Karl Ebner founds the company as major shareholder



Apparate- und Maschinenbau
EBNER & Co. KG

Stefan Ebner joins as limited partner

Share in company Schulz & Partner GmbH

Changing the legal form to
EBNER GmbH & Co. KG
Anlagen und Apparate

Lisa Ebner and Sebastian Ebner join as limited partner

1965

1966

1975

1982

1999

2010

2012

2015

Setting up and move into the production hall and office building in Eiterfeld/Leibolz

Renaming of the company to
EBNER & Co. KG
Anlagen und Apparate

Establishment of the Joint Venture EBNER-Sunshine Environment Protection Ltd. in China

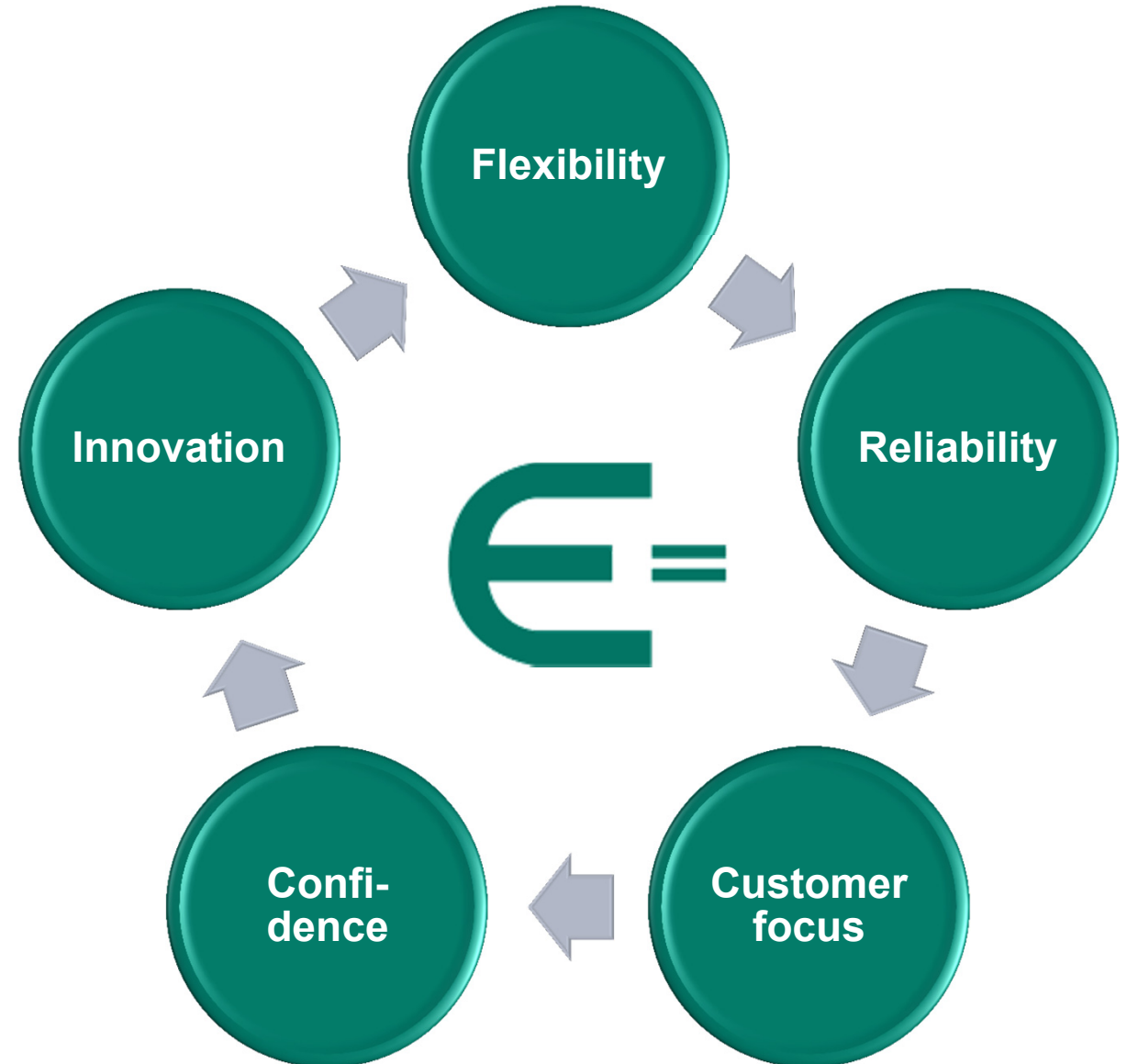
50 Jahre EBNER
552 plants delivered
230 plants modified

Company: Staff

The key factors of our success are executives and employees with high level of professional and social competence.

Our commitment as well as the appreciation of our clients and employees ensure our success.

In doing so, we improve and develop ourselves in all divisions on a constant basis in order to meet the increasing expectations of our clients.



Company: Team



Stefan Ebner
Managing Partner
Sales Plant Technology

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D - 36132 Eiterfeld

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Rasit Özis
Authorized Officer
Head of Plant Technology Division



