

Protective Gas Generator ENDOMAT[®]



λ -probe control
no need of cooling water

New installation sizes

Protective Gas Generator ENDOMAT air-cooled

Gas carburizing processes and other heat treatments under protective gas, where the carbon exchange with the workpiece surface plays a role, make high demands on the controllability of the atmosphere. The carrier gas procedure using endogas, proven since many years, offers the best conditions according process engineering for:

- ▶ exact process control
- ▶ best reproducibility of the final results and
- ▶ high quality requirements.

The development of measuring and control of the furnace atmosphere with O₂-probes brought an additional and reasonable measuring method to the maturity phase: O₂-measurement λ-probe.

The λ-probe control

The measuring gas is conducted through a temperature-constant -probe. At the same time a mV-signal is emitted by the λ-probe, which is used for measuring, control and registration of the endogas-composition and is displayed in °C dewpoint.

A very precise control of gas/air mixtures is required to produce constant quality of endothermic gas.

Quantity control

The endogas generator capacity can be adjusted to the required capacity manually or by automatic quantity control. The unused protective gas is burned off and therefore results a very expensive solution.

This disadvantage of the conventional protective gas generators has been eliminated by the AICHELIN technicians.

Through adapted design and using the modern I-probe, a quantity control of the protective gas in the range of 100 % up to 50 % of the nominal capacity is now possible.



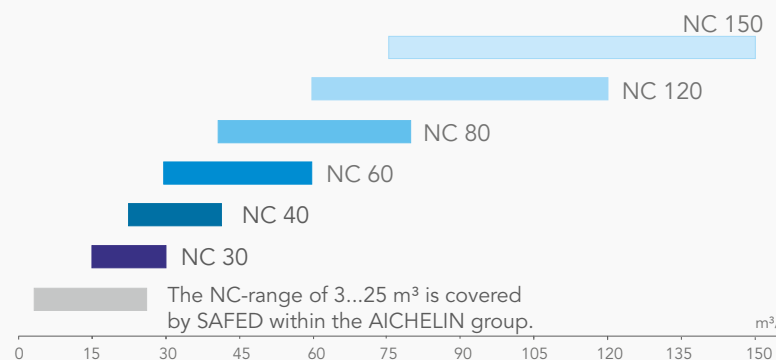
This enables a manual adjustment of the protective gas production of every standard ENDOMAT in the range from 100 % up to 50 % of the max. capacity. Control of the gas composition is done fully automatically by the λ-probe control.

Advantages:

- ▶ protective gas quantity according to requirements
- ▶ reduction of costs
- ▶ no difficult manual adjustments

This fully automatic quantity control can be offered for applications where variations in protective gas volumes are required. In these cases, a sensor measures the pressure rate in the protective gas conduction and keeps it constantly via the protective gas quantity.

With this new development, the range between 15 and 150 m³/h nominal capacity (NC) can be covered cost-efficiently:



Heating

All sizes up to 80 m³ can be carried out with electrical heating; sizes from 60 m³/h can optionally be heated by gas burners, while sizes from 120 m³/h presently only may be heated by gas burners.

Fully automatic regeneration device (optional)

This device enables a fully automatic regeneration of the protective gas generator, whereby the start can be carried out

- ▶ manually
- ▶ automatically with time control
- ▶ with remote control of the AICHELIN - FOCUS[®] process control system

The production of protective gas is stopped automatically, the generator temperature is reduced to regeneration temperature, and the generator is regenerated afterwards. After regeneration, the ENDOMAT[®] is fully automatically heated up again to operation temperature and prepared for protective gas production again.

Advantages:

- ▶ minimized maintenance works
- ▶ reduction of running costs

Change of retorts

The life expectancy of the retort amounts up to 3 years, depending on type of application. Due to the simple assembly concept, the retort can be exchanged safely by the customer within few minutes after cooling. AICHELIN offer their customers exclusively the free of charge and professional disposal of the used up catalyst in the context of the retort exchange. Exchange retorts are available at any time in all sizes on stock.

