

# Railcar loading systems

transferring liquid hydrocarbons

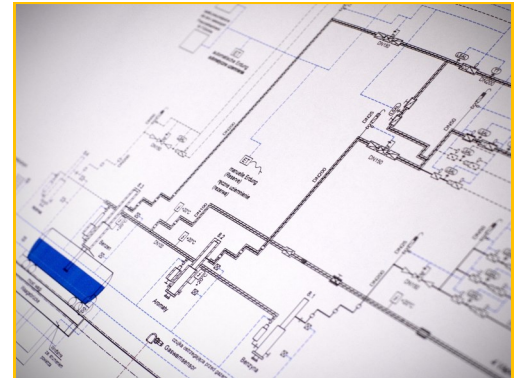


LOADING YOUR FUEL

Dipl.-Ing. SCHERZER GmbH

[www.scherzer.net](http://www.scherzer.net)

# Company profile:



## Welcome to Dipl.-Ing. SCHERZER GmbH

The company's field of activities includes the planning and turn-key construction of plants for handling and storing liquid and gaseous products. Based on more than 50 years of experience in these sectors, the company offers a high degree of professionalism and is a leader in its field.

Our customers from the petroleum and chemical industries and from a range of other sectors at home and abroad value our groundbreaking technology and our high quality standards as well as our ability to address custom applications while optimizing the economic and environmental aspects of our designs.

## Quality - Safety - Service

Social and environmental policy requirements place high demands on our company on a daily basis, as do constantly changing safety guidelines. These standards are our top priority. Consequently, all areas of the company are subject to a quality management system and certified in accordance with DIN EN ISO 9001:2015.

As a specialized company, we do, of course, have all legal permits necessary to operate both in Germany and abroad.

Our subsidiary, SCHERZER Umwelttechnik GmbH, will handle our after-sales service, allowing us to be there for you long after a successful start-up. Maintenance, the procurement of spare parts, and other important services will guarantee the continuous operation of your plant.

## Range of services

**Our comprehensive range of services includes:**

- Concept design including essential performance characteristics
- Basic engineering
- Detail engineering
- Delivery of equipment
- Assembly of unit (for turnkey contracts)
- Supervision (for assembly by customer)
- Training
- Commissioning
- Performance check
- Documentation and handover
- Services

## Scope of supplies and services

Our portfolio covers a wide range, allowing us to meet almost every requirement. In addition to new construction, it also comprises the retrofit, conversion or expansion of existing plants for the loading and unloading of:

- Railcars
- Tank trucks
- Ships

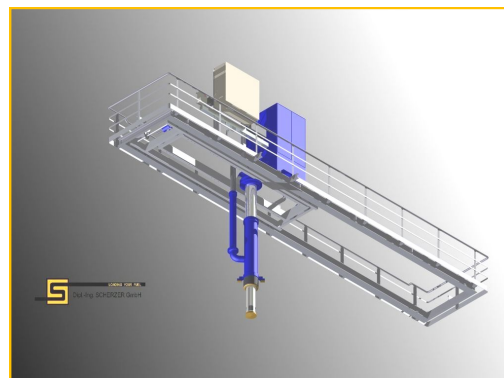
for transshipment of:

- Light products (petrol/gasoline, diesel, jet fuel, etc.)
- Dark products (crude oil, bitumen, etc.)
- Chemical products (arenes, acids, etc.)
- Stable gas condensate
- Liquid gases (propane, butane, LPG, etc.)
- Biodiesel / Bioethanol

The scope of our services covers also the new construction and reconstruction of tank farms as well as peripheral components and systems such as:

- Vapor recovery units (VRU)
- Vapor pendulum systems
- Fire-fighting systems
- Product and pump systems
- Drainage systems
- Power-supply systems
- Automation technology
- Control and monitoring systems
- Product data logging
- Railroad lines





## Railcar loading systems for liquid hydrocarbons

Dipl.-Ing. SCHERZER GmbH plans and designs storage and handling facilities custom-tailored to the customer's individual needs in compliance with the applicable national standards and regulations.

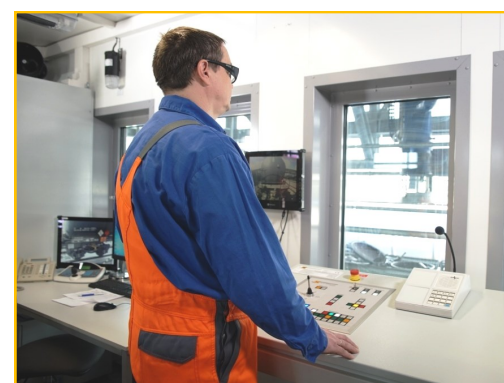
The facilities are configured as specified by the customer or based on our extensive years of experience.

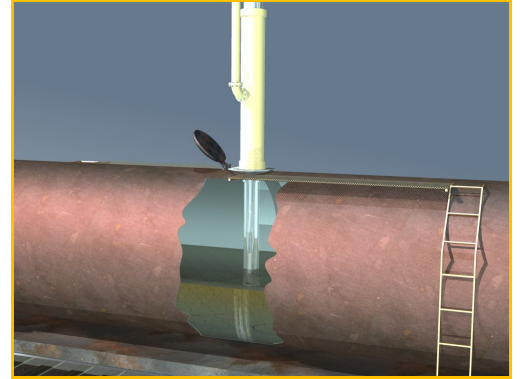
- Design of loading and rail car positioning systems
- Degree of automation (electrical/instrumentation)
- PC systems  
(loading computer, visualization computer, tank management systems)
- Data logging systems weighing scale/meter (mass, volume)
- Safety equipment (fire fighting, emergency and signalling systems)
- Storage capacities (tanks, tank equipment)
- Ancillary systems (pumps, recovery systems VRU)
- Construction services (for turn-key plants)
- Supervision of construction (for non-turnkey plants)
- Commissioning of plants
- Training of plant operatives

The concept of On Spot rail car loading facilities handling liquid hydrocarbons and mixtures thereof meets the highest requirements in terms of fire protection and operational safety and user-friendliness of the complete automated plant.

Dipl.-Ing. SCHERZER GmbH has specialized in loading systems for rail cars using the On Spot principle for discriminating customers worldwide and for all types of rail cars.

- Design pressure: 1.6 MPa PN16 ; 230 psi
- Design temperature: + 50°C / - 60°C ; 122 deg F / -76 deg F
- High operational safety: operability guarantee with specified design data
- Plant performance: guarantee of required daily and annual capacities
- Quality assurance: when handling more than one liquid hydrocarbon via multi-product distributor.





