mobile systems

pipeline evacuation
pressure testing of pipelines
on-site nitrogen generation

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LMF
MOBILE SYSTEMS

your high pressure solution

company profile

LMF is the leading Austrian manufacturer of high-pressure piston compressor systems for air, natural gas, technical and industrial (process) gases. These systems, with power rates from 20 to 6,200 kW (30 to 8,300 hp) and for pressures of up to 700 bar (10,150 psi), are designed and manufactured in accordance with internationally applicable standards.
LMF has a long experience of over 60 years in the production of compressors and offers its customers the benefits of the latest developments in design engineering, proven manufacturing methods, testing under full load, installation and after sales service, all from a single source.

LMF is well-known worldwide as manufacturer of:

- API 11P / API 618 compressors (chemical and petrochemical industry)
- Compound compressor systems (mobile and stationary) for seismic research
- Compressors for many types of industrial applications
- CNG/CBG-systems

LMF Headquater in Leobersdorf, Austria

your high pres

content

PIPELINE EVACUATION

PRESSURE TESTING OF PIPELINES

ON-SITE NITROGEN GENERATION

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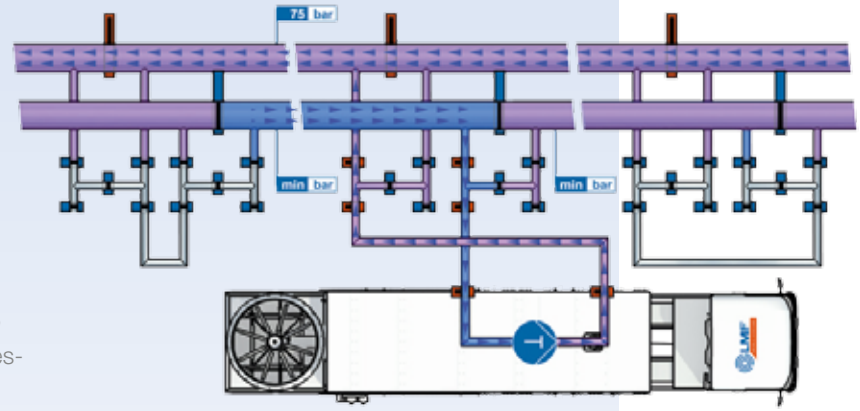
pipeline evacuation



LMF P-Pack 750

Evacuation pressure from 75 to 6 bar, discharge pressure 75 bar, delivers up to 64.500 Nm³/h at 75 bar suction pressure, driven by a 12-cylinder, 750 kW, 1.400 rpm gas engine, equipped with water/air heat exchanger, control system for automatic operation, containerised with truck and trailer for ambient temperatures from -40°C to +35°C.

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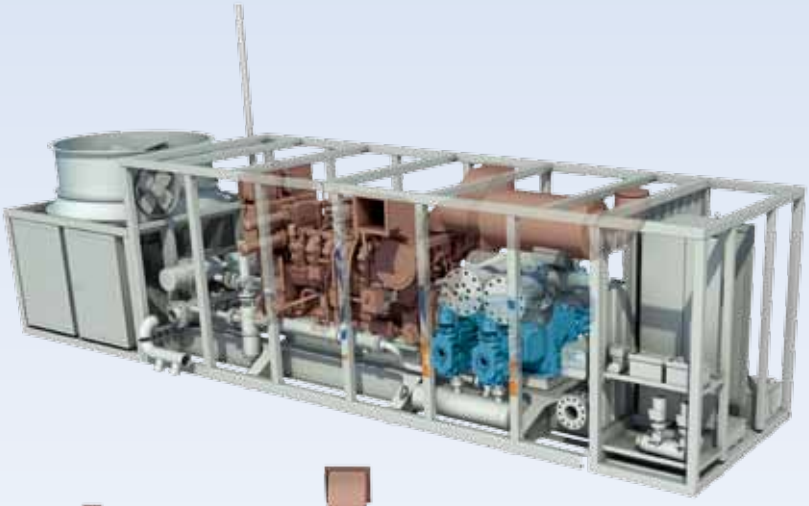
pipeline evacuation