Markus Abel
Authorized Officer
Commercial Manager



Sebastian Ebner
Assistant to Management



Holger Männche
Sales Manager Apparatus



Oliver Ollenik
Sales Manager Apparatus



Klaus Busold
Service and Erection

Company: Certificate



DIN EN ISO 9001



AD2000 HP0 / DIN 3834-2

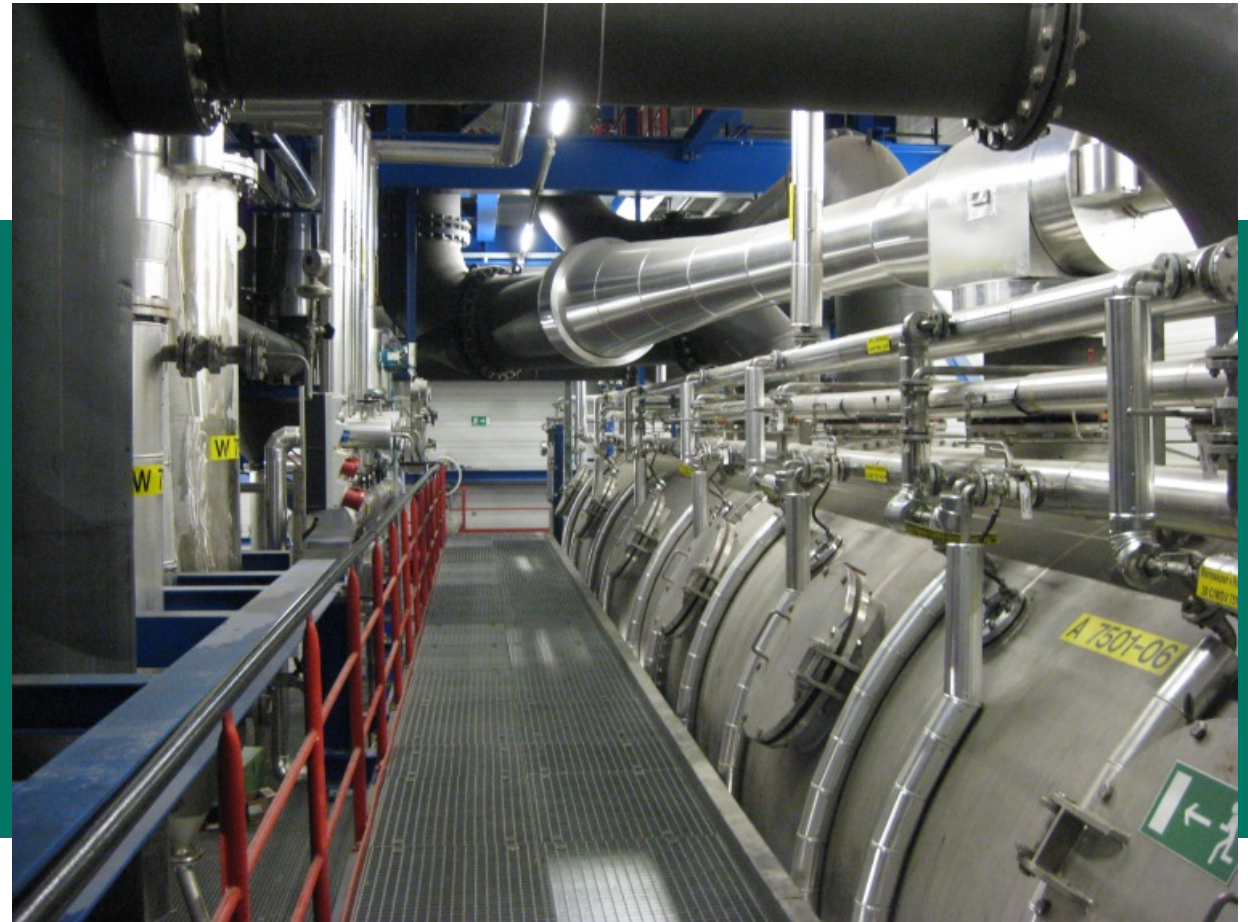


Specialised Company
§ 19I WHG

The following certificates can be supplied for containers and equipment manufactured by **EBNER** and delivered to the Eurasian Economic Union: TR EAWU 004/010/020/020/032 and GOST 2.601 and 2.610

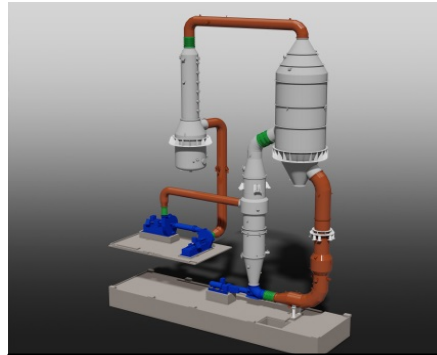
GOST & TR EAWU

- Company
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Technology: Performances

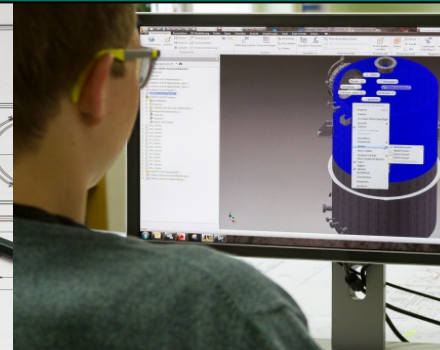
Plants



Apparatus

**Basic-, detail- & EMSR-engineering
workshops & erection**

Engineering



Design

Erection



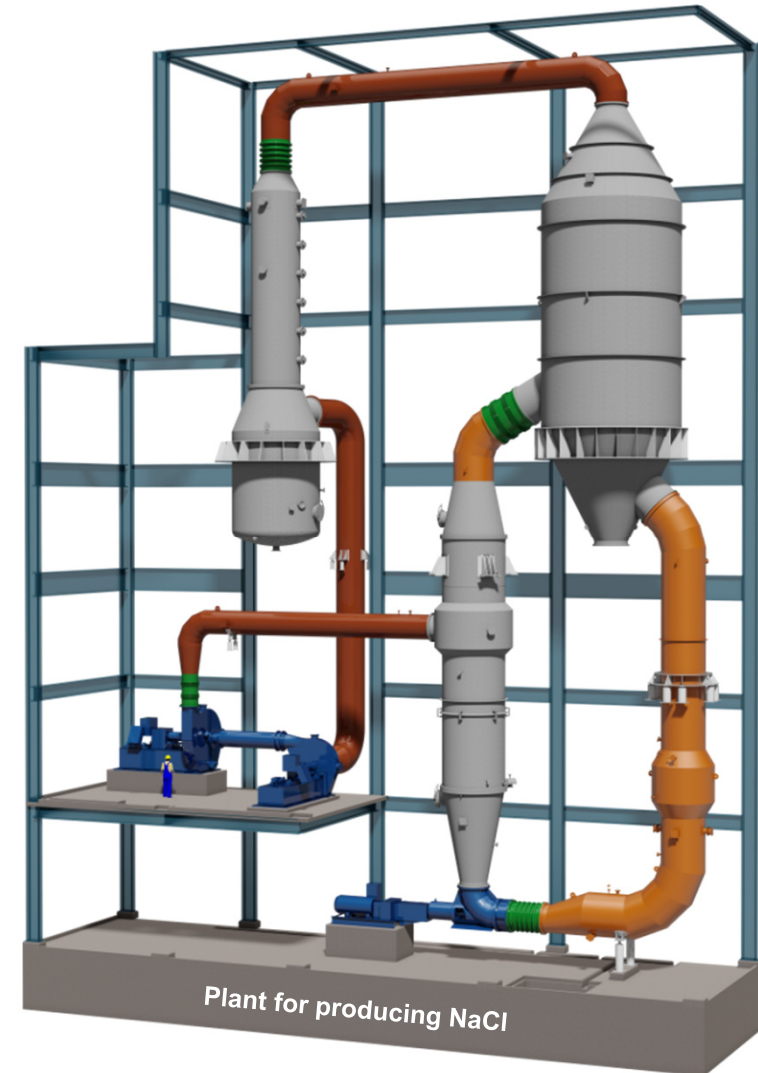
**Start-up and after-sales-
service**

**We stand for:
reliability, flexibility and overall competence**

Technology: Performances

Engineering Services

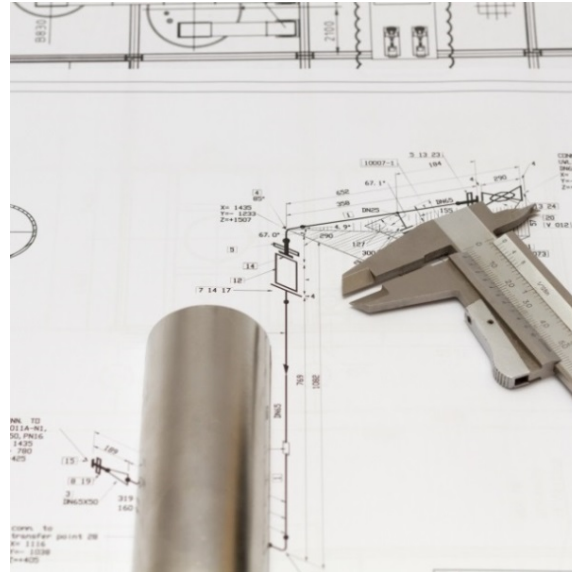
- ✓ Basic- and detail engineering
- ✓ Process- and P&I-flow sheets
- ✓ List of bill of material, pipelines as well as fittings and valves
- ✓ Electric-, process-, measuring- and control engineering
- ✓ Specification for mechanical equipment
- ✓ Process- and mechanical design of apparatus