**Rail car loading facilities** are categorized depending on the required daily or annual liquid transfer rates. Based on the flow profile, the rail car loading process technology is determined and the following filling systems are used:

- Loading facilities with individual top loading arms
- Series loading facilities
- Bottom loading facilities
- On Spot loading facilities

## Loading facilities with individual top loading arms:

Individual top loading arms facilities are filling stations where filling takes place from the top and the loading capacity is low. These types of facilities are used for low daily or annual transfer rates and where space to arrange rail cars is limited.



## Series loading facilities

Series loading facilities are extended, linear facilities with a large number of top loading arms arranged in series. All rail car domes are opened, the top loading arm is manually inserted into the rail car and the loading operation for each rail car takes place almost simultaneously. This type of loading is mainly used when only one product is loaded and the rail car types (lengths) are always the same.

➔ Also see: „Study to compare Tank car On Spot loading systems with serial loading systems“. (available on request)



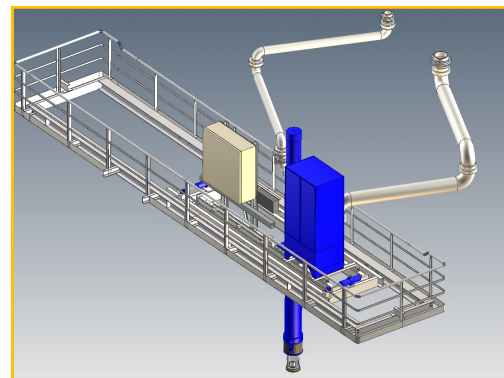
## Bottom loading facilities

Bottom loading facilities with individual bottom loading arms are filling stations where loading is done from the bottom and the filling station capacity is low. These facilities are used for low daily or annual rates and where space to arrange rail cars is limited.

Usually this type of loading is used in the chemical and petrochemical industries.







## What exactly are ON-SPOT loading facilities ?

On Spot loading facilities are filling stations for rail cars with a top loading system and a high filling capacity. The filling of rail cars is similar to a flow line system (sequential procedure). The filling pipe is arranged inside the On Spot facilities on a hydraulically movable filling pipe slide. The slide can be moved in the X and Y direction, and the filling tube is adjustable in the Z direction.

The rail cars are put in place by a locomotive in front of the On Spot facility.

The first rail car is pulled in by a car pulling device or a remote-controlled shunting vehicle and positioned under the filling station.

The filling pipe is moved from the control stand in the operator room located close to the track or between the tracks on a steel structure elevation of approx. 3,700 mm (12 feet) and inserted into the rail car dome. Then, the rail car is loaded.

When loading is complete the car pulling device/shunting vehicle positions the next rail car under the filling station. This goes on until the last rail car of a group of coupled rail cars has been loaded.

Folding stairs are provided in front of and behind the filling station used to open and close the domes.

Flowrate and temperature signals are subject to calibration and are generated through sensors, meters or weighbridges. In addition, these signals are data logged and can be remotely viewed in realtime or accessed in various time intervals. (at the filling station concerned).

On Spot facilities are additionally split into run-through track facilities and dead-end track facilities. This, however, has relevance for the feeding of rail cars only.

For On Spot facilities the track length must be twice the length of a group of coupled rail cars.

### Types of On Spot facilities:

On Spot facilities are differentiated by the number of tracks and filling stations.

Facilities range from single-track facilities with one filling station to double-track facilities with four or more filling stations.

The design depends on the required daily and annual loading capacities and the square footage available for the coupled rail cars as well as the pump capacity.







Our On Spot loading facilities to fill rail-bound tankers with liquid products are designed for high filling capacities. Filling pipes of up to DN 300 (NPS 12 inches) provide for loading capacities of up to 1,000 m<sup>3</sup>/h (4,400 gallons per minute) per loading point (filling station). Several products can be loaded at one station. To operate a double-track loading facility of 20,000 tons per day, only one or two operators are needed in the control station and another one or two helpers.

A sophisticated electronic control and interlocking system minimizes filling, setting and shunting times and operator error.

On Spot facilities can be designed and built in different ways, either as single-track facility provided with one filling station or double-track facility of four or more filling stations. It depends on the required daily and annual capacities of the facilities.

A standard filling pipe of 730m<sup>3</sup>/h (3,200 gpm) filling capacity and four filling stations can transfer up to 2.920m<sup>3</sup>/h (12,800 gpm). In less than 15 minutes 4 rail cars of 73,000 litres (19,300 gallons) each can be loaded on average including the necessary setting time. So, not more than 3.75 minutes are needed per rail car.

#### Annual capacities:

The table below gives a general overview of loading capacities depending on:

No. of tracks	Filling station (total)	Pump capacity	Coupled rail cars	Annual capacity in m <sup>3</sup>
1	1	350 m <sup>3</sup> /h	11	1.725.000
1	1	730 m <sup>3</sup> /h	11	2.375.000
2	2	350 m <sup>3</sup> /h	11	3.450.000
2	2	730 m <sup>3</sup> /h	11	4.750.000
2	2	350 m <sup>3</sup> /h	22	3.806.000
2	2	730 m <sup>3</sup> /h	22	5.465.000
2	4	350 m <sup>3</sup> /h	22	6.898.500
2	4	730 m <sup>3</sup> /h	22	9.530.000
2	2	350 m <sup>3</sup> /h	32	3.935.000
2	2	730 m <sup>3</sup> /h	32	5.748.000
2	4	350 m <sup>3</sup> /h	32	7.330.000
2	4	730 m <sup>3</sup> /h	32	10.335.000

Based on 73m<sup>3</sup> rail cars , 45 minutes feed time and 350 working day/year







### Advantages of the SCHERZER filling tube equipment:

The SCHERZER filling tube is fabricated on very sturdy machine equipment. (The weight of a filling tube amounts to approx. 1700 kg (3,500 lbs). Quite a number of the filling tubes supplied by us have been in service for more than 30 years. The wall thicknesses of the tubes range from 10 – 20 mm (0.4 to 0.8 inches). The guide faces of the tubes are ground and hard chromium plated. The components in contact with the tank car are made of brass or red bronze such as the sealing plate (Russian railcars), the sealing pad of NBR.

Longitudinal and transverse movement of the filling tube for exact position is hydraulically remote controlled.

The sealing plate for i.a. Russian railcars is supported on springs between the filling tube and the tank car dome. The cutting edges are protected by sturdy brass strips. The sealing plate is vulcanised on a brass plate and screwed to the spring supported carrying plate, thus the sealing can be replaced without difficulty and at low cost.

