

Smart Nitrogen-Methanol Lance

High Performance

Smart Technology



Smart Nitrogen-Methanol Lance:

- Reduce rejects and rework
- Allow preventive maintenance
- Support a reliable, homogeneous atmosphere over time
- Improve methanol cracking
- Industry 4.0 integration



Air Products' Smart Nitrogen-Methanol Lance keeps you informed in real time about pressure and temperature. By knowing the status of your lance, maintenance can be scheduled proactively, reducing downtime and keeping your system running at peak performance.

In carburising and hardening processes as well as in annealing applications of steel, a constant atmosphere composition with low amount of oxidising components is required. Both types of typical atmosphere supply modes, endogenerated atmosphere and nitrogen/methanol, have these oxidising components due to thermodynamic reactions. However, in nitrogen/methanol, the creation of H_2O and CO_2 can be reduced by proper methanol injection and adjustment of the lance inside the furnace. This helps to provide a more consistent atmosphere, reduces the amount of enrichment gases like propane and prevents lance blockages due to cracked residuals.

A particularly uncontrolled blockage or damage leads to a non-uniform carburised load and therefore to rework or scrap metal. In addition, an uncontrolled shut down of the furnace, including troubleshooting, means a loss of production and high labor costs for repair.

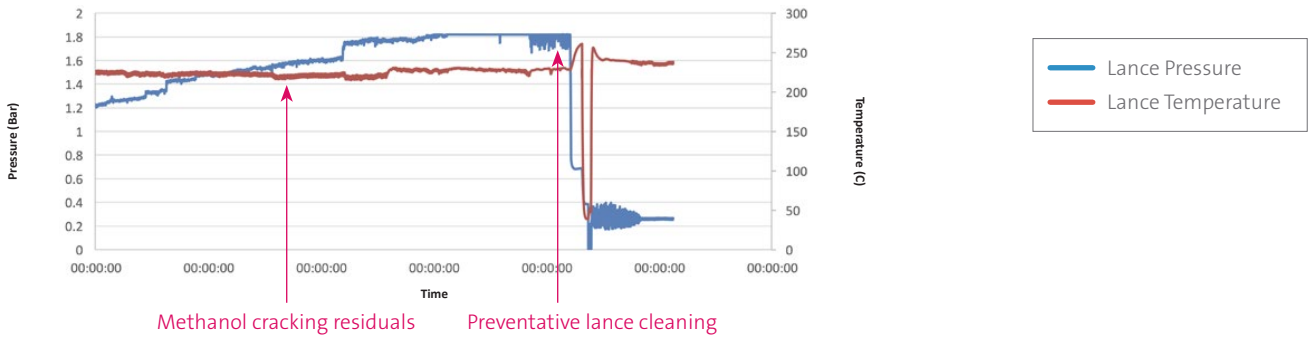
The aim of the new lance developed by Air Products is to optimise the carburising atmosphere, as well as to help operators monitor the operation of their furnaces and thus the operating costs.

