

Unbeatable effectiveness

Variocarb-therm – the most efficient protection against steel oxidation

Above 750 °C, a crystal structure is formed in steel alloys that makes the material literally as hard as steel and wear-resistant – but only after cooling! In the hot phase of heat treatment, however, it is very sensitive and must be protected against oxidation. Conventionally, the required protective gas is produced in an endogas unit. The Variocarb-therm process from Messer is a cost-effective and more efficient alternative.

Maximum effect with minimum effort

The Variocarb-therm process is based on the use of methanol (CH₃OH) and cryogenic nitrogen (N₂). There is a virtually unlimited supply of both ingredients, and they require minimal storage space: N₂ in a pressure tank; CH₃OH, which is liquid up to 65 °C, in tanks under normal pressure or in drums when less is required.

And this is how it works: the nitrogen is converted into gas via a heat exchanger and piped to the furnace. The methanol is conveyed by a dual pump station. When the furnace has reached a temperature of 750 °C, both components are sprayed and finely dispersed into the hot zone of the furnace via a temperature-resistant injection lance.

Thermal cracking produces a protective/reactive gas that is free of undesirable by-products and whose composition is identical to the traditional endogas.

By the way, the ratio of N₂ and CH₃OH, which determines the carbon level (C-level), can be set manually or automatically in accordance with individual specifications. You can therefore choose between neutral annealing and carburisation of steel.



Hardened transmission components



Components in the charging basket



Methanol is stored outdoors.

What the experts think

The Variocarb-therm process is the most efficient and user-friendly protection for steel.

Your benefits at a glance

- The nitrogen-methanol cracked gas is very pure, has a stable composition and can be adjusted to suit individual requirements.
- Your operating costs are reduced due to lower consumption of protective gas.
- The Variocarb-therm process is low-maintenance, saving you time and effort and minimising maintenance-related stoppages.
- Even in the event of a power cut, nitrogen continues to flow through the furnace, limiting production losses and ensuring safety.
- Technical equipment takes up little space, and the nitrogen and methanol is stored outdoors.

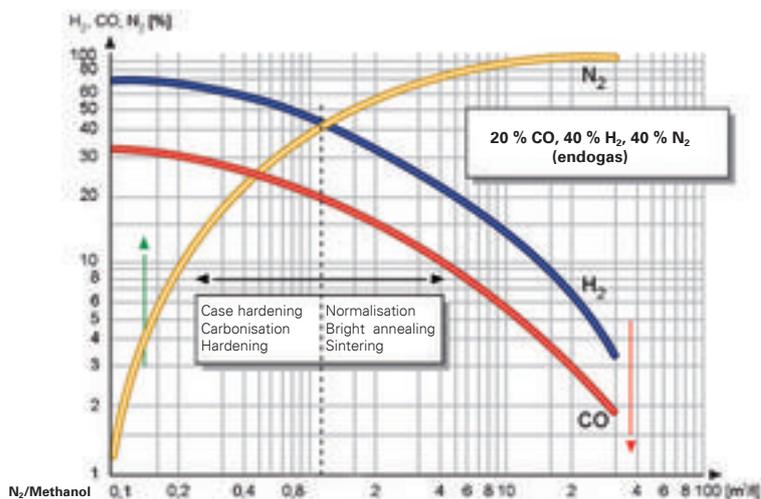
Last but not least: the installation and operation of conventional protective gas production facilities is time-consuming and expensive. By investing in the Variocarb-therm process, you will save money and achieve a sustained improvement in efficiency.

Please do not hesitate to contact us if you have any questions regarding the Variocarb-therm process or would like to arrange a personal consultation with our application experts.

Contacts in your country can be found at:

www.messergroup.com/de/Standorte

This and many other brochures can also be downloaded from the Internet in PDF format:
www.messergroup.com



The optimum gas mixture for each process



Messer Group GmbH
 Gahlingspfad 31
 47803 Krefeld
 Tel. +49 2151 7811-0
 Fax +49 2151 7811-501
 info@messergroup.com
 www.messergroup.com