The sealing bellow for i.a. Non-Russian railcars is fitted on the bellow socket for a complete sealing of the railcar dome. A replacement of the sealing bellow (made of 7.5 mm (0.3 inch) thick NBR) can be made simply and at low cost.

The compensator allows flexible deflection of the conduit and internal tube. It is not necessary to position the filling tube exactly in the centre on top of the dome opening. The lower filling tube is automatically centred by inflating the sealing bellows. (This version is not possible for Russian tank cars with a sealing plate version)

During the whole loading process, the claws contact the dome tightly. The sealing bellows is therefore not subjected to rubbing movement; thus the bellows have a long lifetime cycle.

The gas is returned via a separate high-quality telescopic tube with multiple sealing, with no "low points" to trap condensate. Thus it is ensured that no condensate can accumulate in the system as compared with the hose return systems used formerly.

Sealing of the filling tube after moving out from the tank car is by two (2) O rings and ensures absolute tightness. Residual amounts dripping from the tube walls collect in the tube (max. 10 – 15 l (3 to 5 gallons)).

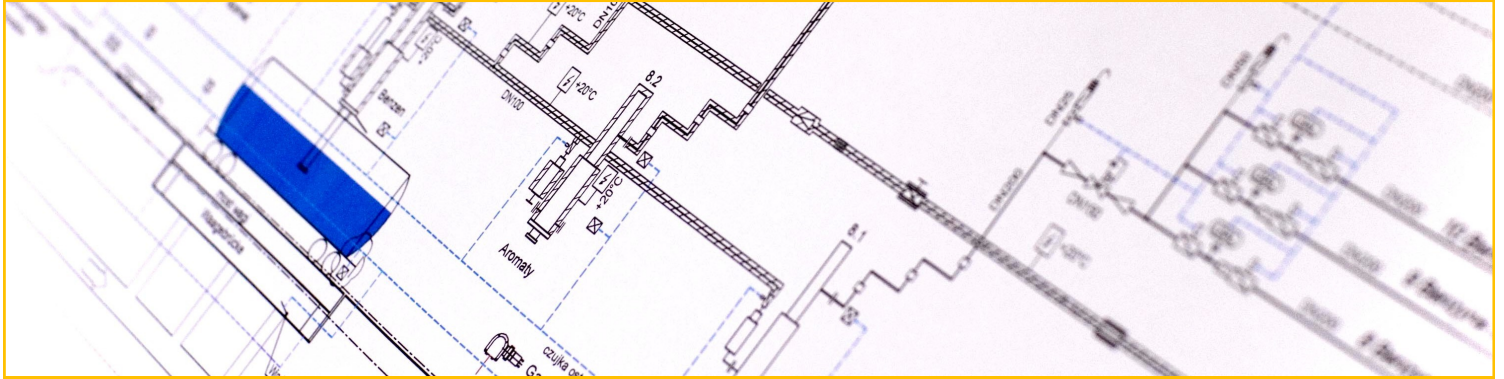
These residual amounts are automatically drained into the tank car during the next loading process. If this mixture (for product changes only) cannot be accepted in special cases it is possible to drain the residue automatically.

The PCS controlled loading process meets all safety requirements. On request, each filling tube position can be shown visually, and the filling tube lift can be limited depending on the type of tank car used.

High safety in operation is achieved by continuous monitoring of the following sensors: The overfilling safeguard, overpressure safeguard and continuous loading display.

During the last 50 years, more than 330 filling tubes have been mounted and commissioned in Austria, Belgium, Bulgaria, Czech Republic, Germany, Great Britain, Hungary, Iran, Lithuania, Poland, Romania, Russia, Slovakia and Switzerland. Due to on-going and continuous improvement and new developments, we are able to offer a sophisticated system meeting state of the art requirements.





## Project design and documentation

The On Spot facilities for liquid hydrocarbons and the related equipment planned and designed by Dipl.-Ing. SCHERZER GmbH represent state-of-the-art technology and comply with the national statutory provisions for design, e.g. <<UP AUTN 96>>. All requirements of national regulations are observed in project planning.

The project documentation is prepared in the following steps:

### Basic design

- Expert report
- Permitting for project operation
- Project scoping (building permit)

### Detailed design (engineering documentation)

- Rail construction
- Tank construction
- Above and below ground structures
- Steel construction
- Piping
- Electrical/instrumentation

### Soils report (geological soil investigation)

### Surveying (project siting)

### Expert report of suppliers' equipment (by experts)

### Operation permit of supplied equipment

### Final documentation (as-built)

### Operation manual







## Design of On Spot rail car loading facilities transferring liquid hydrocarbons

Design, configuration and construction for

- new On Spot rail car loading facilities,
- or
- modernization of existing facilities.

### Design data:

The facilities are always planned and designed in accordance with the customer's specifications of the On Spot rail car loading facility.

Loading facilities with the design data:

- Climatic conditions
- Performance data incl. daily and annual capacities
- Plant operation and operating hours
- Number of products to be loaded and the volumes thereof to be transferred
- Engineering requirements and components of the plant to be built.
- Environmental measures and regulations
- Special requirements

### Technological design:

Based on the design data the technological solutions of Dipl.-Ing. SCHERZER GmbH for the specific type of operation under inclusion of state-of-the-art and innovative solutions are incorporated in the design:

- Single-track or double-track On Spot loading facilities
- Number of coupled rail car and track routing
- Number of filling stations and filling pipes
- Kind of shunting equipment (rail car pulling system or remote-controlled shunting vehicles)
- Ancillary systems, such as operating units, storage tanks, pump stations, fire fighting systems and power supply etc.
- Construction of the operating units for turnkey plants as general contractor of Dipl.-Ing. SCHERZER GmbH
- Commissioning incl. performance test of plants





Rail car loading facilities are designed and configured in accordance with the customer's specifications.