Technology: Performances

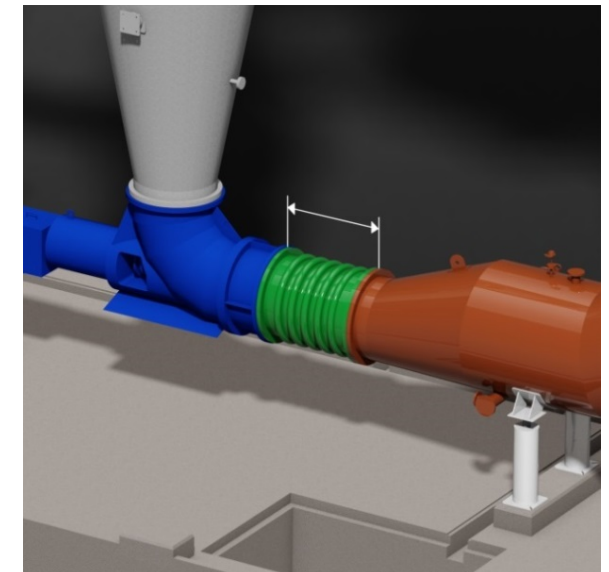
Construction

- ✓ Apparatus workshop drawings
- ✓ Detail – layout plans (3D)
- ✓ Construction- + steel structure drawings
- ✓ Determination of all loads
- ✓ Pipeline planning including isometric drawings



EBNER uses most modern CAD-systems of Autodesk

- ✓ AutoCAD
 - ✓ AutoCAD P&ID
 - ✓ AutoCAD Plant 3D
 - ✓ Inventor
- and **tools** for electrical as well as process- and control engineering
- ✓ EPLAN PPE
 - ✓ EPLAN PREPLANNING for project engineering



Technology: Apparatus

According to the slogan „*individual service, best quality and reliability*“

EBNER treats all standard steel an stainless steel **such as:**

Unalloyed steel, 1.4301 (304 (AISI)) / 1.4410 (S32750 (AISI)) / 1.4501 (S32760 (AISI)) / 1.4571 (316Ti (AISI)) /
1.4539 (Alloy 904L) / 1.4529 (Alloy 926) / 1.4462 (Alloy 31803) / 1.4562 (Alloy 31) **and more**

As well as speical materials **such as:**

Hastelloy® / Monel / Titanium / Graphite / Aluminium bronze / Inconel® / Copper- and Nickel alloys



Heat exchanger Ø 3.150 mm, tube length 9.000 mm, 113 t

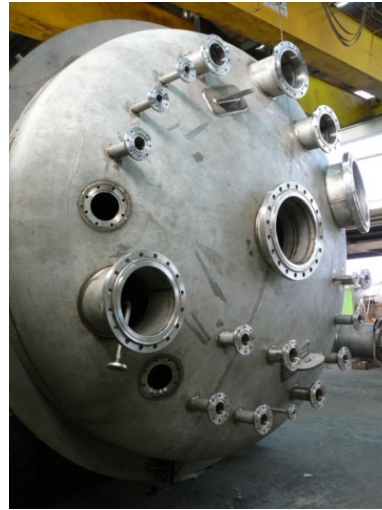


Evaporator Ø 6.000 mm, overall length 15.000 mm, 55 t

Technology: Apparatus



Flash evaporator Ø 3.500 mm, steel/rubber lined



Reactor Ø 3.500 mm, 1.4539



Separator Ø 700 mm, 1.4462

Crystallizer part Ø 1.800 mm, steel/rubber lined



Stirring tank Ø 2.400 mm, 1.4571



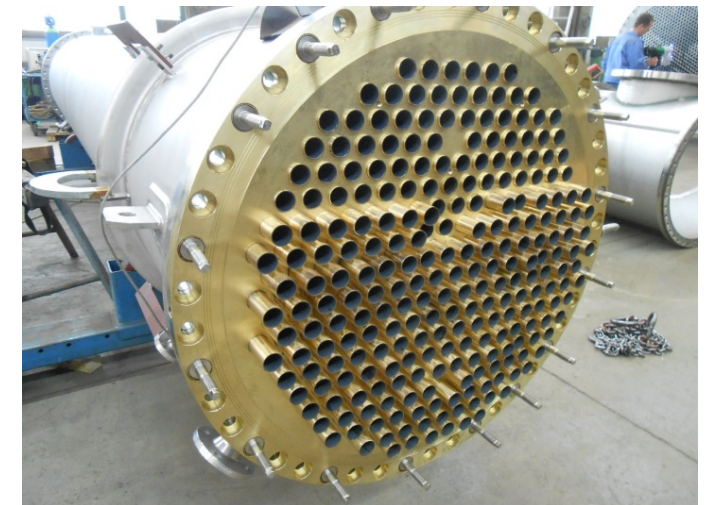
SMR Reaktor Ø 1.000 mm, SA 516 GR.60



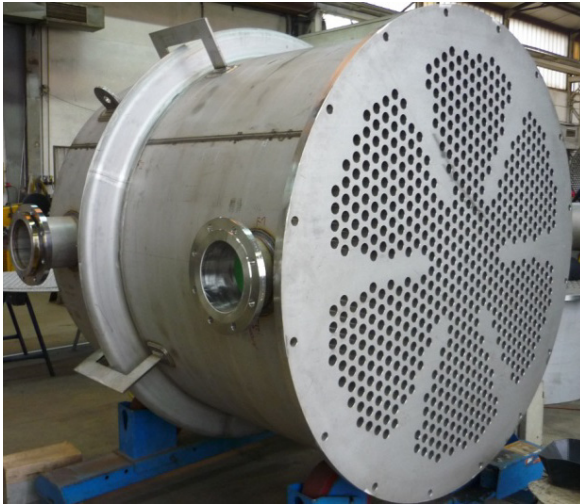
Technology: Apparatus



Heat exchanger in various materials such as Monel, Titanium, Graphite



Technology: Apparatus



Oleum condensator Ø 1.650 mm, 1.4571



SMXL-High pressure mixer
 Ø 250 mm 1.4404 ASME mit U-Stamp



Plume-condensator Ø 1.800 mm, 1.4541

Condensator with pullable bundle
 Ø 610 mm, 1.4571



Flow modifier Ø 950 mm, 1.4404



Pre-heater Ø 350 mm, 1.4539



Technology: Apparatus



Site fabrication and mounting (Austria)
Evaporation crystallizer Ø 6.400 mm, overall length 18.700 mm, 56 t, 1.4562



