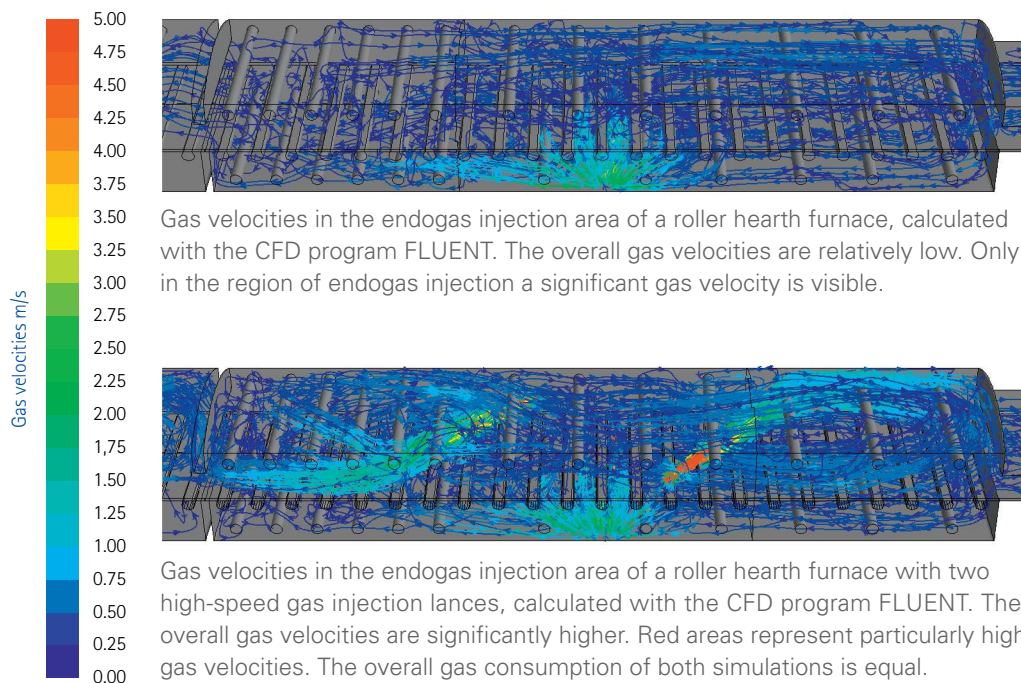


Messer High-speed Gas Injection Technology.

For advanced heat treatment.



Gas velocities in the endogas injection area of a roller hearth furnace, calculated with the CFD program FLUENT. The overall gas velocities are relatively low. Only in the region of endogas injection a significant gas velocity is visible.

Gas velocities in the endogas injection area of a roller hearth furnace with two high-speed gas injection lances, calculated with the CFD program FLUENT. The overall gas velocities are significantly higher. Red areas represent particularly high gas velocities. The overall gas consumption of both simulations is equal.

Description

Messer's high-speed gas injection for advanced heat treatment is a patented technology which allows for better gas convection in heat treatment furnaces without fans. By injecting small amounts of nitrogen at high velocities into several parts of a roller hearth furnace, high-speed gas injection creates a movement in the furnace gas to ensure homogeneous gas and temperature distribution. High-speed gas injection can be installed in every continuous furnace for neutral annealing, carburizing and decarburizing. High-speed gas injection can also be used in pit furnaces for wire annealing with nitrogen or natural gas/nitrogen mixtures.

