



## ***Mobile Test Plants for E&P Industry***

# Mobile Test Plants

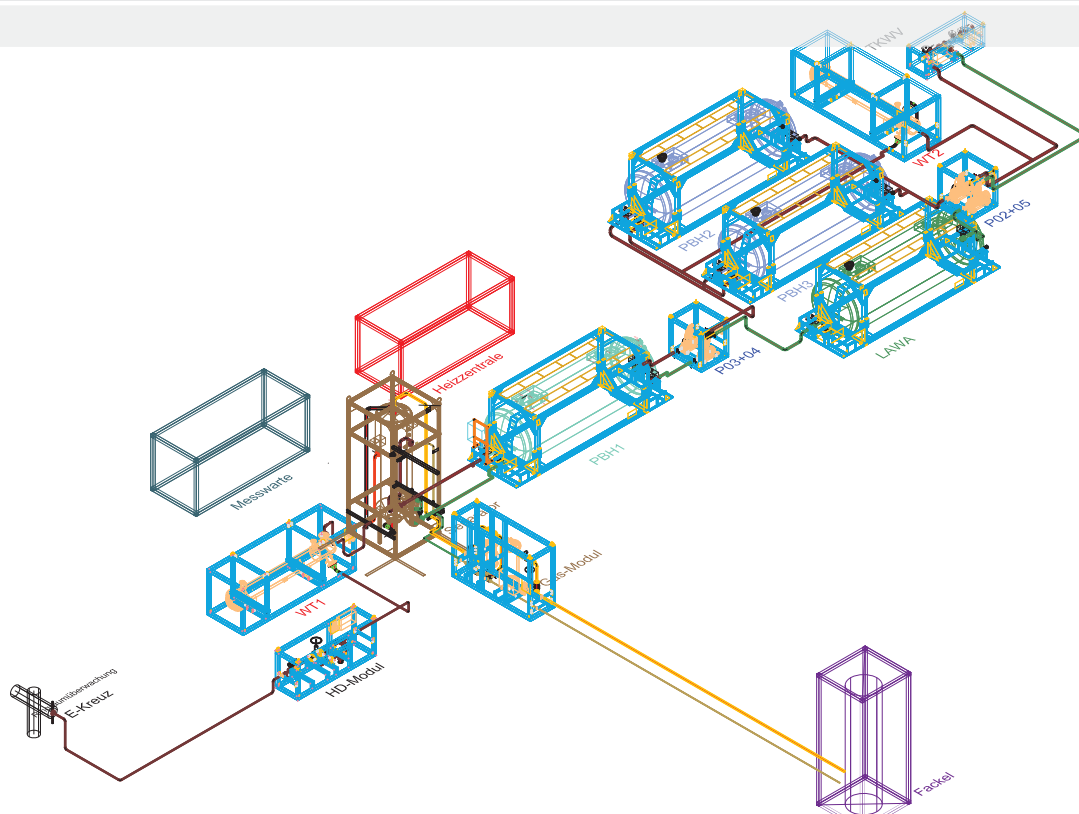


## Mobile Test Plants in modular design

These test plants are designed for any kind of production tests on oil wells. These facilities allow crude oil production from new wells as well as after work over jobs cleanouts of oil, gas and geothermal wells. Based on its modular design, these facilities have a wide range of application, e.g. pigging test runs at oil or gas pipelines or long-term production tests at wells.

Technical Data	
Working pressure	high pressure 250 bar / plant 10 bar
Range of performance	25 m <sup>3</sup> /h at 25 bar well head pressure, GOR 15
Set-up area	approx. 53 m x 40 m
Weight	approx. 90,000 kg

- Transport of plant components is possible with standard trucks (set up fits to standard 20' containers).
- Easy and fast set up with the drilling crew, the available workover crew or the operators staff of drilling rigs or manufacturing areas of workover-, drilling- or conveying system operators
- Easy and flexible expansion with additional modules
- „Plug and Play“ connections for electronic measuring & control by plug connections
- Use of ordinary connecting elements and structural components
- Gas flare with concealed flame for utilisation of associated gases
- The entire plant consists of intrinsically safe modules.
- Partially automation of plant functions and data logging as well as remote transmission of data is possible.
- Mobile and sturdy pipework connecting modules by hammer unions
- All modules allow the possibility of taking fluid and gas samples.
- Fast on site set-up



## Set-up

Set-up of the mobile test plant occurs as usual on a waterproof reinforced surface (concrete). Its modular design allows adapting the plant to different specifications. All modules are equipped with lifting eyes which allows safe and easy loading by using a 60 - 100 t crane. Modules are positioned on concrete surfaces and connected by electrical plugs and hammer unions (FIG 206 b 1502). Positioning, as well as mechanical and/or electrical connection of the components need approximately 48 hours to be set up. Therefore, it is possible to carry out ready for use service of the test plant within short time. All modules are ready for transport by a 20 frame design and are protected against mechanical effects.