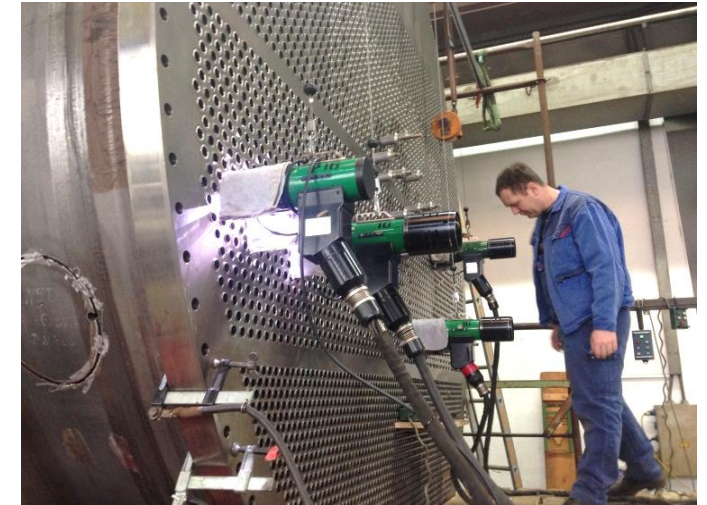
Technology: Apparatus



Site fabrication and mounting (Russia)
Evaporating crystallizer Ø 5.400 mm, overall length 21.800 mm, 40 t, 1.4562



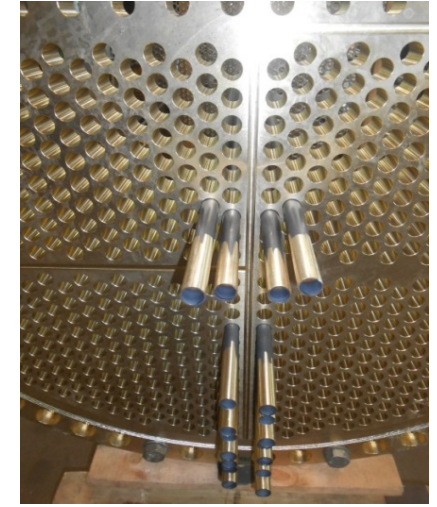
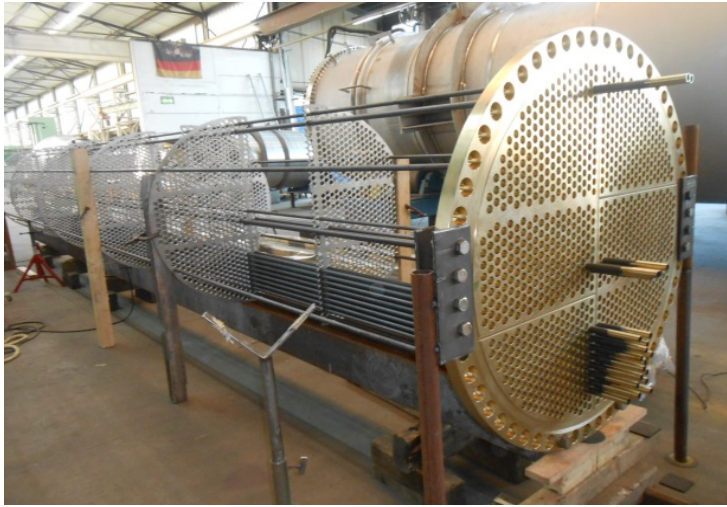
Technology: Apparatus



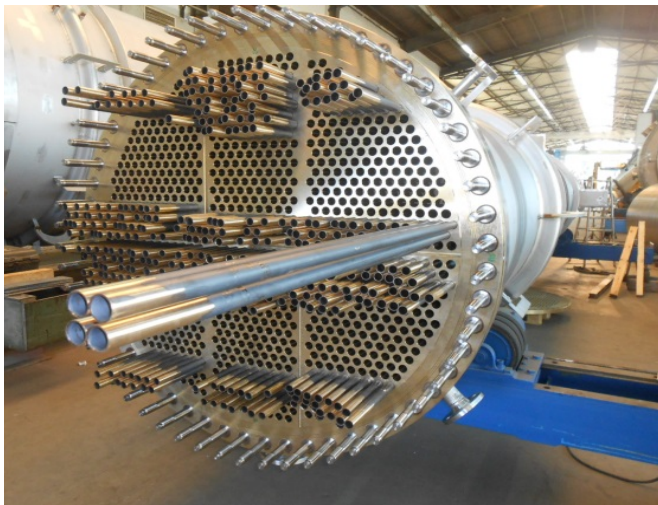
Manufacturing and mounting (Netherlands)
Sea water condenser Ø 3.650 mm, overall length 10.000 mm, 40 t, 1.4462/P355GH



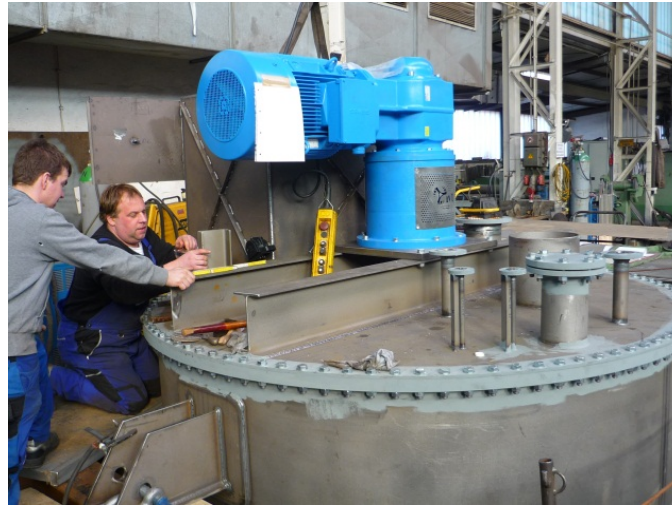
Technology: Apparatus



Manufacturing of pre heaters for evaporation crystallization
Ø 800 mm - Ø 1.300 mm, overall length 11.700 mm, weight 8,8 - 21,8 t, Aluminium bronze



Technology: Apparatus



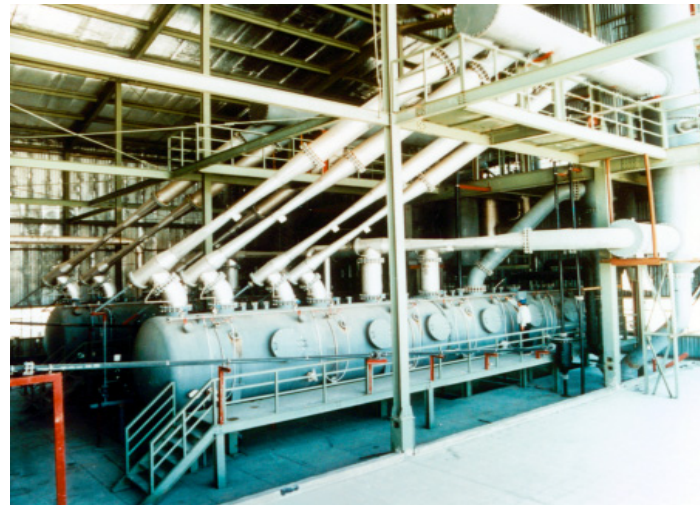
Manufacturing and mouting of agitator tanks incl. EMSR-Technology (Germany)
Ø 2.200 mm - Ø 3.000 mm, overall length 5.700 mm, weight 7 - 11,6 t, Steel



Technology: Plants



**From desert sand to salt -
manufacturing, supervision of erection and start-up of a plant for production of high purity sodium sulfate Na_2SO_4**



Technology: Plants



Potassium sulfate K_2SO_4 from waste water (Austria)

This plant is built and installed by applying EBNER's philosophy „Just one source“



