



Apparatus Construction Division

IN SAFE HANDS



EXPERTISE

BORNE OF

EXPERIENCE

OFFERING YOU

EXCELLENCE



# Knowhow and Leading Edge Technology

## for non-ferrous products made in Germany

Since the company was founded 100 years ago, JL Goslar has become the world's leading manufacturer of non-ferrous products, semi-finished metal products, assemblies and plant made of lead, tin and corresponding alloys, thus making the company a highly sought-after partner for many industrial users and research institutes.

Today the Goslar site, where lead ore has been mined for over a thousand years, offers a unique wealth of expert metallurgical experience and understanding.



in safe hands – everywhere

**More than lead. It is protection ENGINEERING.**

### Apparatus Construction

Lead is highly appreciated in apparatus construction for the chemical industry, non-ferrous metallurgy and environment protection, thanks to its special properties such as

- corrosion resistance to highly aggressive media
- great density
- high electrical conductivity
- good malleability
- low melting point
- particularly easy to repair

For more than 60 years, JL Goslar has been producing apparatus and corrosion-protected parts such as:

- homogeneously lead-lined reactors/ pressure autoclaves
- tanks and containers
- electrostatic precipitator housings
- star tube coolers

Lead is an ideal material for these applications but, in most cases, needs a base or structural material because of its relatively low strength.

Examples of this, are sealing with lead and homogeneous lead coating of steel. In addition, solid lead structures are also used.





Homogeneous lead lining of an autoclave section

### Homogeneous lead-lining

Homogeneous lead-lining of steel structures results in a composite material which combines the strength of steel with the corrosion resistance of lead. The procedure has been automated by JL Goslar and permits economic production of the composite in large pieces and outstanding quality. JL Goslar is the only producer world-wide to use and master this process.

Together with the lead/ steel composite, all special steels are processed and used in accordance with the design requirements.

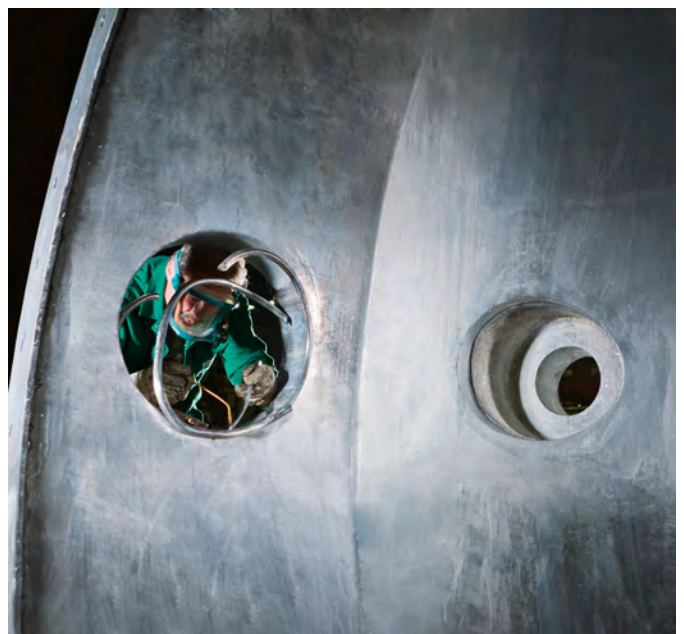
Our factory hall dimensions and crane facilities allow the processing of parts measuring up to a diameter of 6 m or unit weights of up to 130 tons.

Homogeneously lead-lined autoclave  
diameter 4 m, length 24 m, weight 130 tons

### Homogeneous lead-lining on site

Homogeneous lead linings on site, or in the workshop of steel fabricators, allowing us to transfer our expertise for lead lining of tanks with no size or weight limitations. The lead lining specialists of JL Goslar have, over several decades, satisfactorily lead lined many types of such vessels, tanks and autoclaves.

An important factor in this field is the execution of expert maintenance on lead lined apparatus, world-wide.



Homogeneous lead lining on site

### Product Examples

Typical products are electrostatic precipitator housing, washing and cooling towers, reaction vessels and pressure autoclaves, evaporators and coolers. In this context, lead or lead alloys according to DIN EN 12659 are primarily used.

In addition to this, during site fabrications, large segmented containers are also made in the homogeneous design.





## Assembly work

We deploy experienced skilled fitters for assembly work involved in apparatus, piping systems, complete plants made out of steel, and lead lined. This also applies to work which has to be carried out in the secure areas of nuclear power stations.

