

▶ Product overview



DK46, 47, 48, 800

VA40, VA45

DK32, DK34, DK37

H250 M40, H250 M9

www.krohne.com



© KROHNE 02/2013 Subject to change without notice.

Head office
KROHNE Messtechnik GmbH
Ludwig-Krohne-Str. 5
47058 Duisburg, Germany
Tel.: +49 203 301 0
Fax: +49 203 301 103 89
Info@krohne.de
www.krohne.de

Contact



More information about the products:
www.krohne.com/Varablaarea

Register free of charge now:
<http://academy-online.krohne.com>



▶ Web-based training for variable area flowmeters

As part of the KROHNE Academy online we offer a variety of web-based trainings (WBT) including a WBT covering variable area flowmeters. Here you will learn all about the process including the measurement principle and sizing, design, advantages and limits of operation right down to applications and industries – and it's all free and available for unlimited use.

KROHNE

▶ achieve more



▶ Primary explosion protection by inertisation

▶ Measure inert gases reliably and cost-effectively

Is it your task to guarantee explosion protection in your production while keeping a watchful eye on costs?

KROHNE variable area flowmeters provide you with an economical and reliable solution for the measurement of nitrogen used in the inertisation of process tanks and other systems.

Whether it is discontinuous purging or permanent blanketing, with reliable measurement you can optimise inert gas consumption and guarantee explosion protection at the same time.

"Measures that inhibit the development of explosive atmospheres are to be implemented before all other explosion protection measures." See ATEX 1999/92/EC

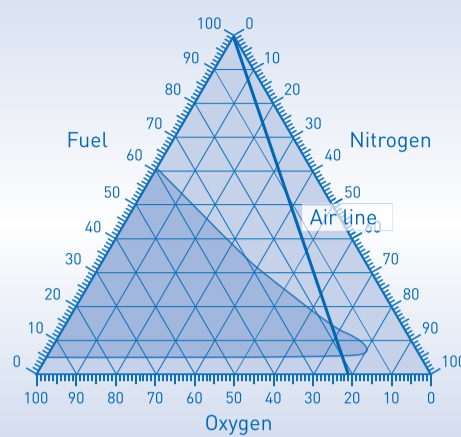
▶ As much as necessary

During inertisation the oxygen in the air is at least partially replaced by inert gases, usually in a limited volume, so that the limiting oxygen concentration is not exceeded and the fuel/air mixture is no longer flammable.

For many gases the limiting concentration is about 8-10 volume per cent, with hydrogen and carbon monoxide it is even less than 4 vol%.

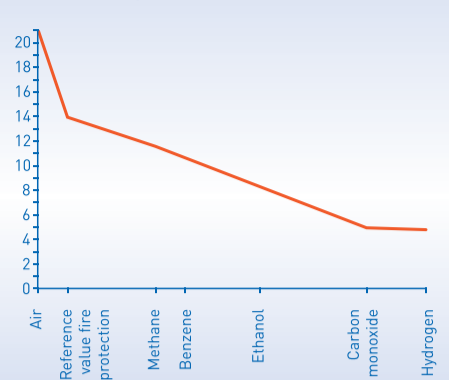
Nitrogen is generally used for inertisation and its throughput can be monitored reliably and cost-effectively with variable area flowmeters.

Explosion triangle



Limiting oxygen concentration

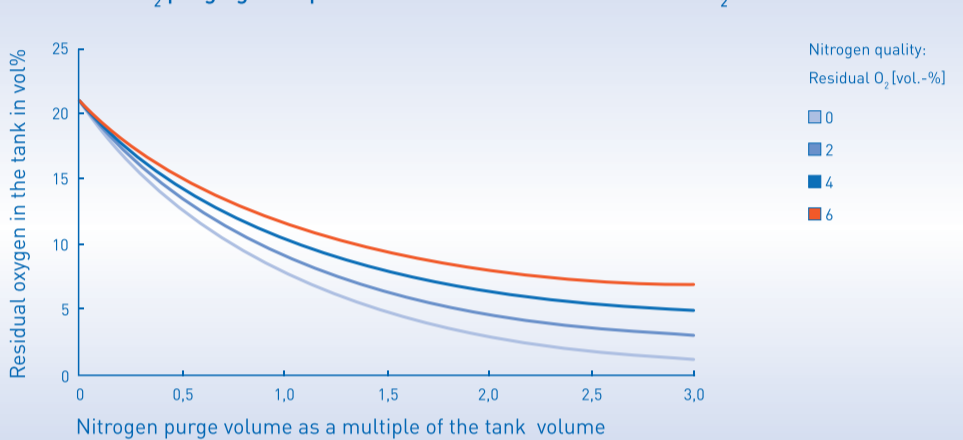
Residual oxygen in vol%



▶ Discontinuous purging with nitrogen

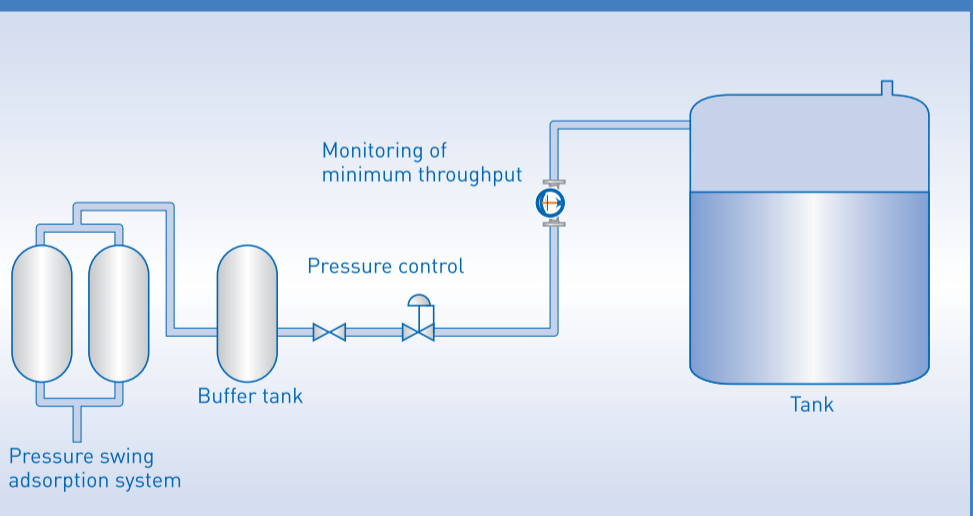
- Prior to process start
- Decrease in residual oxygen
- Reactors, stirrer tanks, mixers
- Displacement purging or alternating pressure purging
- Large flow volumes for quick operational availability
- Measurement of the purge volume using variable area flowmeter

Theoretical N_2 purge gas requirement as function of the residual O_2 concentration



▶ Continuous nitrogen blanketing

- During the process
- Maintenance of the non-explosive atmosphere
- Process tank, centrifuges, tanks
- Low flows with mostly low pressures
- Monitoring of minimum throughput using variable area flowmeter



▶ Product entry through nitrogen locks

- During the process
- Minimisation of oxygenation
- For occasionally open tanks
- Monitoring of nitrogen supply using variable area flowmeter