## Components of the plant (standard version)

1. 4 Storage Tanks (material 316 L)  
(2 pure oil tanks; 1 pure oil tank or processing tank; 1 deposit water tank)
2. 1 Separator (material 1.4571)  
(2 or 3 phases; standing in 20' container frames)
3. Complete steel pipework (Wet H<sub>2</sub>S service) with application of the hammer unions and armatures
4. 2 Heat exchanger (material 1.4571)
5. Heating unit
6. 20' Container for the electric distribution, production of instrument air and measuring station
7. 2 Material containers for storage of materials during the operation and for the transport of the plant parts
8. Pumps and metering station loading plants
9. Gas processing
10. Flare with an associated petroleum gas (covert burning) with propane pilot-flare burner
11. Loading unit with optional gas compensation system
12. Fire detection system; lightning protection
13. CMD&A with partial automation and visualisation and option of remote monitoring
14. High pressure unit 25 m<sup>3</sup>/h at 25 bar, well head flow pressure

# Mobile Test Plants



## Individual Components



## High Pressure Unit

The high pressure unit is safety-related the core part of the facility. This part guarantees the pressure reduction from 250 bar to a maximum of 10 bar, the prepositioned pressure of the plant. It can be achieved by 2" manually controlled adjustable choke valve or 1" pneumatically controlled adjustable choke valve. Any event which may violate the limit condition will activate the safety valves (NC – normally closed). This protects the entire test plant at any time against too high pressure, high temperatures and high levels.

### Technical Data

Working pressure	up to 250 bar
Range of performance	25 m³/h at 25 bar well head flow pressure
Set-up area	4,400 x 1,200 x 1,720 [mm]
Weight	1,300 kg

## Heat Exchanger

Heat exchangers are used to cool down or heat up production fluid. This module can be applied on various sites of the plant. This will guarantee running crude processing at wells with low temperature flow. The heat exchangers also cool the crude oil to the necessary temperature for wells with high temperature flows. To keep the fluid temperature in the tanks in the correct condition, a circulation between the tank and the heat exchanger is possible. Heat power will be delivered from the containerised heater, and cooling is realised by fan cooler.

### Technical Data

Working pressure	max. 25 bar
Range of performance	507 kW (chilling), 253 kW (heating) primary side
Set-up area	each 6,058 x 1,940 x 2,120 [mm]
Weight	each 3,700 kg

## Separator

The separator is developed as a standing three-phase-gravity separator. It is equipped with a microwave detector which identifies the different layers of oil, gas and formation water. The preset separation layer levels will be controlled by pneumatic chokes. The demister installed in gas zone, supports the separation of condensate from gas flow. A sand flush system allows a clean up under working conditions, guaranteed by a high level protection and a pressure relief valve. Temperature, supplementary data and regular states are transferred to control station where they will be visualised and controlled. The 4" pressure relief valve, installed at the top, provides protection against high pressure.

Technical Data	
Working pressure	up to 10 bar
Range of performance	25 m³/h wet oil
Set-up area	2,600 x 2,438 x 6,058 [mm]
Weight	5,900 kg

## Gas Module

The gas module controls the preset pressure ratios inside separator by using an automatic choke valve. A meter controls the volume which passes the cyclone. Accumulated, separated condensate will be pumped back into the separator. Activated carbon is used as a filter to collect heavy metals (e.g. mercury). The gas module is protected against high pressure by using a shear disk. The measured data will be transferred to the control room.

Technical Data	
Working pressure	pre-burner: 5-1,000 mbar
Set-up area	4,180 x 1,320 x 2,880 [mm]
Weight	2,000 kg
Consumption	200 m³/h (process gas)



Individual Components



# Mobile Test Plants



Individual Components



## Air Cooler

The cooling module provides all needed temperature to guarantee the entire processing procedure until final loading/shipment. Flow and return flow temperatures are stationary indicated and allow easy supervision for operating staff. The temperature is controlled by a heating unit with frequency inverter controlled inline-pumps. This guarantees adequate product temperatures at all time.

