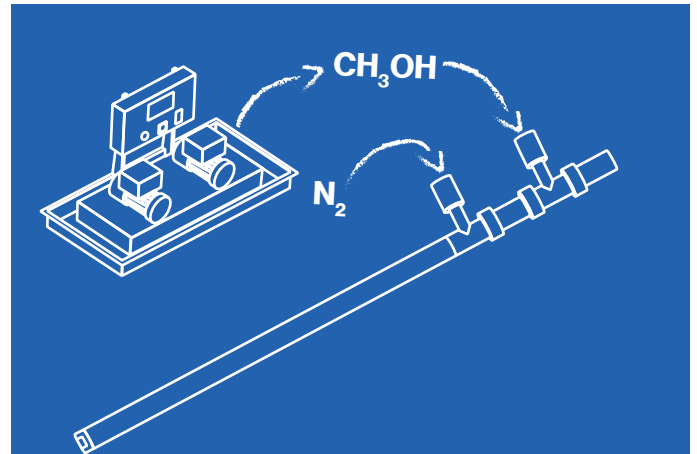


METHANOL LANCE/PUMP

- Reliability
- Safety
- Process consistency



The Concept

Atmospheric carburizing is a heat-treatment process that enhances the hardness of a metal part by diffusing carbon.

This carburizing is often generated by cracking methanol inside the furnace and diluting it with nitrogen. The management of carbon-potential measurement in the atmosphere is key to ensure the properties of the final parts.

Liquid methanol is stored in fixed or movable tanks and sprayed inside the furnace with nitrogen through an injection lance.

Methanol tanks are inerted with a controlled nitrogen injection to avoid bubble formation, and stored in a specific vented area. Methanol is injected by a dedicated in-line pump with adjustable pressure from 1 to 3 bars. A dual pumping system, including backup, ensures continuous operation.

Applicable Industries

METHANOL LANCE/PUMP is used in various industries, such as:

- Automotive
- Aeronautic
- Metal fabrication

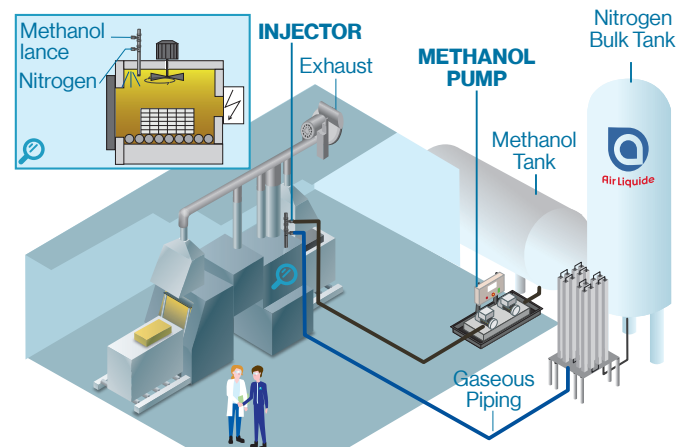
Special Features

The methanol pumping station offers you:

- Fully reliable design
- Continuous operation guaranteed by a dual pumping system
- Fine setup of pressure management with dedicated control panel

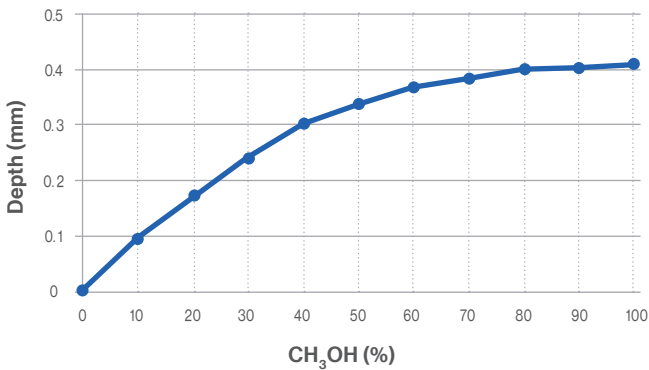
The injection lance is designed to optimize the methanol cracking, thus ensuring a good homogeneity of the furnace atmosphere at high temperature.

Automatic safety procedures are incorporated to inject nitrogen in case the process temperature accidentally drops below 700°C.



Air Liquide simulation tools help you to determine the optimal methanol / nitrogen ratio to inject in the process to comply with quality specifications.

IMPACT of the METHANOL RATE on the CARBON DIFFUSION DEPTH



Carburizing cycle:
3 hours at 900°C, carbon potential 0.9% and depth at 0.4% C

Case Study

The solutions based on a pressurized methanol storage, used in the past and still in use, present some limits in comparison with the Air Liquide methanol pumping station.

Comparative study for atmospheric carburizing

	Pressurized Methanol storage	Methanol pumping station	Advantages of pumping station
Regulation	- Local regulations for methanol storage - Directive for pressure equipment with periodic testing	Local regulations for methanol storage	- Ease-of-use - Continuous operations
Pressure Adjustment	Fixed Pressure	Adjustable	Flexibility in case of several furnaces
Pressure stability	0.8 bar ± 0.2	1 bar ± 0.05	Consistency of process recipes
Safety in case of piping rupture	No automatic switch off	Automatic switch off	Safe operations
Tank filling	Interruption of supply during filling or need of a second storage tank	Full time availability	Continuous operations
Flexibility	Fixed design for current needs with limited potential evolution	Compatible with removable storage	- Flexibility - Storage cost

Model Range

The methanol pump station is designed to fit for all industrial configurations while delivering from 0L/h up to 180L/h thanks to a back pressure regulator system. Two options are available: mono- and dual-pump, to optimize reliability.

At point of use, the methanol injection lance covers range from 5 to 15 liters per hour. Based on a proven design, the injection lance is adapted to your process depending on the flow rate.

Size (mm)	Width	Depth	Height
Single	650	450	326
Dual	800	500	326

Our experts team is ready to support you for the design and commissioning of your equipment and to validate its performance.

Related Offer

METHANOL LANCE/PUMP is part of our **Nexelia for Thermo-chemical Treatment** solution, which is designed and tailored to your specific needs. This comprehensive offer combines the best of Air Liquide's gases, application technologies and expert support. As with all solutions under the **Nexelia** label, we work closely with you to pre-define a concrete set of results, and we commit to delivering them.

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