#### Design example (2 rails / 4 filling stations) :

- Double-track facility up to: 2 x 32 rail cars
- Loading capacity approx. 400 rail cars/d
- Workforce 4
- Daily capacity max.: 29,368 m<sup>3</sup>/d (7,750,000 gallons per day)  
22,026 mt/d
- Annual capacity (350 days): 7,709,100 T

#### Description of technological operating systems

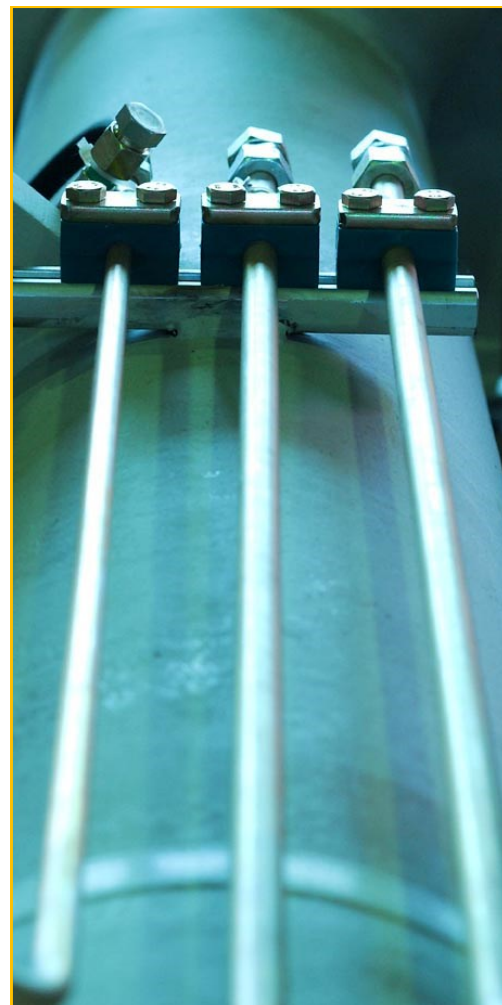
The double-track loading facility is designed for max. 32 rail cars/track. The rail cars are positioned automatically under the filling station by a car pulling device or shunting vehicle.

For access the rail cars have mobile folding stairs arranged in front of and behind the filling station to open and close the rail car dome.

#### Filling systems

Major components of the filling systems for each filling station are:

- Hydraulic filling pipe incl. telescopic gas pipe
  - Articulated arms for product and displaced vapors
  - Product distributor with quality assurance system
  - Monitoring system for filling pipe positioning
  - Controlled product double valves DN 250 for each product
  - Controlled gas valves and detonation arrestors DN100/150
- Folding stairs, 5-step, with monitored parking position
  - Horizontally movable for safe rail car access
  - Pneumatic actuation
  - Provided with protecting cage
- Earth tester for monitored forced earthing of the filling pipe and the rail car during the loading operation (Eastern Europe).



#### Filling control

To avoid electrostatic charging while filling of the rail car takes place, the initial volumetric flow is limited to approx. 300 m<sup>3</sup>/h (1,320 gpm) per filling station.

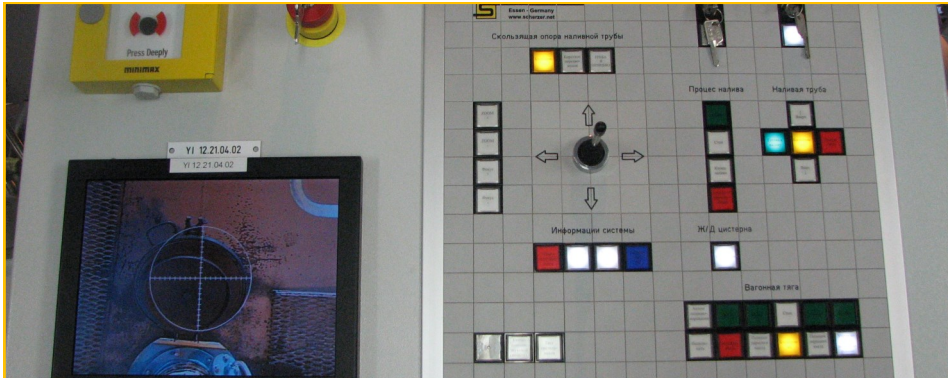
To measure the volumetric flow, either a calibrated volume/mass flow meter or a weigh-bridge is used.

The output signal of the data logging system is processed by the SPC and used to control the electro-pneumatic control valve.

The filling control is used to:

- Pre-set loading quantities/rail car
- keep the flow rate
- switch off automatically as soon as the pre-set quantities have been reached, in a controlled manner and free of pressure surges.  
(no dynamic pressure surges).





## Control- and automation systems

### Process control and instrumentation systems

Control and visualisation of the whole process by process control and instrumentation systems (e.g. WinCC of Siemens) and PCS control systems.

Server/client based process control system with centralized data storage based on Windows computer systems

#### Creation of redundant systems:

Process connection of PCS control systems (e.g. Simatik S7 of Siemens) via bus systems (Industrial Ethernet or Profibus)

Integration of tank storage management systems, quantity recording systems admitted by the calibration authorities, and ID card reading systems into the whole concept

Connection of tank measuring equipment (e.g. radar filling level measuring systems) with OPC (OLE for Process Control)

Connection of process signals in PCS control systems via standardised field bus systems (Profibus-DP, Profibus-PA)

Coupling to external systems and their integration into the process automation systems as far as possible via standardized or user specific protocols (e.g. Profibus, Modbus, 3964R, RK512 or other)

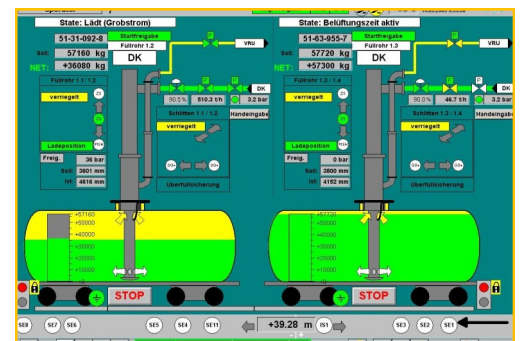
SAP connections of loading computer systems and customer specific adaptations are possible.

### Process visualisation

Complex On Spot railcar loading facilities including all sub-systems such as VRU systems, fire fighting systems, power supply systems, shunting units, product tanks, product pumps, piping systems, etc. are provided with subordinate machine-near operation and monitoring systems based on Windows computer systems.

Visualisation and process operation in visualisation pictures specifically prepared for this process.

- Specification and check of process parameters
- Visualisation, recording and archiving of alarms
- Incorporation of subordinate process visualisation systems into the process control system



### Data logging

The data logging subject to calibration for the loading quantity/rail car is effected by the:

- Weighbridge under the filling station, or
- Coriolis mass flow meters and volumeter provided with turbine and slide vane systems respectively.

The decision which type of data logger is to be used is taken in the basic design and depends on a number of project requirements.

As a rule a Coriolis mass flow meter or volumeter is useful for small product quantities. But if future extensions are planned, a weighbridge should be provided from the start. In such case the car pit can be planned as collecting pit to meet the requirements of the waste water management regulations.

The weighbridges can be individual or interconnected weighbridges depending on the plant concept and the various rail car types. Up to three weighbridges are typical in the overall concept.