### Technical Data

Working pressure	16 bar
Range of performance	400 kW
Set-up area	8,870 x 1,820 x 2,070 [mm]
Weight	3,000 kg

## Gas Flare

The gas flare is a device with a concealed flame. The automatic gas burner realises ignition of the flare according to specification and controls. Correct operation of the flare are sent by process signals from UV detector as flame supervision and operating valves and ignition transformer. High flame temperatures ensure high efficiency combustion (99,9%) and by that low rate emissions. Quick and easy applications of the gas flare are made possible due to the folding design.

### Technical Data

Working pressure	40 - 140 mbar
Range of performance	1.5 MW
Set-up area	6,038 x 2,432 x 2,660 [mm]
Weight	6,300 kg

## Tanks (Container Tank)

- Processing tanks (fine separation) with regulated discharge of oil and water
- Pure oil tanks (2 or 3)
- Formation water tanks
- Capacity of 30 m³
- Level gauge
- Overfill protection
- Isolated
- Further insulated container modules retrofit
- Intrinsically safe
- Interchangeable
- Extensible
- Due to a media circulation it is possible to maintain the fluid temperature between the tanks

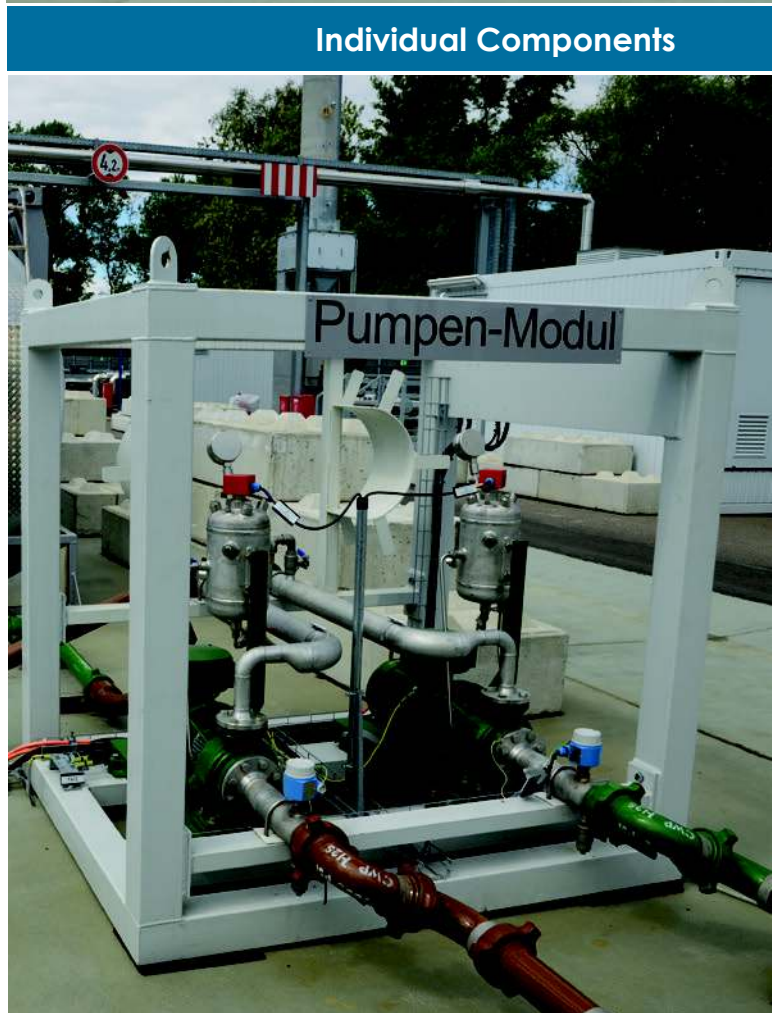
Technical Data	
Working pressure	0.1 - 1 bar
Set-up area	8,650 x 2,600 x 2,977 [mm]
Weight	6,100 kg
Tank capacity	max. 30,000 liter



## Pumps

Facility pumps (centrifugal pumps with controlled mechanical seal) are located at two positions. The pumps to exit fluid from the processing tanks (fine discharge) are operated by frequency inverters. Loading pumps are controlled by a flow preselector and are supervised by equipotential bonding and overfill protection established in the railcar tanker.