We install new plants at home and abroad for engineering and chemical companies, offering comprehensive repair and maintenance work.



On-site manufacture of two waste acid tanks.  
diameter 6.800 mms, height 27.400 mms, volume 900 m<sup>3</sup>

## Precipitator housings

JL Goslar has been applying large mechanical homogeneous lead linings to steel plates since 1972. This method permits economical and high-quality production of homogeneously lead-lined precipitator housings with round and angular cross sections.

Homogeneously lead-lined precipitators, manufactured in Goslar, are successfully used, in metallurgical and chemical plants all over the world. Thanks to their excellent corrosion resistance and mechanical stability, our precipitators have been in operation without repairs being necessary for over 25 years.

### Precipitating systems and discharge electrodes

Precipitating systems have been undergoing continuous developments for years.

JL Goslar manufactures all systems, from the conventional plate precipitator via the round and square-tube versions, through to the octagonal profile, developed and patented by JL Goslar.

The shape and size of the discharge electrodes are adapted to suit all kinds of precipitation systems. The special corona discharge electrodes developed by engineering consultants, some of which are patented, are manufactured by us in all shapes.



Installation of a complete wet electrostatic precipitator housing

### Dry insulation

In order to overcome the disadvantages of oil insulations assembled to wet electrostatic precipitators, JL Goslar has developed a dry insulation, offering our clients the following advantages:

- The dry insulation is practically maintenance free.
- There will be no oil which might enter the wet electrostatic precipitator.
- There will be no risk of fire of the oil caused by an oil contamination.

our dry insulations are satisfactorily used world wide.



A dry insulation under fabrication



## Containers for transporting hazardous goods



Tank container with internal homogeneous lead lining

of parts in contact with the product, these are still being produced today. The outstanding features include an excellent service life while being easy to maintain. Some units have been in continuous operation for 25 years without needing major repairs.

The standard materials used for tank containers often fail to meet the special demands made for the transport of dangerous goods.

Examples here include extremely corrosive products, or special requirements for keeping products pure.

JL Goslar has focused on the special problems involved with tank containers and transport solutions for dangerous goods. Today our range of products included many special containers made of special and composite materials.

### Range of tanks containers

JL Goslar's range extends from small containers with 450 litres capacity up to 20' ISO containers, with integrated devices for treatment of products and exhaust air, including all possible sizes and equipment variations. The range also includes stainless steel tanks with walls 4 mm thick, high-safety tanks with 2 x 10 mm double jacket, to shielded tanks with 4-fold sandwich jacket of 35 mm steel and 50 mm lead. Further features include normal thermal insulation with mineral wool, gas-tight and fire-proof insulation with integrated heating for temperature control.

The company also supplies standard IMO-type 1, 2 and 5 tank containers. All containers have national and international approvals.

### Tank containers with homogenous lead-lining

The company's activities in this product area began with tank containers for liquid bromine for example, with lead lining

### Tank container made of special materials

In some cases, the normal metallic materials are not sufficiently resistant and the linings are not always, or only conditionally, suitable for economical use.

The use of special alloys can be appropriate here; for example, tank containers for the transport of nitric acid have been manufactured from austenite alloyed with silicon.



Tank container made of special materials

This material makes special demands of the production process, but combines excellent corrosion resistance over a wide range of concentrations, with good mechanical properties and a low weight.

### Special and small containers

Resulting from the use of special materials, JL Goslar has specialised in the manufacture of specific designs. Together with standard containers with an ISO frame, we supply a whole range of small and special containers.



Special Containers





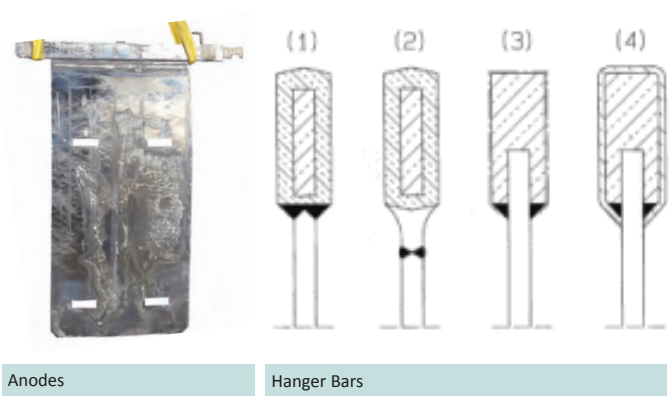


**Longstanding. Efficient. LEAD**

## Lead anodes for extractive metallurgy electrolyses

JL Goslar manufactures complete lead anodes and anode plates for zinc and copper extraction electrolysis. Cast anodes are produced in any alloy, to customer specification, or an agreed alloy, using our extensive experience.