### Loading computer system

The process control system (visualization) is connected with the loading computer. All inputs, functions and the representation of the loading system including the display of all safety-related conditions can be gathered from 2 colour monitors. The PC system is installed in the control room housed within the operation container of the On- Spot rail car loading facility.

### Control and monitoring system

The control and monitoring system (SPC) is arranged in the electrical/instrumentation container outside the explosion-hazardous area.

The SPC renders all safety-related interlocks of the On Spot loading facility and gives the higher-ranking filling release signals and controls the loading operation through flow rate measurement (filling control), opens/closes the pneumatic valves. In case of power failure the entire automatic system is supplied by a UPS system for a period of 60 minutes.

### LV switchgear and feeder systems

Via fused outgoing circuits the LV switchgear supplies the field instruments, such as electric heaters, lighting and control gears, with voltages of 400/230 V AC and 24 V DC in the loading facility.

### Gas warning system

The gas warning system consists of the gas sensors arranged at exposed locations in the loading facility. The gas warning system signals: 20 % UEG → Alarm (horn and flasher lamp) and 50 % UEG Disconnection of facility. The signals are processed and monitored in the fail-safe part of the SPC.

### Fire fighting systems

The fire fighting systems of On Spot facilities are designed and supplied by SCHERZER according to the individual applications. Different systems are used, e.g. filling station extinguishers (CO<sub>2</sub> or dry powder), sprinklers to wet (cool) the rail cars and foam extinguishers for collecting areas.

### Emergency STOP control

When the Emergency Stop button is pressed the entire loading operation will be interrupted in a fail-safe manner. The de-energized valves (spring type) return automatically to a safe position. In addition to that a separate emergency stop system is provided.

### Vapor recovery units (VRU)

The vapor recovery units of the On Spot rail car loading facilities are usually designed and supplied by SCHERZER. Systems available on the market are analysed as to whether they are suitable for the project and then incorporated into the overall concept. For this purpose SCHERZER works together with all manufacturers worldwide. Based on many years of experience we can always provide the optimum vapour recovery solution for the project concerned.







### Product pump stands

The product pump stands are designed by SCHERZER according to the project requirements and the required daily and annual capacities. So, top-quality, variable frequency-controlled product pumps with automatic bypass control are used.

### Integration of customer's systems

On request SCHERZER integrates all existing systems in the process control system and visualizes the tank levels, pressure measurements from the entire system, product line systems, emergency systems etc.

### Plenum systems

SCHERZER relies on high-quality systems made in Germany that use ATEX-approved ventilators and air-conditioning compressors. The ventilators are arranged at an elevation of approx. + 10.5 m (35 feet). Extraction takes place from a height of 16 m to 18 m (50-60 feet). In front of the boxed device and inside the operation container one gas warning sensor each is provided for monitoring purposes. This system maintains the minimum pressure of the container of 25 PA (0.25 mbar (0.1 inch H<sub>2</sub>O)) as required by IEC 79-13 and provides for a pleasant climate inside the operation container whatever the climatic conditions of the locations are.

### Piping

The pipes are planned and installed in accordance with the customer requirements. The pipes are designed based on European (EU), Russian or US norms and standards. All valves and systems are provided with tag numbers and listed in a project-related database (MS Access). In addition pipe connections, pump stations, product distributors etc. are visually displayed in the process control system (e.g. WIN CC).

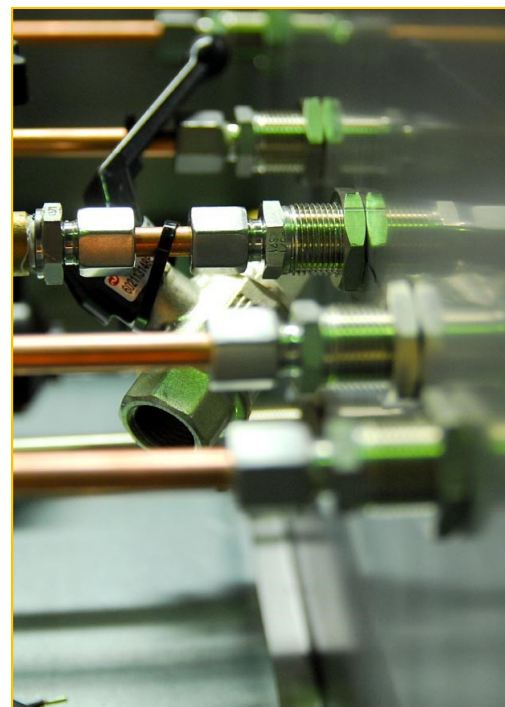
Solenoid valves (pilot valves) of the pneumatic drives come as standard in heated and insulated switchgear cubicles. Also provided are restrictors for the opening and closing of valves. Thus, pressure surges are avoided in the pipes even in case of emergency stop or power failure. All valves in the product system are of fail-safe design. Alternatively ATEX-approved electrical drives with fail-safe function are provided through the UPS.

SCHERZER attaches great importance to the quality assurance systems of the products and employs as standard a double shutoff system and leak detection. Much emphasis is also put on ergonomic aspects, such as accessibility, maintenance etc. of pipes and product distributors.

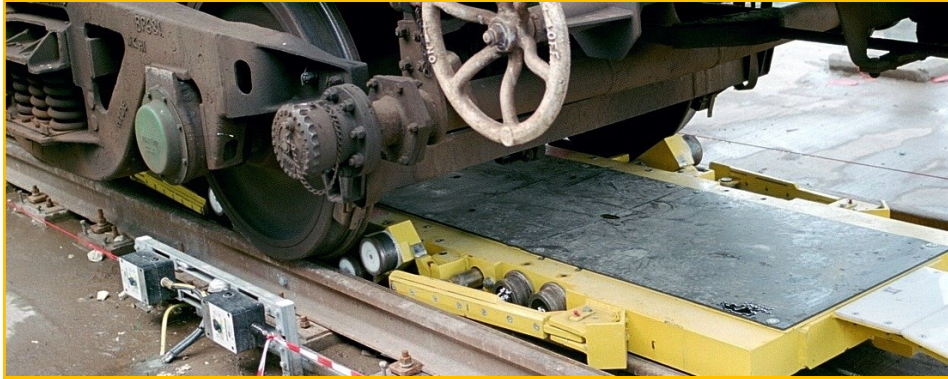
### Leak detection system

The leak detection system used by SCHERZER has proved successful over the years and meets the high product quality requirements of the oil industry. After every loading operation the space between the valves is automatically emptied and the leak detection system activated. Thus, no product mixing can take place when the facility is fed to the rail car and a penetration into a product feed line can be completely excluded.

This is quality assurance at its best.