Technical Data	
Working pressure	2 - 5 bar
Range of performance	1,460 x 1,740 x 1,700 [mm]
Weight	1,200 kg / 1,400 kg
Flow rate	standard flow up to 50 m³/h
Processing pumps	2 x up to 25 m³/h
Loading module	up to 50 m³/h



# Mobile Test Plants



## Individual Components



## Pipes

The pipelines used in the mobile test plant are connected by hammer unions. Use of swivel joints avoids tension in the entire pipework. This kind of installation allows a multiplicity of variations.

Technical Data	
Working pressure	different pressure levels
Range of performance	140 – 700 bar at 1 – 3 inch diameter
Material	A350LF2/AISI 4130

## RTT Loading Unit

The amounts of formation water and crude oil are accumulated in the road tanker loading unit. The loading occurs by an additional filter to avoid any particles in the product. Flow pre-selector and overflow protection avoid overfilling of road tanker trucks.

Technical Data	
Working pressure	permissible 10 bar
Set-up area	3,080 x 1,080 x 1,016 [mm]
Weight	1,000 kg
Loading unit	35 up to 50 m³/h

## Heating Unit

The heating unit container is noise protected. The installed heater has a propane burner working at atmospheric pressure. The burner performance is  $200 \text{ kW}_{\text{th}}$ . Recirculation occurs by inline pumps.



Individual Components

## Containerised Control Room

At the control room all recorded data (PC S7) is engaged and processed. All modules are pneumatically and electrically connected to control room by cables and hoses with plug connections. By that the unit is very quickly ready for operation. Compressor unit generating control air is installed on a separate sound-proof section.

Technical Data	
Set-up area	6,096 x 2,350 x 2,660 [mm]
Weight	5,300 kg



## Cooperation Partners



### STREICHER Group

With more than 100 years of history the STREICHER Group combines quality and special knowledge with a long-term experience in competence areas like construction of pipelines and plants, mechanical engineering, civil and structural engineering, as well as raw and construction materials. Consolidated with the parent company MAX STREICHER GmbH & Co. KG aA with its headquarters in Deggendorf, the company has approximately 3,500 employees at 30 locations worldwide.

Each division is focused on particular primary activities. Close inter-divisional cooperation guarantees excellent execution of large-scale projects worldwide in a multiplicity of industry branches.

The STREICHER Group is characterized by following technologies and services in four business sectors:

**Pipelines and plants:**

Pipelines, plants, local network construction, deep drilling technology, horizontal directional drilling, services

**Mechanical engineering:**

Apparatus engineering, drilling technology, process engineering, manufacture of amusement rides

**Civil and structural engineering:**

Road construction and civil engineering, bridge construction and civil engineering, hydraulic engineering, landfill construction, industrial construction, sewer construction, Public Private Partnership

**Raw and construction material:**

Asphalt mixing plants, quarries and gravel mills, sand and gravel extraction, building material disposal

The success of the STREICHER Group is based on a foundation of many years of experience, technical know-how, consequent quality management and respectable capital resources. Continuous investments into future technologies as well as into knowledge and qualification of the employees guarantee a long-term performance of STREICHER Group.



## IGATEC GmbH

IGATEC is an internationally operating engineering company. We have been offering an extensive portfolio in the field of automation and construction of industrial plants to our customers for 31 years.

Among electro-technical engineering, our business spectrum is amended by loading and regenerative energies technology. Internationally IGATEC is considered to be one of the leading full-range providers in plant engineering and construction.

One element of our success is the corporate philosophy by which our company has been focusing a long-term oriented partnership for years. Particularly in Russian-speaking territories we have got co-partners, coaching and serving our customers and projects.

At our locations in Speyer and Hagen we currently employ approx. 70 people – who represent the most important resources of our company – because qualified and highly motivated personnel is the basis for satisfied customers.

Reliability creates confidence and turns us into a professional partner of the pharmacy as well as of the chemical and petrochemical industry.



#### Contact

MAX STREICHER GmbH & Co. KG aA  
Schwaigerbreite 17  
94469 Deggendorf (Germany)  
Phone: +49(0)991 330-0  
[www.streicher.de](http://www.streicher.de)

#### Contact

IGATEC GmbH  
Siemensstraße 18  
67346 Speyer (Germany)  
Phone: +49(0)6232 91 904-0  
[www.igatec.de](http://www.igatec.de)