Technology: Plants



Potassium sulfate K_2SO_4 from waste water (Austria)

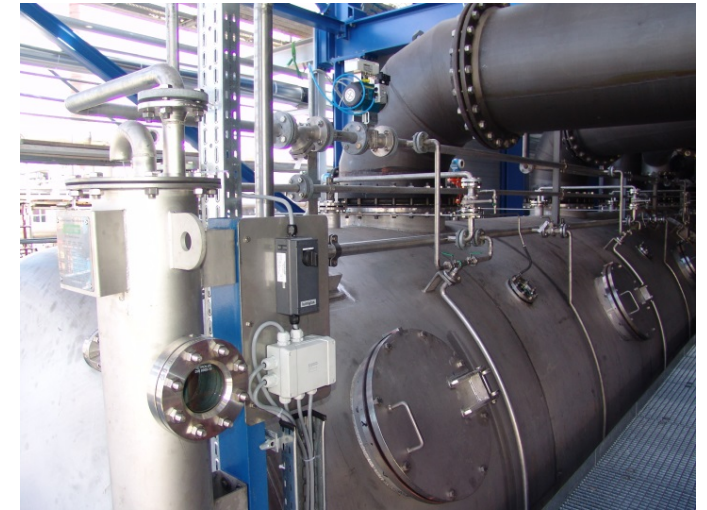
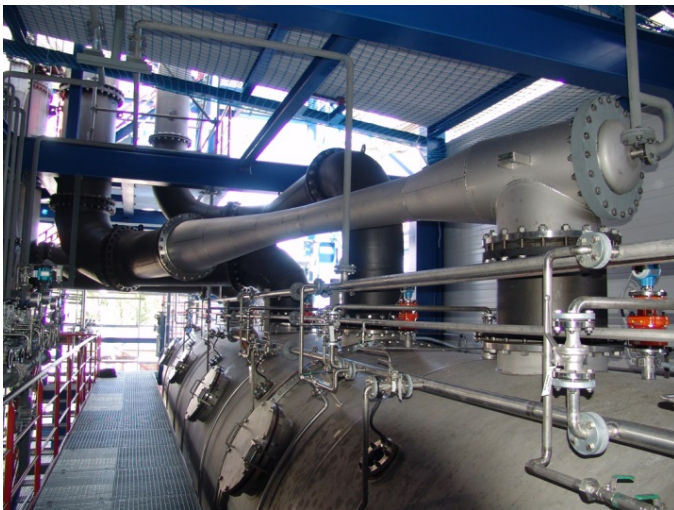
This plant is built and installed by applying EBNER's philosophy „Just one source“



Technology: Plants



Manufacturing, erection and start-up of a crystallization



Technology: Plants



Table salt (NaCl) from brine



Technology: Plants



Manufacturing, erection and start-up of a evaporation



Technology: Plants



Manufacturing, erection and start-up of a flash evaporation



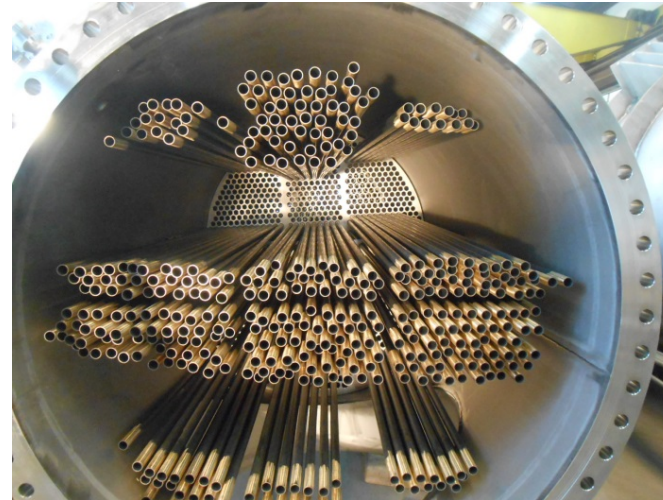
Technology: Plants



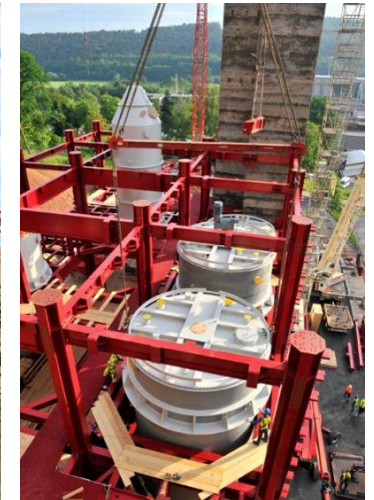
Manufacturing and erection of different plant parts of a calcination



Technology: Plants



Manufacturing, transport and erection of various plant components of a evaporation crstallization



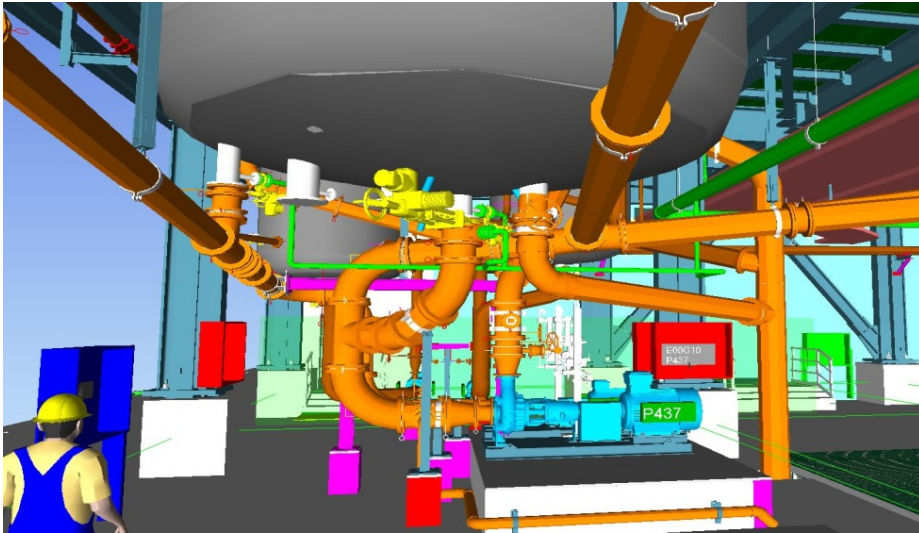
Technology: Plants



Heat exchanger Ø 3.100 mm, overall length 17.640 mm, weight 113 t
A special transport on air cushions was necessary