## Rail car pulling devices and remote-controlled shunting vehicles

SCHERZER uses high-quality shunting equipment made in Germany. The shunting systems available on the market have been developed to fit the rough conditions of an On Spot facility. SCHERZER does the programming itself and relies on an automatic positioning of rail cars under the filling station and on the weighbridge respectively and a machine oriented visualization.

A whole range of shunting systems is used. Depending on the application, buffer cars with or without siding or pusher cars directly acting onto wagon wheels are used, which rail cars can run on.

**Buffer cars** are used when the number of coupled rail cars is large. Special sidings are provided for through tracks.

**Pusher cars directly acting onto wagon wheels** are used for up to 11 coupled rail cars and have the big advantage that they can be 'run over' by the rail cars. An auxiliary track is no longer required with the new facility because this car can run on the main track.

### Remote-controlled shunting vehicles

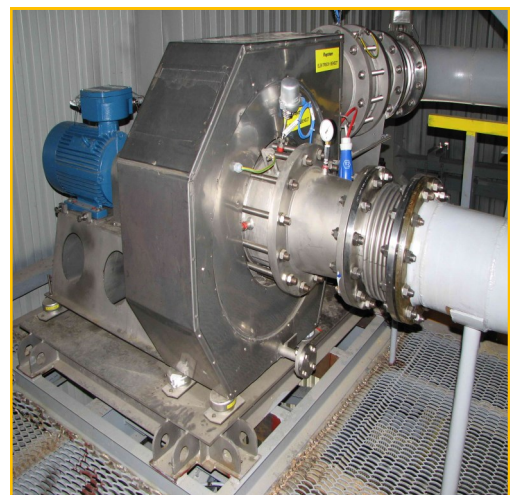
Compared to conventional cable systems remote-controlled shunting vehicles are particularly useful, especially when it comes to installation and maintenance (no foundations and cables).

Diesel-driven shunting vehicles are also very flexible, e.g. may be used on several loading tracks and to feed and remove coupled rail cars.



## Centrifugal fans

On Spot facilities for loading Russian rail car types use special ATEX-approved centrifugal fans. They provide special protection against emergent hydrocarbon vapors from the dome while filling takes place. Standard control is by a vacuum system.







## Electrical/instrumentation, operation and CO<sub>2</sub> extinguisher containers

The containers designed by SCHERZER are fully equipped when supplied. All switch-gear cubicles, operator panels, control points, ventilation systems, heating system etc. are completely installed and wired on a terminal strip. Prior to delivery they undergo a detailed performance test including all sub-systems to the extent possible at the factory. The end user is invited to witness such test. All equipment including desks, chairs, thermometers, shelves, writing utensils, light fittings etc. are supplied.

### Electrical/Instrumentation container

The standard type of this container is a combined unit split into:

- Compressor room (optional), equipped with a ready-to-use redundant compressor for instrument air, dew point  $-60^{\circ}\text{C}$  ( $-76^{\circ}\text{F}$ ).
- Electrical/instrumentation room, equipped with a ready-to-use control and monitoring system, LV switchgear and UPS for voltage supply of the automatic system in case of power failure.

The electrical/instrumentation room is also provided with heating, lighting and air-conditioning system.

In Russia, for example, the electrical room is provided with an automatic CO<sub>2</sub> extinguishing system. A temporary workplace for the maintenance and service personnel is also provided.

### CO<sub>2</sub> extinguishing system

The CO<sub>2</sub> extinguishers are arranged in the area of the On Spot rail car loading facility. The CO<sub>2</sub> container is supplied completely equipped and ready for use. In case of fire the extinguishers are triggered automatically by the fire alarm system (UV/IR alarm system) or manually by the push button call point on the operator panels.

After installation at the factory the systems and system components undergo a thorough functional test. During this test all communications are put into operation and to the extent possible, components are tested, too. Usually the end user witnesses such test for the purpose of pre-acceptance.

## Operation container inside the On Spot facility

This container is designed in accordance with the plant concept.

For facilities with 2 filling stations the container will be approx. 9 m (30 feet) long, and for 4 filling stations the container will be approx. 16 m (50 feet) long. The side windows are made of laminated glass and are inclined at an optimal angle to the filling station.

The installation and cabling of vents, operator panels, network cabinets including network connection distributors and all necessary accessories takes place at the factory prior to shipping the unit to the site.

Also provided are all necessary computer systems for a safe operation of the facility.

The operation container is the central control station of the On Spot facility and is permanently manned as long as the facility runs. Here, all systems are monitored and the loading data checked.

In accordance with IEC 79-13 this container is designed for an internal pressure of over 200 Pa (0.8 inch H<sub>2</sub>O). Local requirements will be met.

After installation at the factory the systems and system components undergo a thorough functional test. During this test all communications are put into operation and to the extent possible, components are tested, too. Usually the end user witnesses such test for the purpose of pre-acceptance.

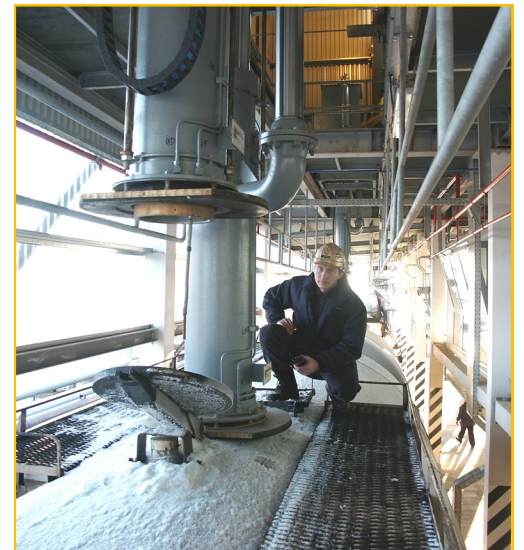


## Supervision, Training, Commissioning

Training, supervision and commissioning is performed by highly qualified specialists of Dipl.-Ing. SCHERZER GmbH.

In-house training is generally combined with the function – test of the facility. Therefore it is secured that training activities are performed directly at control systems of the facility. During training, substantial functions are explained as well as the complete engineering system such as tag number system, circuit diagram etc.