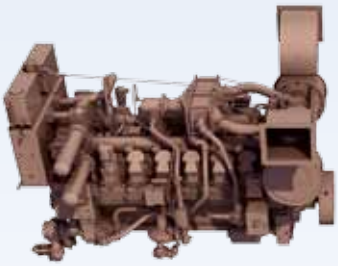
general description/ benefits

PIPELINE EVACUATION

LMF mobile compressor systems for pipeline evacuation are fully equipped (with generator, control system) to enable them to operate independently of an external power source at site. The section of the pipeline to be evacuated is isolated by interception valves at each of its ends. The compressor is then connected to this isolated section and started – which can be done by remote control from a central operator station. The unit operates fully automatically.

LMF's patented two-stage operation is designed for maximum efficiency in pipeline evacuation. Initially the system operates as a single-stage compressor for high volume operation, changing automatically to double-stage function during the second half of the evacuation process in order to reach a minimum pipeline pressure.





Gas engine

Balanced-opposed compressor unit BS 604

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mobile gas compressor units

applications

LMF BS604-319 S35.1

delivers up to 5,160 Nm³/h (3,210 cfm) at 351 bar (5,090 psi) working pressure, driven by a 12-cylinder, 955 kW, 1,800 rpm diesel engine, equipped with water / air heat exchanger, control system for automatic operation, containerised with truck and trailer for ambient temperatures from –9° C to +30° C.

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LMF mobile gas compressor units are designed for a wide range of applications, including:

- Increasing well production using EOR (enhanced oil recovery). Natural gas is pumped into a well to increase the pressure inside it and so the rate of production.
- Increasing production during oil lifting. Natural gas is pumped into the annular space around the drilling tube, so increasing the pressure, and also the rate of lift in the riser tube.
- Pumping gas into underground storage reservoirs. Using a mobile compressor unit when pumping gas into underground storage makes it easier to determine whether the gas is being efficiently retained (the pressure remains constant), or whether it is being lost (the pressure gradually drops).
- De-liquefying gas wells. This is done by pumping foam-based additives, or various batch and surfactant fluids, into a well using compressed gas from a mobile gas compressor.
- Testing for leaks. Compressed gas is used to pressurize test tubes, pipes and connections of all types.
- Transporting gas. Mobile gas compressors are ideal for maintaining the pressure and flow rate in gas transport pipelines.

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pressure testing of pipelines

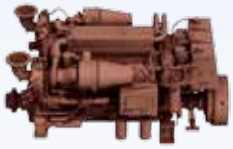
THE COMPOUND COMPRESSOR SYSTEM

LMF compound compressors efficiently combine the maximum possible capacities and pressures with minimum weight and dimensions. A rotating, optimised-speed (screw) compressor and a reciprocating (piston) compressor are both coupled (in most cases directly) to a prime mover – either diesel or electric (AC).

The balanced-opposed compressors – either the 2-cylinder BS 302 or the 4-cylinder BS 604 type – are used for pressure testing of pipelines and provide a delivery rate of up to 78 m^3/min and pressures of up to 450 bar. They have proven their reliability by operating well even in extreme conditions and at temperatures from +35° C down to as low as –40° C.

The compound unit can be supplied containerised (standard ISO container dimensions) that can be truck or trailer-mounted for mobile applications, or it can be mounted on a stable base-frame for stationary operation on- or offshore.