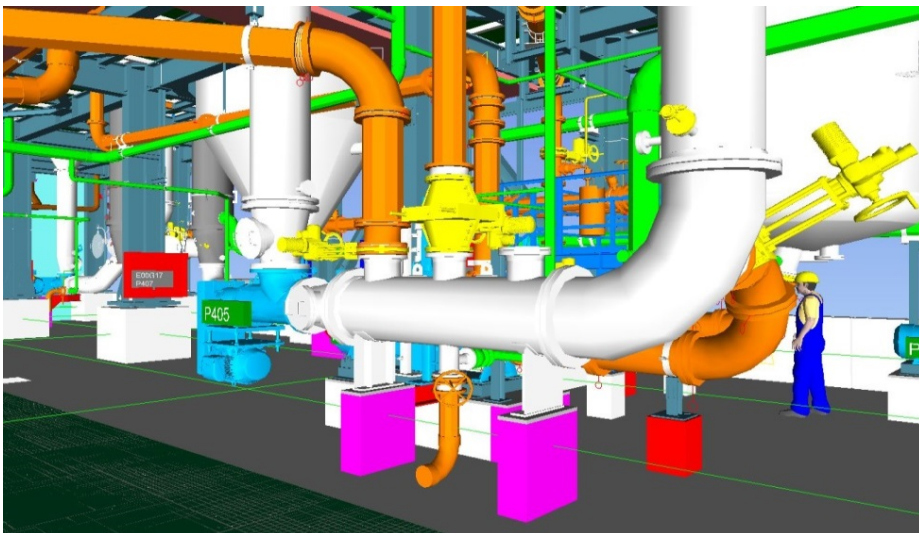


Technology: Plants



3D-pipeline planning

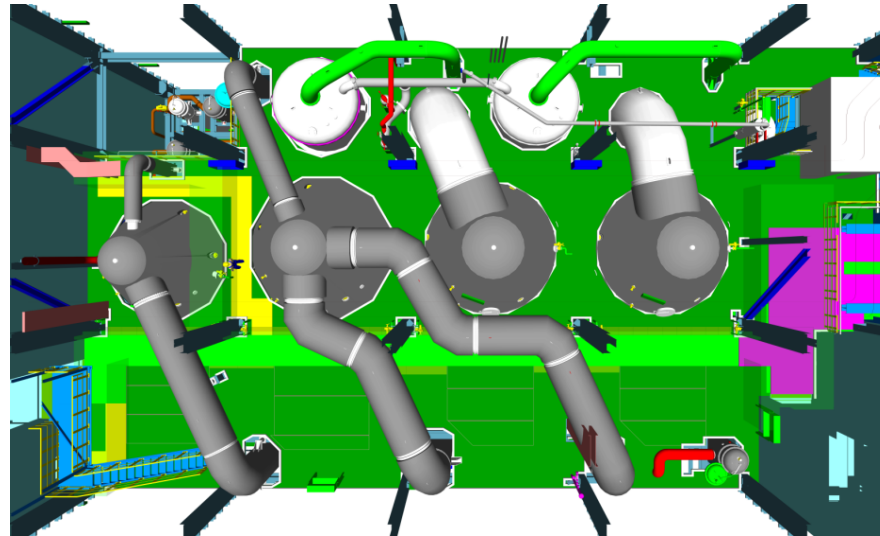
preliminary planning / detailed planning



fully assembled



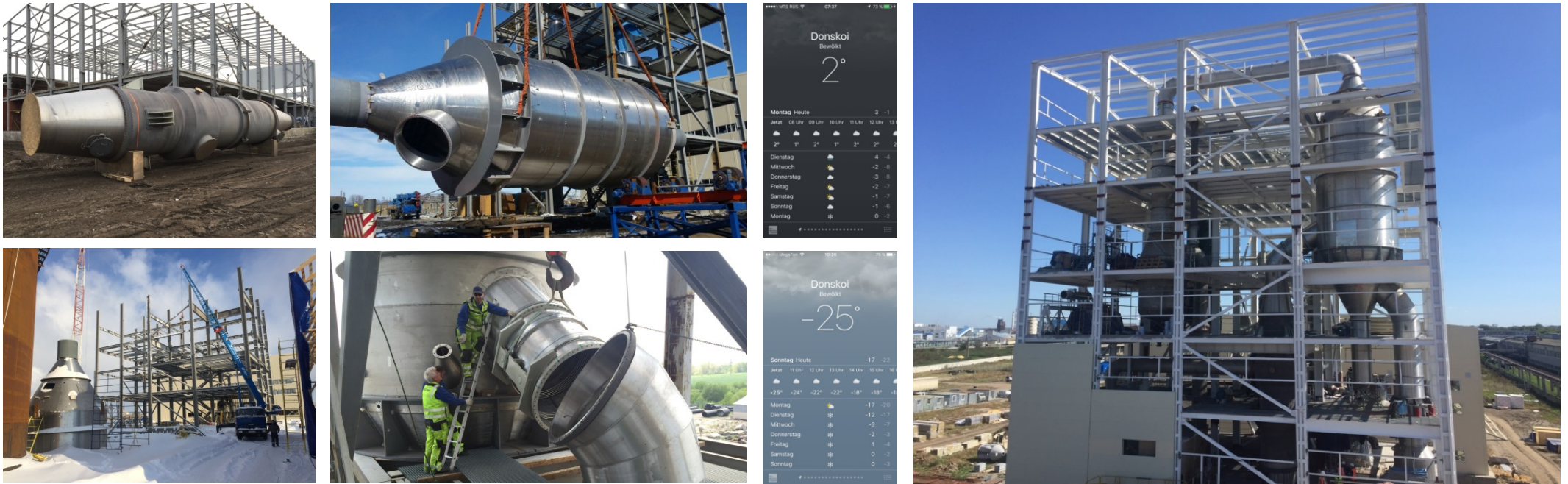
Technology: Plants



Vapour pipeline Ø 2.600 mm



Technology: Plants



Site fabrication of the crystallizer (Russia)

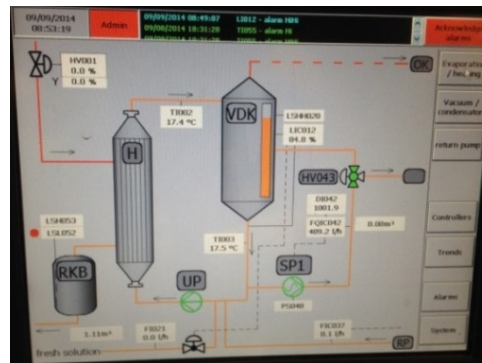
The conditions were difficult

- a building did not exist
- fabrication has been carried out inside a tent
- prevailing temperatures were between + 2 °C and – 25 °C



Technology: Plants

Mobile pilot plant



Plant type:

Mobile evaporation or evaporation crystallization plant

Characteristics:

Transportation to the place of use worldwide is possible on a standard semi-trailer

Capacity:

