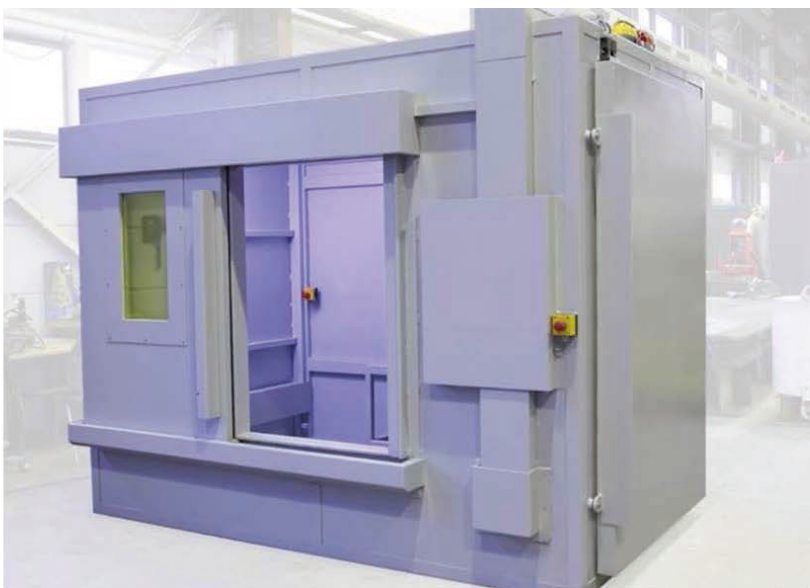




Radiation Protection

IN SAFE HANDS



EXPERTISE

BORNE OF

EXPERIENCE

OFFERING YOU

EXCELLENCE





## More than LEAD - Customised protection ENGINEERING.

### Radiation protection

JL Goslar has a long tradition in radiation protection, offering a wealth of engineering and production know-how for applications where effective radiation protection matters (gamma, neutron, X-ray radiation).

#### Nuclear technology and dangerous goods containers

JL Goslar supplies the nuclear industry with radiation protection systems, dangerous goods containers, semi-finished products and radiation protection materials.

#### Research institutes

For research institutes JL Goslar develops special equip-

ment and components for their tests, experiments and equipment

#### Material testing

JL Goslar supplies radiation protection housings for material testing and for electron beam welding.

#### Medical technology

For medical technology, JL Goslar constructs complete radiation protection systems, hot cells and laboratory equipment, and supplies an extensive range of radiation protection accessories.





## Transport container for radioactive liquids and wastes

JL Goslar is one of the world's leading manufacturers of tank containers for radioactive liquids and wastes as well as concentrates, sludge and used ion exchangers. The containers are certified to ADR/ RID for road and rail transport for dangerous goods class 7 with a total weight up to 40 tonnes.

They are manufactured according to a production and inspection plan, in close coordination with the user. The tanks can be designed with varying capacity from 1 up to 15 m<sup>3</sup>. The tank can be also heated on request.

### Safety concept

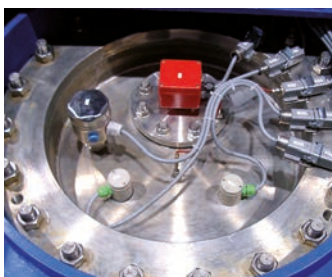
Depending on the requirements given by the intended load, the high-safety tank is of double and tripple jacket or sandwich jacket design (up to 4-fold of 35 mm steel and 50 mm lead in total) and with or without plastic lining.

The radiation shielding is rated according to the activity inventory being transported in the tank.

On demand the tank may be equipped with automatic control concept and/ or a leak check. Servicing and maintenance work can be carried out on the access platform of the container.

The automatic control concept is designed so that the valves on the tank close automatically.

The inner tank is made from 1.4571 Stainless Steel. An inner lining can be made from various different materials depending on the mixture of substances, e.g. PB, PVDF, PFA, FEP and ECTFE. The choice of inner lining takes account of the corresponding radiation loads.



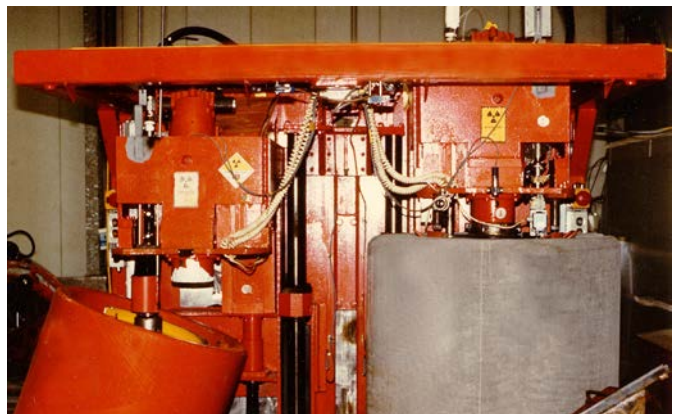
Volume readout module



SPS-Control



Tank container



Conditioning plant

## Nuclear Power Stations

For nuclear power station operations and disposal, JL Goslar develops and produces an extensive range of products for gamma and neutron screening. JL Goslar has got the permit of working on external plants pursuant to section 15 StrlSchV (German Radiation Protection Ordinance).