Benefits

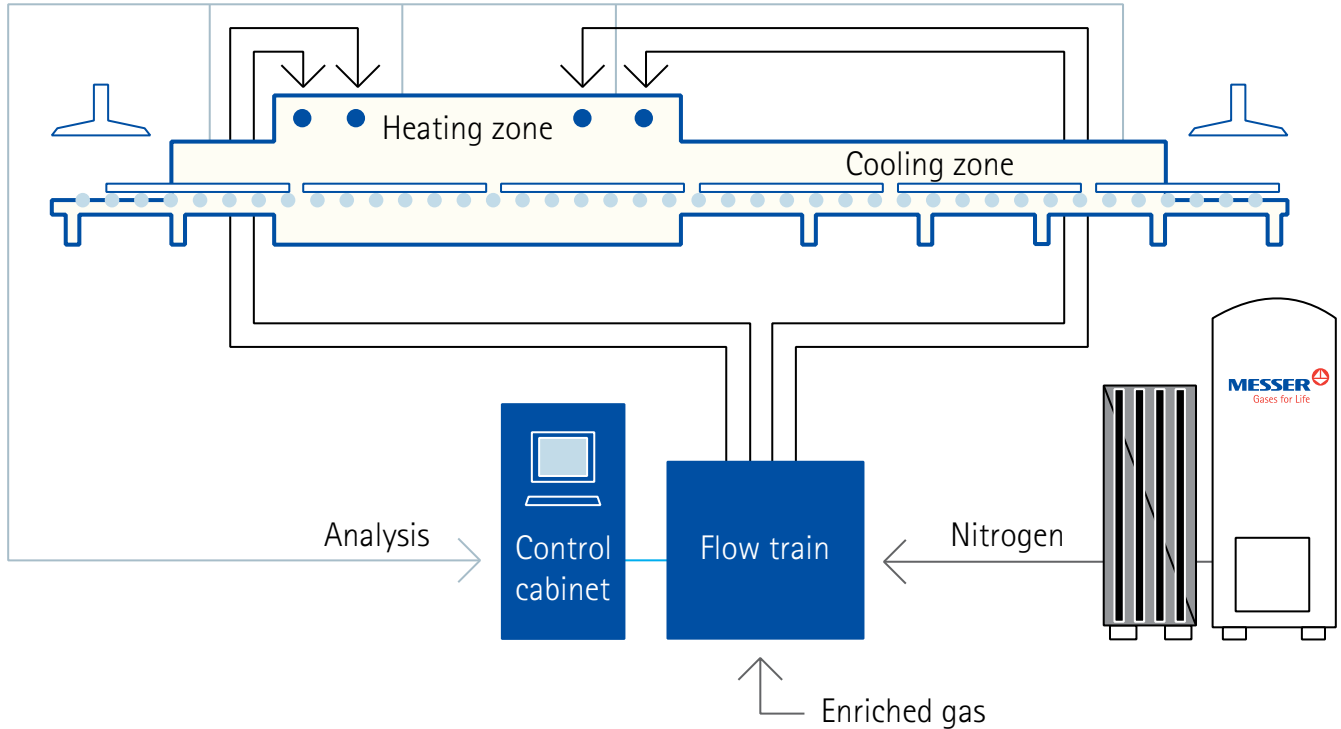
- Homogenizes product quality of annealing and other heat treatment furnaces using endogas, exogas or monogas
- Increases the utilization of carburizing gases and reduces the soot formation in heat treatment furnaces (such as roller hearth furnaces and walking beam furnaces)
- Increases heating rate and cooling rate
- Increases the carbon transfer on material surfaces due to forced convection of protective gases
- Allows a faster switch of atmospheres
- Allows the use of higher carbon potentials due to advanced premixing of gases
- Optimizes the heat transfer in furnaces with convective heating

System

The system consists of one or several high-speed gas injection lances with piping and flow train. The number of lances is adapted to the furnace size and the existing gas consumption. The lances can be controlled manually or

through a high-speed gas injection control unit. The specially designed lances are made of heat resistant material to ensure a long lifetime. In order to provide tailor-made solutions, Messer adapts its high-speed gas injection systems to individual customer needs. High-speed gas injection is applicable to any continuous furnace for heat treatment. Messer has extensive experience using high-speed gas injection in roller hearth furnaces and walking beam furnaces.

Roller hearth furnace with Messer's high-speed gas injection



Atmosphere supply

Nitrogen can be stored in and supplied by on-site liquid tanks, but Messer also offers competitive on-site gas production units. In order to allow for higher carbon potentials, acetylene, propane or natural gas can be added through high-speed gas injection lances. Propane is supplied in tanks or cylinders, acetylene is supplied in cylinders or bundles.



Messer Americas
 200 Somerset Corporate Blvd
 Suite 7000
 Bridgewater, NJ 08807
 Phone: 1-800-755-9277
 sales@messer-us.com
 www.messer-us.com



Part of the Messer World

Copyright 2019 Messer North America, Inc. All rights reserved.