ca. 0,4 m³/h feed

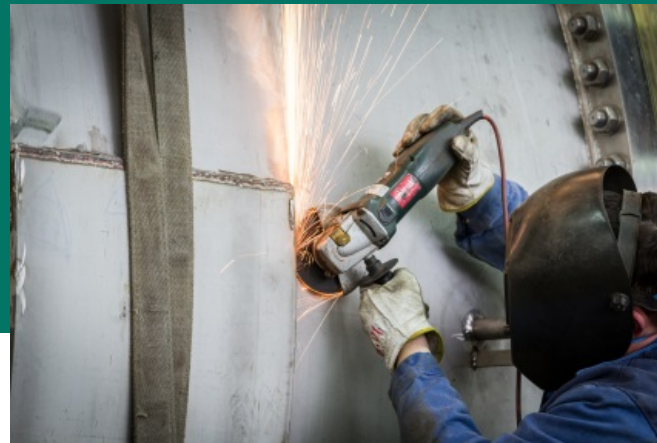
ca. 300 kg/h water evaporation

ca. 150 kg/h salt production

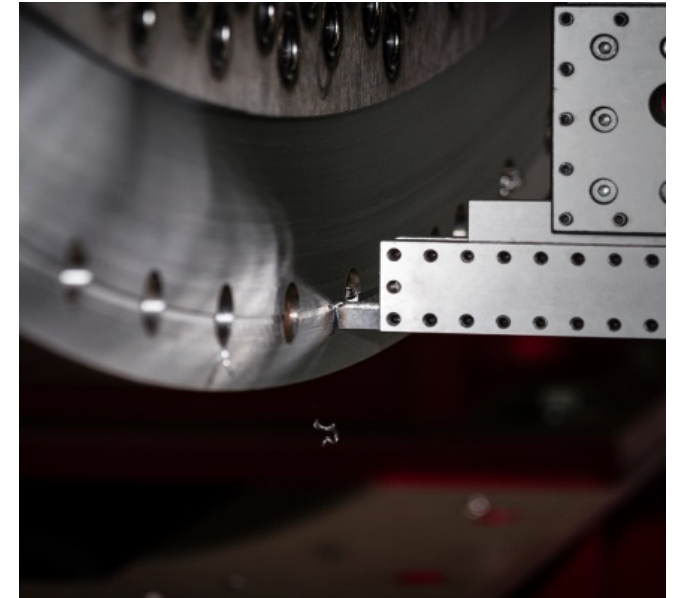
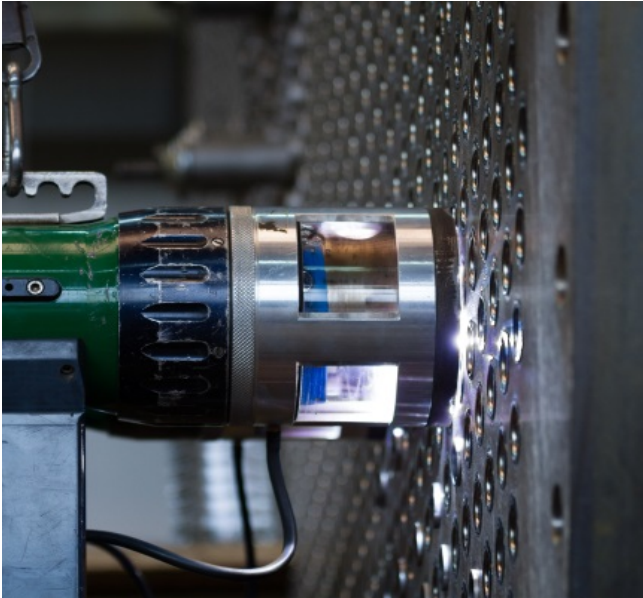
This plant is available in our company for renting.

Please contact us!

- Company
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Manufacture: Equipment



- ✓ Plasma longitudinal seam welding machine
- ✓ UP-welding mast
- ✓ Tube welding machines (WIG)
- ✓ Metall protective gas welding (MAG+MIG)
- ✓ Protective gas welding (WIG)
- ✓ Non-destructive test equipment
- ✓ Plate rolls

- ✓ Tube expander
- ✓ CNC-drilling machine / CNC-milling machine
- ✓ Boring mill
- ✓ Vertical turning lathe / Turning lathes
- ✓ Plasma-shearing equipment
- ✓ Tube bending machines / Profile bending machines
- ✓ and further...

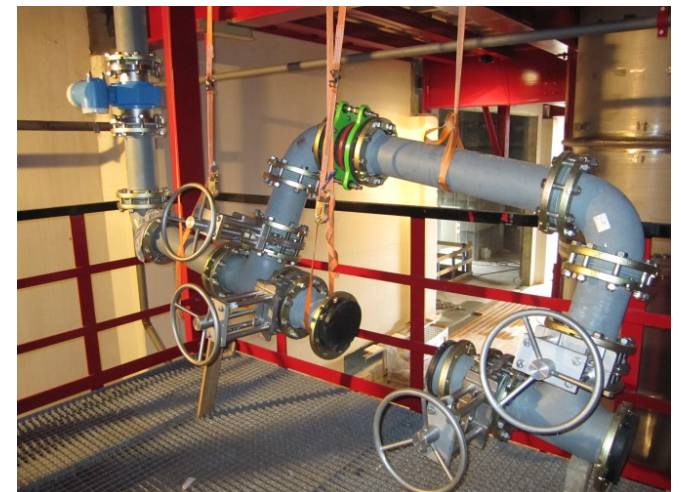
- Company
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Service: Erection



**Our assembly team is integrated in the fabrication sector and involved in the erection work for flexible solutions from project to project
EBNER assemblers continue the work, where others stop.**



Service: Erection



We coordinate the cooperation with specialised companies for:

- ✓ Earth- and concrete works
- ✓ Steel structure
- ✓ Transportation of components
- ✓ Crane work
- ✓ Insulation
- ✓ Painting



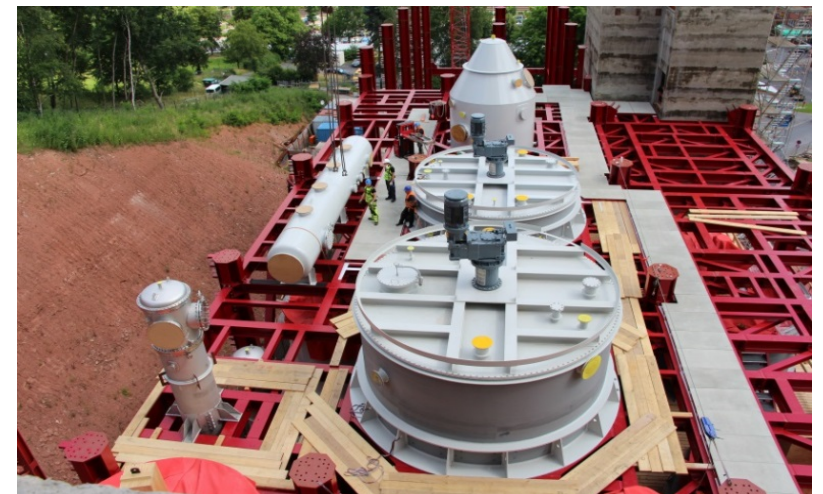
We undertake the entire handling and coordination of erection work.
Benefits for you: **Cost- and time savings**



Service: Erection



EBNER – assemblers work in a structured manner following a predefined timetable. Assembly work worth millions were already completed in timely manner and to full satisfaction of the customer.