Summary

The development of the measure- and control technology now enables a reasonable, exact control of the gas composition by endogas generators with I-probe. Positive operational experiences have been gathered over many years.

This new measuring method makes the development of protective gas generators easier, which

are reducible in their production quantity down to 50%

Optionally, with a minimal additional price - a

fully automatic quantity control

of the produced protective gas quantity via sensor can be offered.

To decrease maintenance costs even more, an automatic regeneration device may be supplied optionally.

automatical regeneration device

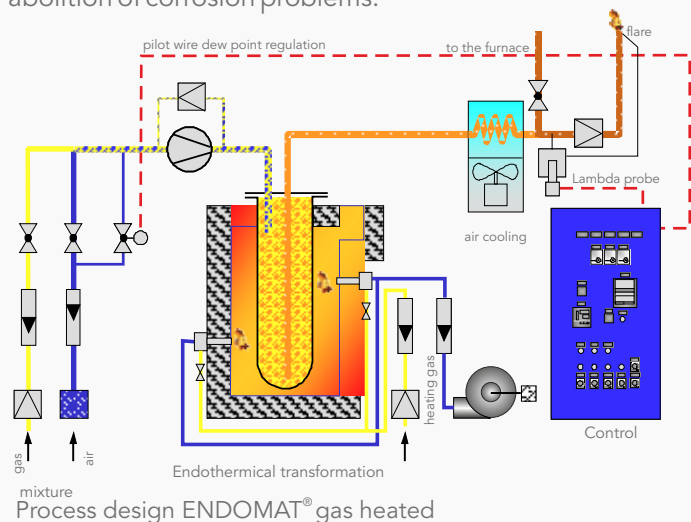
can be supplied.

All AICHELIN protective gas generators of the series ENDOMAT® series can be integrated into the process control system FOCOS® for hardening shops.

Since several years, the AICHELIN ENDOMAT series are delivered with an air-cooling device.

Therefore there is no more need for cooling water.

This is a further step to establish a hardening shop without cooling water, that causes lower maintenance cost due the abolition of corrosion problems.



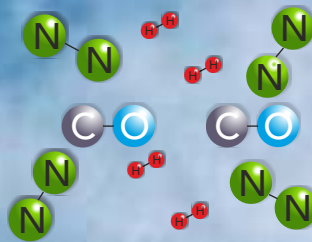
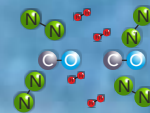
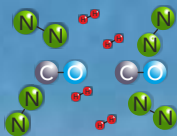
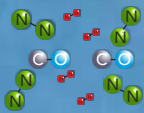
Why choose AICHELIN ?

Furnaces and plants made by AICHELIN offer reproducible high quality and economy.

Through our long term partnership with our customers all over the world, proven designs have been developed with unmatched service simplicity, reliability and durability.

Permanent research and development as well as the background of a well established group of companies grants our customers an excellent protection of their investments.

Protective Gas Generator ENDOMAT[®]



quantity control • full automatic regeneration unit

AICHELIN Ges.m.b.H.

Fabriksgasse 3
A-2340 Mödling
Phone +43 (2236) 236 46 - 0
Telefax +43 (2236) 22 22 9
marketing@aichelin.com

EMA Indutec GmbH

Petersbergstrasse 9
D-74909 Meckesheim
Phone +49 (6226) 788 - 0
Telefax +49 (6226) 788 - 100
info@ema-indutec.de

NOXMAT GmbH

Ringstrasse 7
D-09569 Oederan
Phone +49 (37292) 65 03-0
Telefax +49 (37292) 65 03-29
info@noxmat.de

SAFED Suisse SA

36, rue Emile-Boéchat
CH - 2800 Delémont
Phone +41 (32) 421 44 60
Telefax+41 (32) 421 44 64
contact@safed.ch

AICHELIN Heat Treatment Systems Inc.

Plymouth, MI 48 170 USA
Phone +1 (734) 459 9850
Telefax +1 (734) 459 9851
sales@aichelinusa.com

www.aichelin.com

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