Features

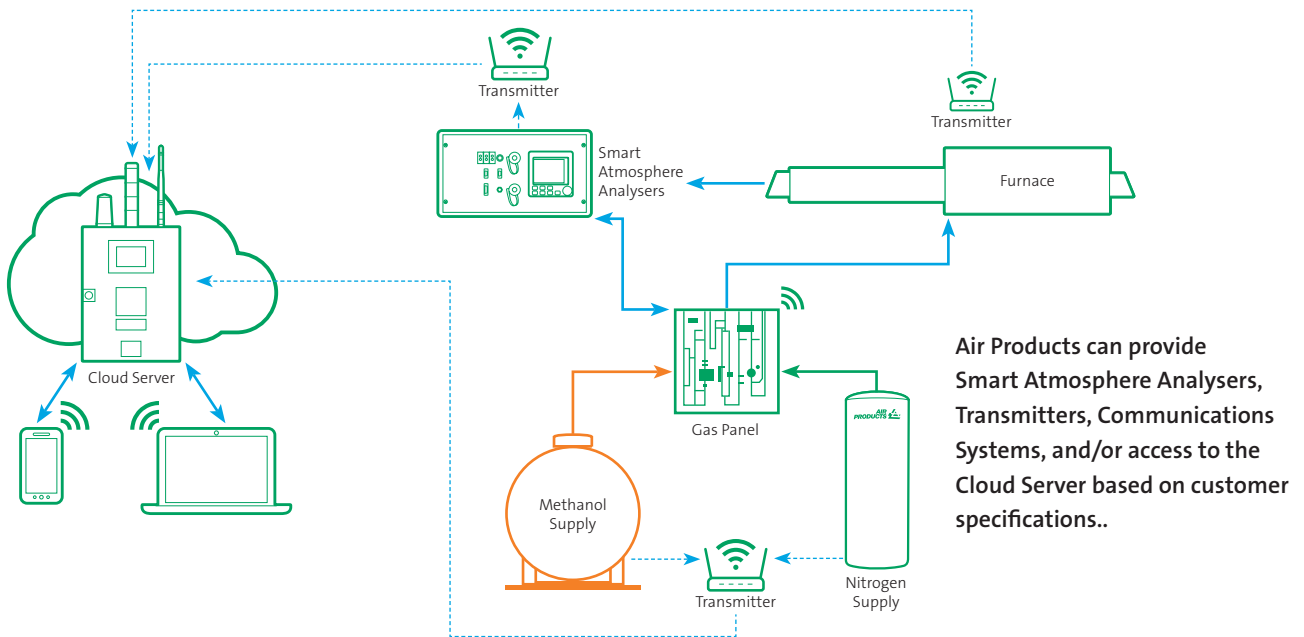
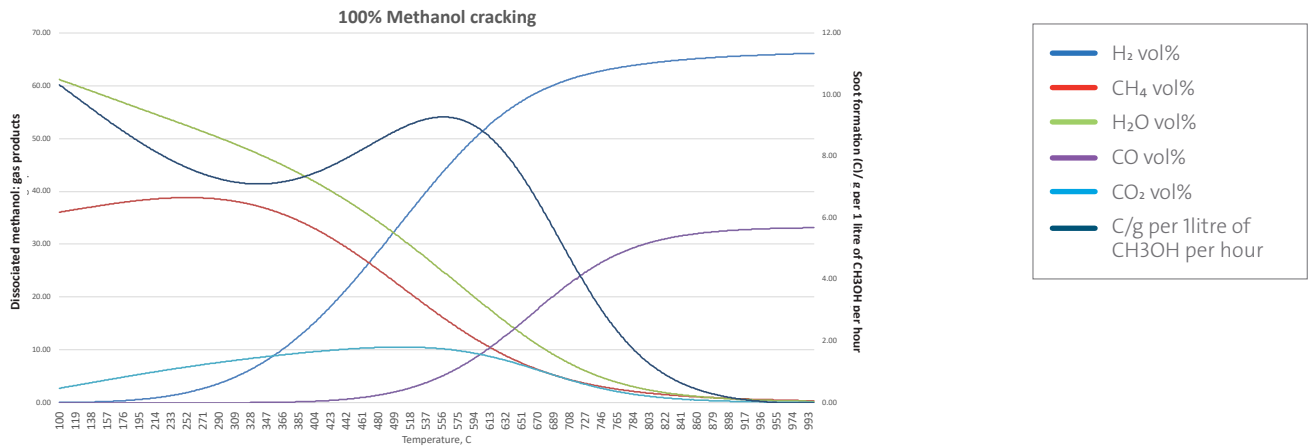
- The Air Products Smart Lance measures the pressure and temperature of nitrogen and methanol inside the lance
- The new N_2 /methanol nozzle creates a fine methanol mist for perfect cracking results



Lance Pressure: Result of a wrong positioned lance operating at high methanol temperature



Methanol Cracking: Vaporisation and cracking of methanol below 750°C causes significant sooting



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