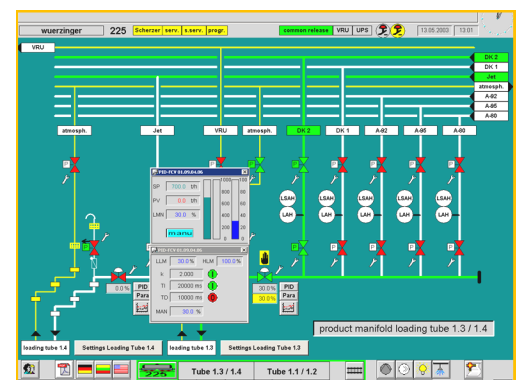
Our specialists of supervision are sub – classified regarding Mechanic, earth work and foundations, electric and MSR. Further a Chief supervisor for coordination and as the contact person for the customer is foreseen. Detailed schedules and organization sheets and plans for supervision and commissioning are worked out.



## After Sales Service

Our After Sales Service are performed by the specialists of our subsidiary company SCHERZER Umwelttechnik GmbH.

Maintenance contracts can be settled directly and will be split between mechanical section and EMSR. Short term fault analyses are carried out by a remote diagnosis with VPN or modem connection for a quick solution of problems. These checks can be made from the headquarter in Germany or from regional offices located in more close proximity to the end-user location.





### Our clients:

AGIP GmbH, Angarsknefteorgsintez, ARAL AG, AVIA, Bayer AG, Bayernoil GmbH, BP / TNK, BP Oil Grangemouth Refinery, Brenntag AG, BSL BUNA Werke, Ceska Rafinerska S.A., Cheming, Chemo-petrol S.A., Conoco, CPI, DEFROL GmbH, Deutsche BP AG, Deutsche Solvay Werke AG, DHC - Solvent Chemie GmbH, Didier AG, Donau Chemie AG, ELF OIL AG, Erdölraff. – Ingolstadt AG, Erdölraff. - Neustadt GmbH&Co., ESSO AG, FINA GmbH, Ineos, Jugopetrol, Gazpromneft, Grupa LOTOS, Kebo Energy, KINEF, Komsomolskij NPZ, Leuna - Raff. ges. mbH, Lotos, Lukoil, Lukoil Neftochim Bourgas, Lurgi Life Science, Mannesmann Anlagenbau AG, Mazeikiu Nafta, Melcher GmbH, Mider, MIDEX, Migrol, Mineralölraff. Dollbergen, Minol AG, MIRO, MOL, N.I.O.C. - Kala Naft, Nizhnekamsk Raff., Novatek, Ölhafen Rostock, Omni Tank GmbH, ÖMV, Orenburgneft, ORLEN, Orsknefteorgsintez, PCK-Schwedt, Petrochemia S.A. / PKN, Petrogal, Petrokasachstan, Petrotank, Porta Petrol S.A., Raab Karcher GmbH, Raffinerie Vohburg, Reederei Dettmer GmbH&Co., Rosneft, Ruhr Öl GmbH, Ruhrtanklager Kaufer GmbH, Russneft, Rüttgers Werke AG, Seehafen Rostock, SHELL Deutschland Oil GmbH, Slavneft, Sloznaft, Solvay, Sonacop, South Ural Company, Südzucker AG, Tanquid, Total, Transtank, Turkmenbaschinskij KNPZ, UTG, VA Tech, VEBA OEL AG, Vopak, Wilhelmshafener Raffinerie.

### Transtank (Gelsenkirchen / Germany) 2019-2022

Turnkey construction of a two track On Spot railcar loading facility zur for loading of railcars with Jet A1 and middle destillates im automatic mode with :

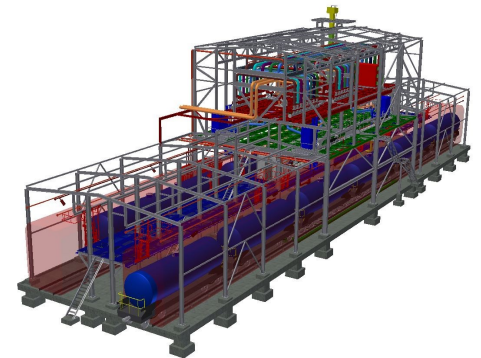
- ◆ 4 filling tube systems
- ◆ Measurement by track scale
- ◆ 2 electr. Remote controlled Shunting robots
- ◆ Operating container, Electrical room as precast concrete elements
- ◆ AFFF Fire fighting system, Monitoring- and control systems
- ◆ Steel constuction (280t), Civil works, Piping, Corrosion protection, etc.
- ◆ Complete track construction and DEOW track control technology, a.o.



### Kaz Munaj Gas / KazStroyService (Atyrau / Kazakhstan) 2016-2017

New construction of a two track railcar loading facility with 4 filling points for loading of railcars with Benzine, Diesel and Kerosine in automatic mode with:

- ◆ 6 filling tube systems
- ◆ Measurement by track scale
- ◆ Shunting system
- ◆ Operating room and electrical room
- ◆ Fire fighting system
- ◆ Monitoring- and control system



### SHELL (Cologne / Germany) 2014-2016

Turnkey construction of a two track On Spot railcar loading facility with 2 filling points for loading Diesel and HEL in automatic mode with:

- ◆ 2 filling tube systems
- ◆ Measurement by track scale
- ◆ Robots
- ◆ Operating room and electrical room
- ◆ Fire fighting system
- ◆ Monitoring- and control system



### SLAVNEFT (Yaroslavl / Russland) 2013

New construction of two two track railcar loading facility with 4 filling points each for loading of railcars with Diesel and Kerosine in automatic mode with:

- ◆ 12 filling tube systems
- ◆ Measurement by track scale
- ◆ Shunting systems
- ◆ Operating rooms and electrical rooms
- ◆ Pump stations
- ◆ Fire fighting systems
- ◆ Monitoring- and control system



### Grupa LOTOS S.A. / Gdansk - Poland (2008 - 2010)

On-Spot Loading station for rail car loading of Diesel as a turn key project with :

- ◆ 2 filling tube systems,
- ◆ Shunting system,
- ◆ complete control– and automation system,
- ◆ Control room and electrical room,
- ◆ Valves and product system,
- ◆ Steel construction, civil works, piping



### PKN - ORLEN S.A. / Plock – Poland, 2006-2008

On-Spot Loading station for rail car loading of Benzenes, Aromats, Benzole with :

- ◆ 6 filling tubes (10 products),
- ◆ shunting system,
- ◆ Control room and electrical room,
- ◆ VRU (Vapour recovery unit),
- ◆ Gas warn- and ventilation system,
- ◆ Steel construction, civil works, piping,
- ◆ Control system a.o. as a turn key project.



### Novatek / Westsibiria – Russia, 2005 and 2008

Engineering and delivery of equipment of two facilities for two track On-Spot loading systems for railcar loading of gas condensate with filling tube systems, complete control – and automation system, shunting unit, weighing bridge, measuring system, valves and product system, over pressure venting unit, commissioning for temperatures of -55°C.