Screw compressor



Diesel engine

Balanced-opposed compressor unit BS 604

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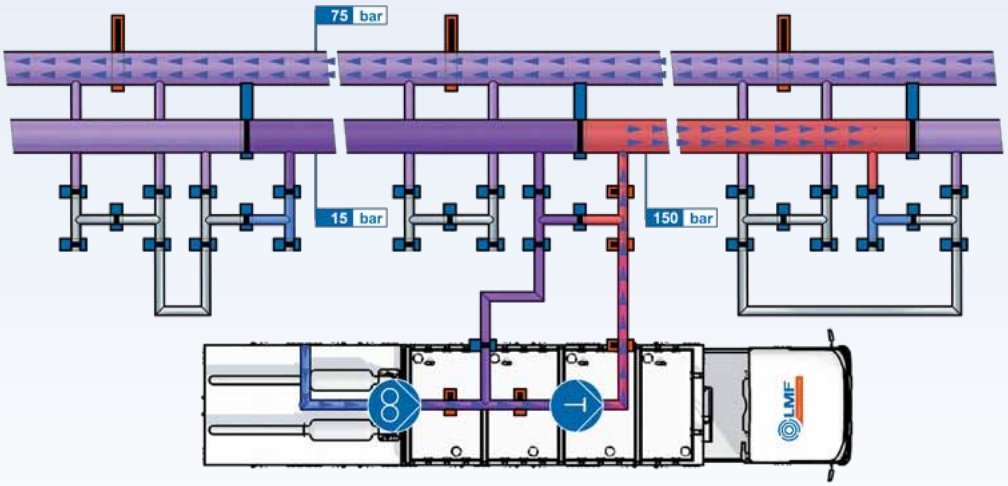
pressure testing of pipelines

mobile compressor sytems

PIPELINE TESTING

LMF can provide mobile compressor systems for pipeline pressure testing suitable for even extreme situations. The units are fully equipped (with generator, control system) to enable them to operate independently of an external power source ad side. The section of the pipeline to be tested is isolated by interception valves at each of its ends. The compressor is then connected to this isolated section and started – which can be done by remote control from a central operator station. The unit operates fully automatically and stops when a preselected pressure is reached. If a series of tests is planned on adjoining sections of the pipeline, the unit is able to pump the air already available in one section into the next section, so saving considerably on time, expense and energy.



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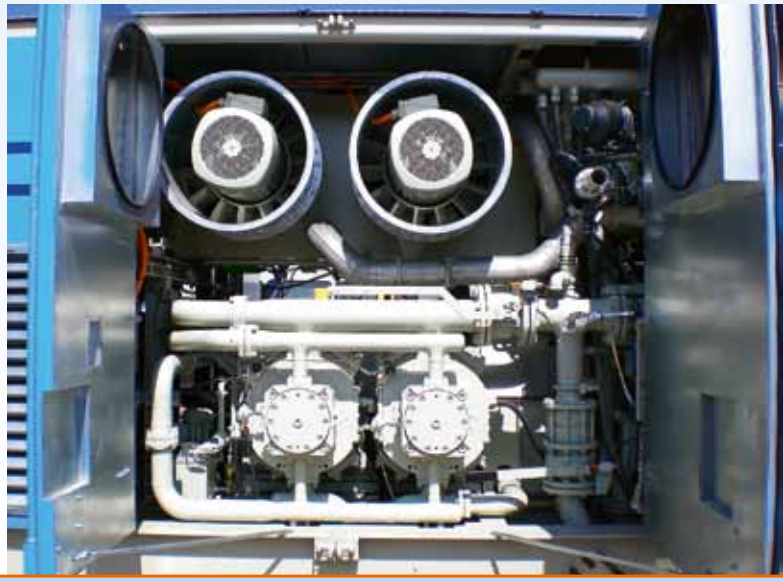
pressure testing of pipelines

applications

LMF 67s / 100-D

delivery 67 m³/min (2,364 cfm) FAD at 100 bar (1,450 psi), driven by a 12-cylinder, 1,045 kW, 1,800 rpm diesel engine, containerised, equipped with water/air heat exchanger and control system for automatic operation, for ambient temperatures –50° C to +50° C.