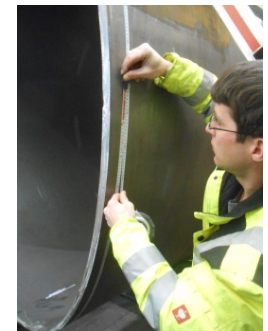
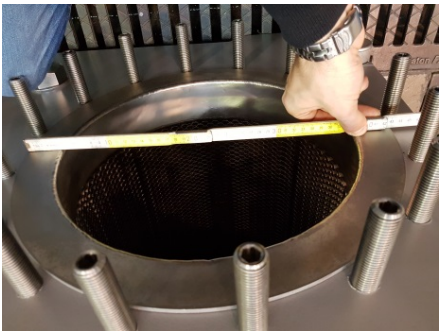


Service: Erection



Beside the standard erections of plants and plant components the following focuses are our distinguishing marks:

- ✓ Assembly of sensitive, rubberlined or coated equipment parts and pipelines
 - ✓ Inspections for recurring tests (e.g. TÜV)
 - ✓ Wall thickness measurements for detecting corrosion attacks
- ✓ Local replacement of pipes of existing heat exchangers (among others fragile graphite pipes)
 - ✓ All welding works



Service: Start-up



Check of electrical, process- and control systems



pressure and leakage test



Vacuum test



Cold commissioning



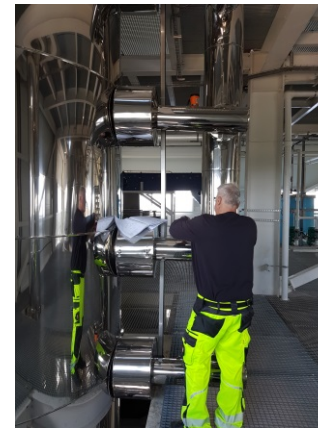
Warm commissioning



Test run



Performance test



- Company
- Technology
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- Market - Reference



Market – Reference: Excerpt of substances being processed till now

Degassed substances:

Air
H₂S
CS₂
CO₂
SO₂

Evaporated substances:

Aluminate liquor
Aluminium sulphate solution
Ammonium rhodanide solution
Ammonium sulphate solution
Black liquor
Calcium chloride solution
Caprolactam
Cellophane bath
Filament fiber spinbath
Glycerin-water mixture
Iron sulphate solution
Kerosene-oil mixture
Laktam-water
Mixed bath
Normal fiber spinbath
Oil mixture
Picking bath

Polynositic fiber spinbath
Potash lye
Potash magnesia solution
Radioactive waste water
Salinen waste water
Silver nitrate solution
Sodium aluminate solution
Sodium carbonate solution
Sodium chloride solution
Sodium sulphate solution
Sodium sulphite solution
Special fiber spinbath
Titanic oxide solution
Waste water
White spirit
Wolframat solution
Zinc chloride solution

Crstallized substances:

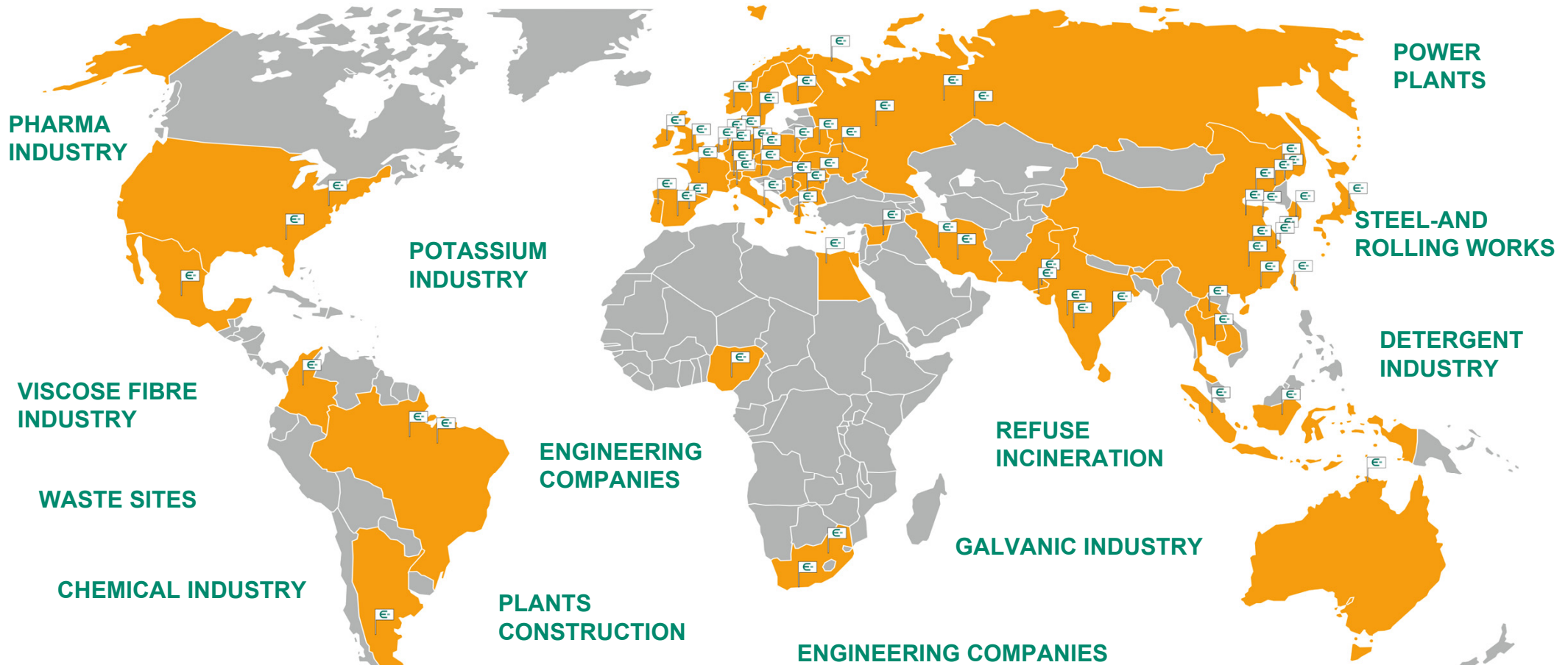
Ammonium chloride
Ammonium rhodanide
Ammonium sulphate
Carbon disulfide
Carnallite
Carnallite
Copper sulphate pentahydrate
Diammonium phosphate
Glaserite
Glauber's salt
Hexamethylentetramin
Iron sulphate heptahydrate
Iron sulphate monohydrate
Kainite
Langbeinite
Magnesium sulphate
Magnesium sulphat heptahydrate
Metal salt
Mixed salt
Monoammonium phosphate

Monopotassium phosphate
Nickel sulphate
Nickel sulphat hexahydrate
OAT
Organic salts
Potassium chloride
Potassium sulphate
Schoenite
Sodium aluminate
Sodium carbonate
Sodium chloride
Sodium thiocyanate
Sodium sulphate
Sodium sulphite
Strontium nitrate
Thiourea
Wolframat salt
Zinc sulphate heptahydrate

With the plants projected till now over 34 aqueous solutions are processed and more than 35 salts are produced with a complete capacity exceeding 16 million tons per year.

Market – Reference: Supplier countries

EBNER gained satisfied customers in more than 42 countries worldwide.



| | | | | | | | | | | |
|-----------|-------------|----------------|---------------|-----------|-------------|----------|--------------|-------------|----------|------------|
| Australia | Brazil | Czech Republic | Germany | Indonesia | Laos | Nigeria | Portugal | South Korea | Syria | USA |
| Austria | Bulgara | Egypt | Great Britain | Iran | Malaysia | Norway | Romania | Spain | Taiwan | Yugoslavia |
| Belarus | China, P.R. | Finland | Greece | Ireland | Mexico | Pakistan | Russia | Sweden | Thailand | |
| Belgium | Colombia | France | India | Italy | Netherlands | Poland | South Africa | Switzerland | Ukraine | |

Market – Reference: Excerpt of our list of clients



Customer satisfaction is our main goal

Thank you for your attention