Our Pb-Ag anode plates for zinc electrolysis and Pb-Ca alloys for copper electrolysis are made using wrought, rolling process, which results in a better density and grain structure than cast anodes. This, in turn, offers ideal corrosion resistance a deformation stability and consequently a longer service life.



Anodes

Hanger Bars





The shape and size of the copper bar and the anode plate are made to customer specifications. The copper bar is tin-plated and then given a homogeneous coat of lead several millimetres thick as protection from corrosion caused by aggressive acid mist.

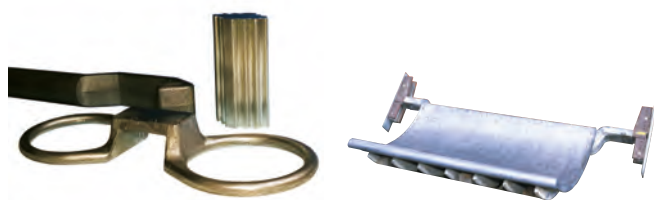
This method of protecting the anode bar also ensures the best possible bond between lead and copper for improved current flow and long service life.

Constant scientific and technological exchange with research institutes and our customers, has resulted in the best possible expert advice for you when it comes to the use of our lead anodes.

Finally, the anode plates can be blasted in the special ABG procedure in Accordance with customer specifications, to meet the special demands made by the electrolysis process.

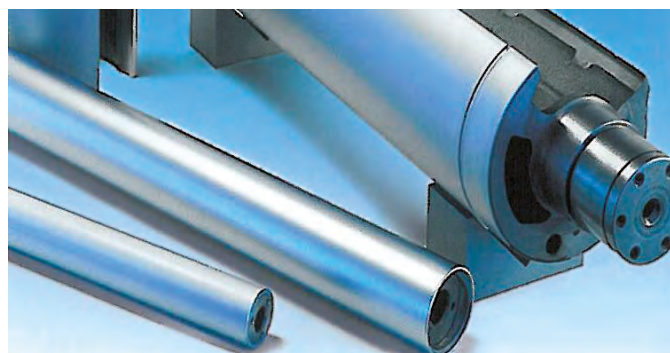
### Lead anodes for hard-chrome plating an other electrical processes

We produce all kinds of lead anodes for hard-chrome plating and other galvanic processes, and offer economical solutions for suspension systems and anode profiles.



Anodes for galvanic chromium plating

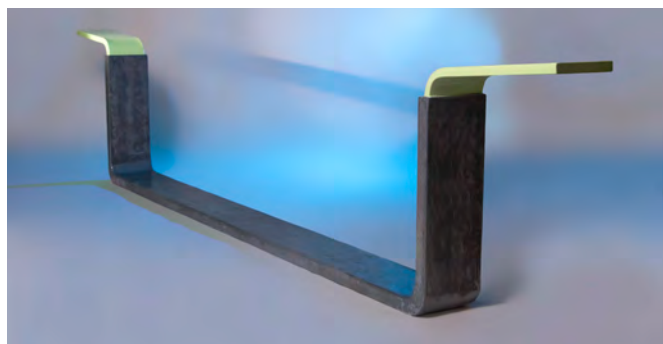
High voltage anodes for the production of copper foils



Hard-chrome plated rollers

### Lead lined anodes for stainless steel pickling plants

One of the specialities of JL Goslar is the fabrication of lead lined anodes for stainless steel pickling plants. The use of a special lead alloy, combined with the most suitable lead lining thickness and expert workmanship, leads to a longstanding operational use of our anodes and satisfied clients world wide.



Lead lined anode for stainless steel pickling plants



Building covered with stainless steel

### Recycling

Take advantage of our full-service recycling programme for your used Pb-Ag anodes and copper bars. Our products will fulfil your expectations.



# IN SAFE HANDS

With us you are in safe hands. Numerous certificates provide you with the certainty that you will receive services of high quality.

- ISO 9001:2008
- Pressure Equipment AD2000 HP0
- Pressure Equipment DIN EN 3834-2
- Certificate about the manufacture of pressure vessels ASME (U-stamp)
- Certificate about the repair of pressure vessels ASME (R-stamp)
- Welding approval by Germanischen Lloyd for pressure vessels and containers

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