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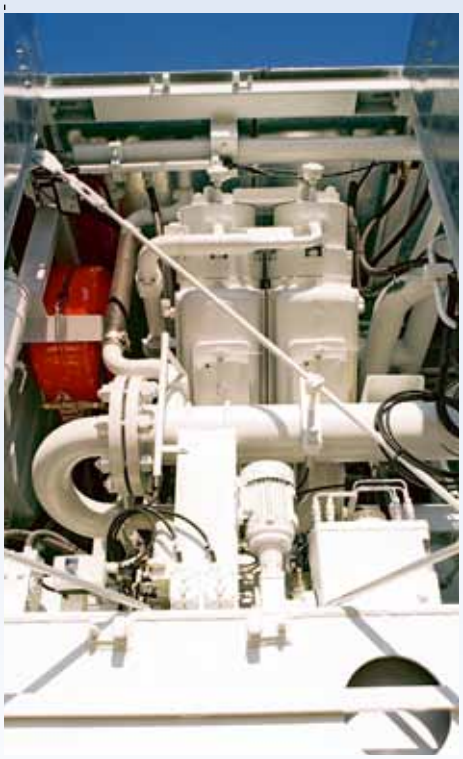
LMF 67/150-D

using type VCS 3421 W20 piston compressor, containerised, truck-mounted, for ambient temperatures from –50° C to +35° C.



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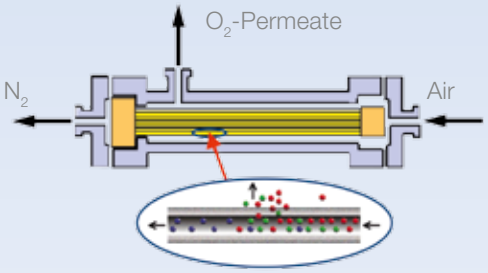
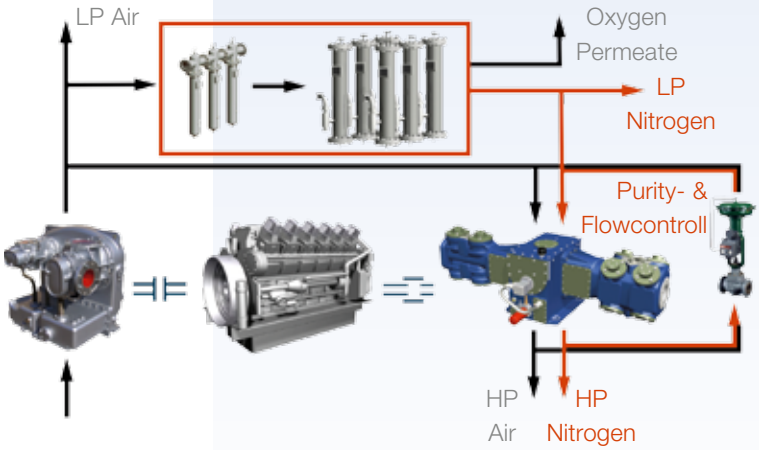
on-site nitrogen generation

MOBILE / STATIONARY MODULAR DESIGN

LMF nitrogen generation systems are based on a well-proven modular design, each module containing a group of hollow-fibred membranes working on the selective permeation principle. Every gas has its own characteristic rate at which it permeates (or diffuses) through the membrane. This allows “fast” gases, such as oxygen, to be separated from “slow” gases, such as nitrogen. The initial separating force is the differential pressure established between the feed side and the outlet side of the membranes.





PURITY (mostly 90 % – 99 %)

The degree of nitrogen purity obtained basically depends on three factors: the feed purity, the differential pressure across the membranes and the level of recovery required. LMF selects the most efficient membrane for any specific application. Capacities are up 2,350 Nm³/h (1,450 scfm) at working pressures of up to 350 bar (5,000 psi), producing nitrogen that is up to 99% pure.

OPTIONAL FEATURES

- adjustable nitrogen purity
- dew point optimisation for drying

Each unit has 3 modes of operation:

- high pressure nitrogen (or air)
- low pressure nitrogen
- low pressure air

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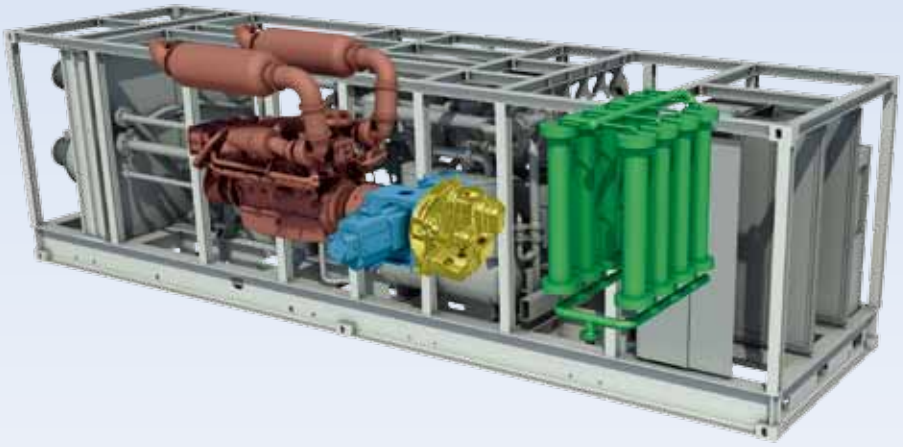
on-site nitrogen generation

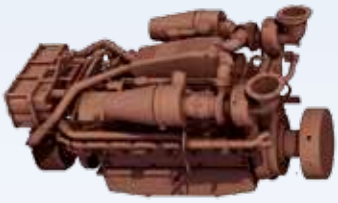
benefits

ADVANTAGES OF THE UNIT DESIGN

Whether for use on- or offshore, LMF's compound units for nitrogen generation can be supplied in:

- a single container (compound compressor and nitrogen generator together).
- two containers (compound compressor in one container and nitrogen generator in the other).





Diesel engine

Piston compressor

Oil-free screw compressor

Membrane package

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on-site nitrogen generation

applications

NITROGEN APPLICATIONS

LMF nitrogen generators are designed for a wide range of applications, including:

- decreasing the fluid level in a well during production stimulation
- investigating a well
- releasing a drill pipe that is stuck in a drilling tube
- speeding up the drilling process and so reducing costs
- pressurising equipment with nitrogen (e.g. pipelines, production tubing, castings, well heads, etc.)
- intensifying well production by stimulating the fluid inside it (physical/chemical treatment)
- treating wells to inhibit corrosion
- fire extinguishing (by using nitrogen to create an inert atmosphere in the combustion zone)
- purging (removing hydro-carbon-laden gas), cleaning and testing storage reservoirs
- increasing well delivery by removing sand from the shaft

NOTE: **LMF** nitrogen generators are suitable for both vertical and horizontal drilling.

ECOPACK 20 / LMF 47–20 / 350 D

HP compound compressor unit for nitrogen generation, compressor type BS 302–317 S 35, containerized version with sound-proofing, truck-mounted.

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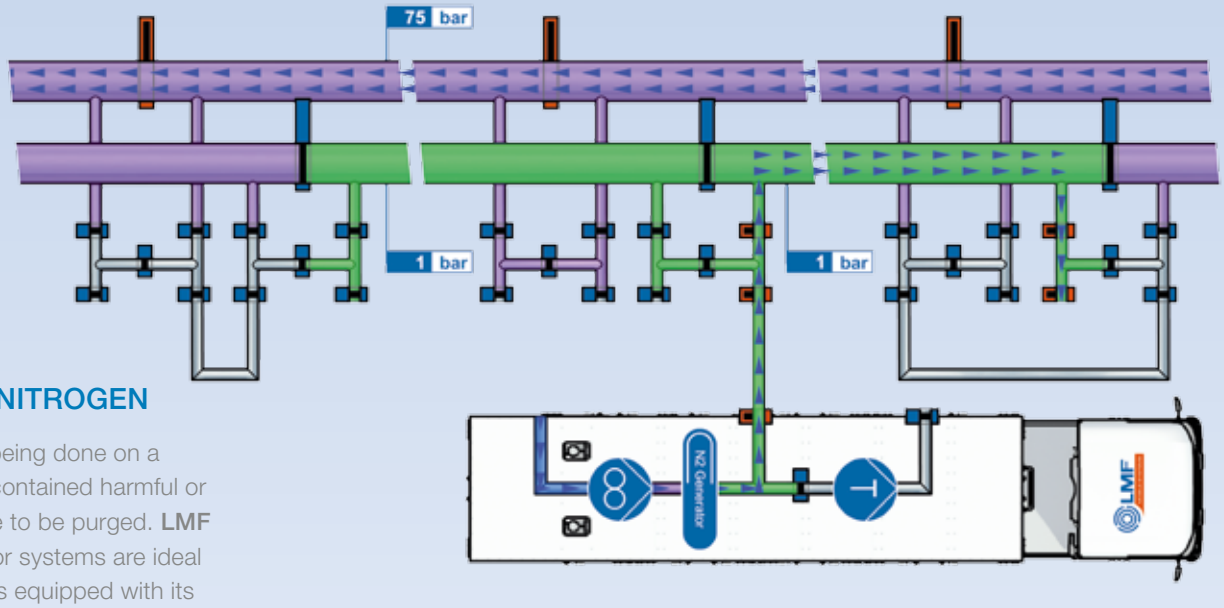