### SLAVNEFT (Yaroslavl / Russia) 2004-2005

On-Spot Loading station for rail car loading of Benzine, Jet, Diesel with :

- ◆ 6 filling tube systems,
- ◆ Shunting system,
- ◆ Control room and electrical room,
- ◆ VRU (Vapour recovery unit),
- ◆ Steel construction, civil works, piping,
- ◆ Control system a.o.

as a turn key project.



### Mazeikiu Nafta / Mazeikiai – Lithuania (2002 - 2003)

On-spot loading station for rail car loading of Benzine, Jet, Diesel with:

- ◆ 8 filling tube systems,
- ◆ Shunting system,
- ◆ Control room and electrical room,
- ◆ Steel construction, civil works and piping,
- ◆ Control system a.o.

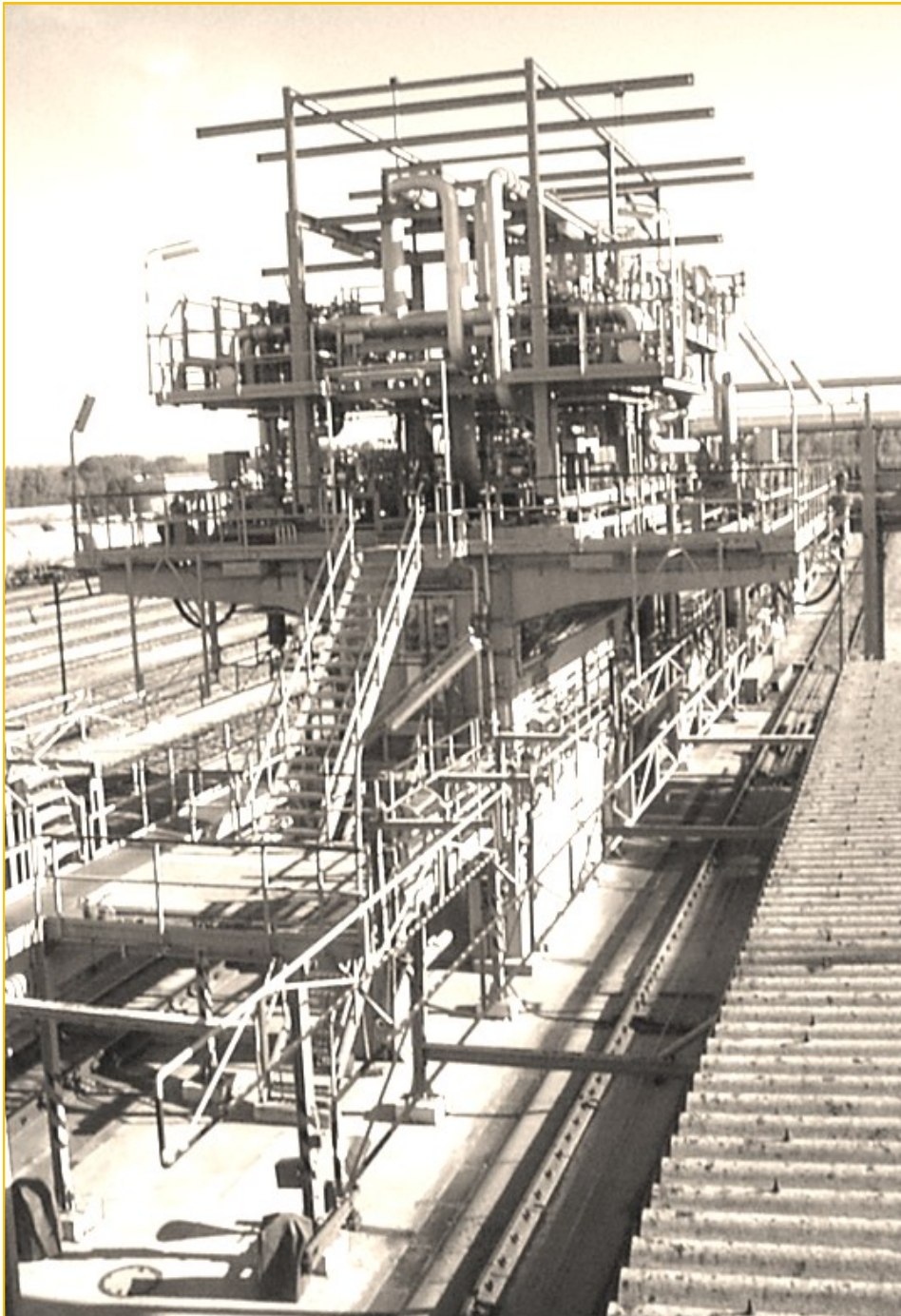
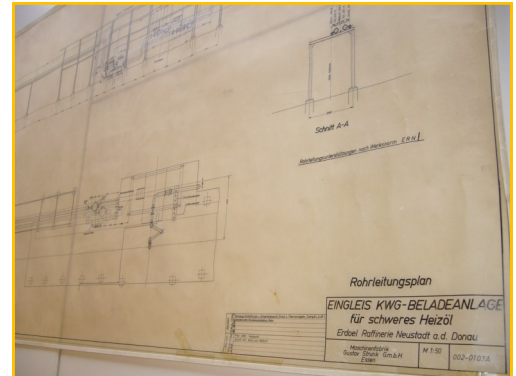
as a turn key project.





### Refinery Neustadt (Neustadt Donau / Germany) 1967-1971

- ◆ Delivery of a On - Spot – railcar loading facility for light heating oil (EL) as a turn key project,
- ◆ Delivery of a On - Spot – railcar loading facility for crude oil (S) as a turn key project,
- ◆ Delivery of a two track On - Spot – railcar loading facility for benzine, middle distillates and crude oil with 6 hydraulic filling tubes DN 300 (18 different products).



## HISTORY



**LOADING YOUR FUEL**

**Dipl.-Ing. SCHERZER GmbH**

**[www.scherzer.net](http://www.scherzer.net)**

## **Headquaters**

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### **Other brochures of Dipl.-Ing. SCHERZER GmbH**

- Company profile
- Railcar – Loading systems
- Railcar – Unloading systems
- Railcar – Filling tube and Hydraulic systems
- Options for SCHERZER filling tube systems
- Study to compare Rail Tank Car ON-SPOT loading systems with serial loading systems
- LPG Loading– and Unloading systems
- Tankcar - Loading– and Unloading systems
- Ship - Loading– and Unloading systems
- Tankfarms, including handling plants and Vapor recovery units (VRU)
- Reference lists

*We are pleased to send you our brochures on request.*