- conditioning and treatment equipment
- shielded chambers
- shielding walls and panels
- shielding equipment for transport containers shielding
- elements for hot cells
- measuring chambers for radiation measuring stations
- lead bricks and lead plates
- lead mats
- heavy shielded doors
- lead casting
- accessories, semi-finished products, materials



## Research

### JL Goslar - project partner for research institutes

JL Goslar is a sought-after project partner for radiation protection equipment used by research institutes.

- Shielding hutches
- Beam lined screening
- Detector screening
- Radiation protection chambers
- Detector plates
- Neutrino research
- Doors and door systems
- Mobile screening
- Lead bricks
- Accessories, semi-finished products, materials

The company works with institute staff, to develop special equipment and components for their tests, experiments (e.g. neutrino experiments) and equipment (e.g. synchrotrons).

JL Goslar has special experiences in working with low-radiation materials.



Neutrino Rack

### Process design, quality and safety

The quality and long-term safety of our products, results primarily, from intensive consultation with the customer at all stages of the projects. This takes in design, suitability of production, assembly and commissioning.

In the project and design phase, 3D design offers a qualified basis for discussion, permitting complete simulation in advance of manufacture and assembly of the project.

We develop our metallurgical expertise in close cooperation with universities and colleges permanently. This enables us to provide customized solutions to our clients in accordance with international safety and quality standards at any time.

As specialist company according to § 15 StrlSchV (German Radiation Protection Ordinance), JL Goslar also performs work under radiation conditions.

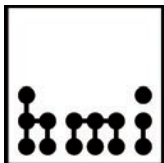
### Neutrino research

JL Goslar supplies essential parts for neutrino research, including among others special neutrino lead components for neutrino oscillation of the Opera detector have been delivered.



Underground laboratory in Gran Sasso

Projects have being carried out for:





## Shielding Hutches

JL Goslar designs and produces Shielding Hutches for synchrotrons (beam lines) required for screening beam lines or for screening monochromators and experimental facilities. In particular, JL Goslar also produce special Shielding Hutches for handling open radioactive substances in the experimental context.

One example of this is the plutonium migration experiment at ANKA, which works with a Shielding Hutch in negative pressure mode with certified filter technology. The system can be designed, among others, to the ERSF standard.



Soleil Samba



Beam line screening

## Material Testing

Radiation protection housings for non destructive material testing and electron beam welding are designed and produced by JL Goslar, depending on each specific application. Skilled, qualified staff are available to install the systems.

### Housing for screening systems

The wall systems consist of steel elements filled with lead. The individual cassettes are inserted in a system of rails. If required, it is possible to dismantle individual parts, or the whole structure, for inspection without any problems. Using steel for the complete structure fulfils all existing marginal protection requirements. The walls are screwed with anchor plates to wall and floor.

The individual elements are designed for erection in a confined space. The grid size is always selected so that the individual cassettes can be quickly removed and fitted.

Mobile radiation protection screening is also available for various different items of equipment. The systems are adapted by our engineers to the specific conditions and can be fitted on site by our specially qualified radiation protection fitters.



Radiation protection chambers



## Medical Radiation Protection

Since 1958, JL Goslar has been planning and producing radiation protection systems for medical applications. Many years of experience and comprehensive know-how recommend JL Goslar as an ideal partner.

JL Goslar is your competent partner for radiation protection in medical technology:

- Radiotherapy
- Diagnostics
- Nuklear medicine
- PET
- Systems for the production of radiopharmaceuticals
- Research
- Operating suites
- Transport and storage systems of radioactive substances

### Laboratory equipment

JL Goslar produces components and containers for handling radioactive preparations, rated according to the radiation sources being handled. The delivery programme includes:

- Lead containers
- Lead sheets and plates
- Lead castings
- Waste containers

Our production stands out, due to its great depth and range of skills. Steel construction and production of lead components take place in-house, only a short distance from the design team. This allows for the necessary intense level of coordination between project staff and technical departments involved, which is only possible when they are all under one roof.



Laboratory equipment

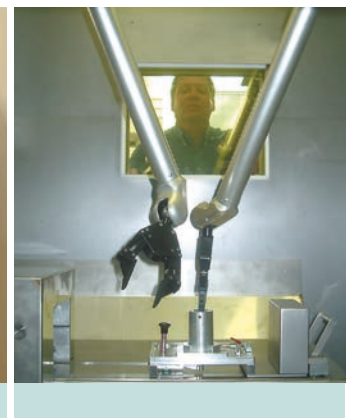


Storage cabinets

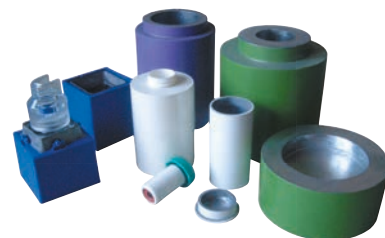


### Shielding equipment for hot cells

JL Goslar designs and produces shielding equipment for hot cells and installations for radionuclide production and nuclear medicine. The radiation protection consists of walls made of modular lead components according to customer specific requirements.



Lead bricks or profiles can be used to produce screening walls in a modular system, offering variability in wall length, height and thickness in the modular dimensions of 50 mm.



Lead pots





# 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**

JL Goslar's special processing know-how in the wide range of applications for lead and tin, make us a global leader in the company's strategic fields of business:

- Apparatus construction lead/steel
- Radiation protection
- Anodes
- Soldering products (ELSOLD)



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