PURGING WITH NITROGEN

Prior to service work being done on a pipeline section, the contained harmful or dangerous gases have to be purged. **LMF** mobile gas compressor systems are ideal for the job. Each unit is equipped with its own generator and controls, enabling it to operate independently of an external power source.

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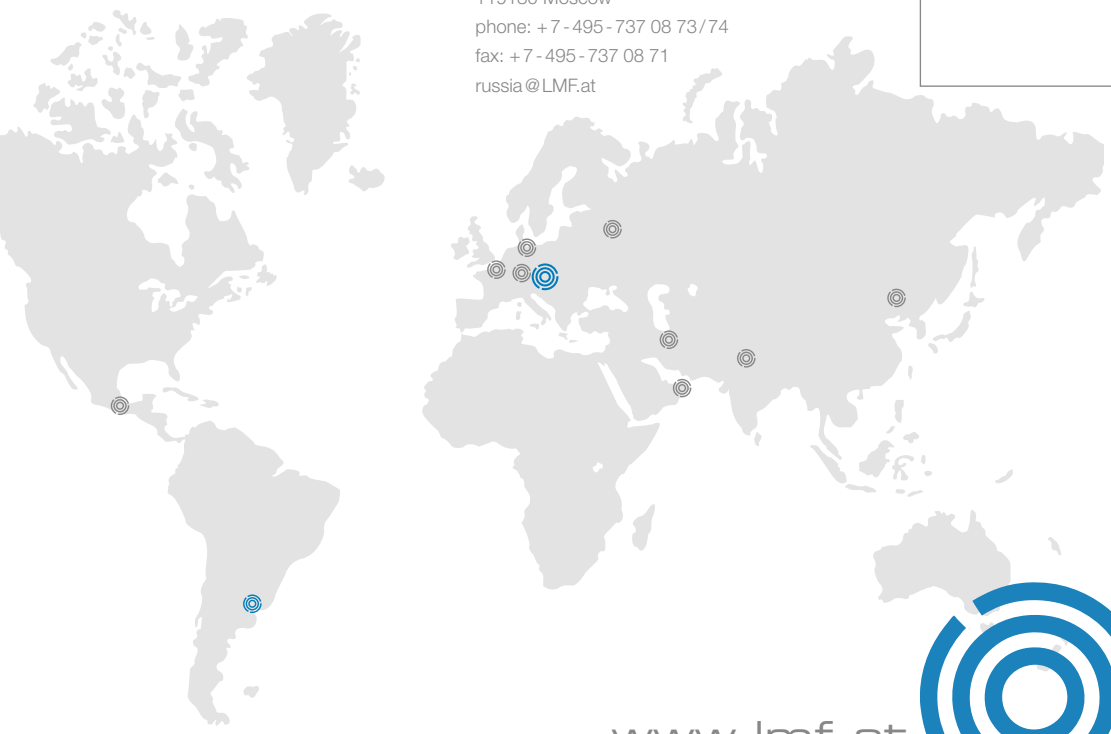

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