

Injection technology for steel desulphurization in RH vacuum degassers (“top blowing”)



thyssenkrupp



Precision work for every requirement

Flexible – effective – cost-efficient

The production of **high-quality steel grades** requires **low sulphur** concentration in the final product. An effective way to reduce sulphur is the desulphurization of liquid steel during vacuum processing in **RH degasser**. A proven method is the injection of a powder mixture (composed of a desulphurization reagent and a slag conditioner) into the vacuum chamber. The mixture is **sprayed on the melt surface** via the top oxygen lance (“top blowing”). thyssenkrupp Industrial Solutions provides advanced injection technologies powered by high-quality, durable and future-proof equipment with highest degree of automation.

A large portfolio of high-quality steel grades contributes to stable profits of steelmaking companies in times of overcapacity. Furthermore, ongoing heavy competition in terms of price promotes technologies which are efficient and economic in operation.

For the desulphurization of liquid steel, the injection of pulverized burned lime (CaO) mixed with a slag conditioner (aluminum oxide, fluorspar, cryolite) offers good performance. The mixture can be delivered ready for injection, or made in-house by the injection system.

The high equipment quality promises safe and reliable operation for decades and at low maintenance costs. The heart of the desulphurization system and guarantor for process efficiency and economy is the pneumatic injection conveyor DP with PLC-based injection control system MEPOL.

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Fields of application

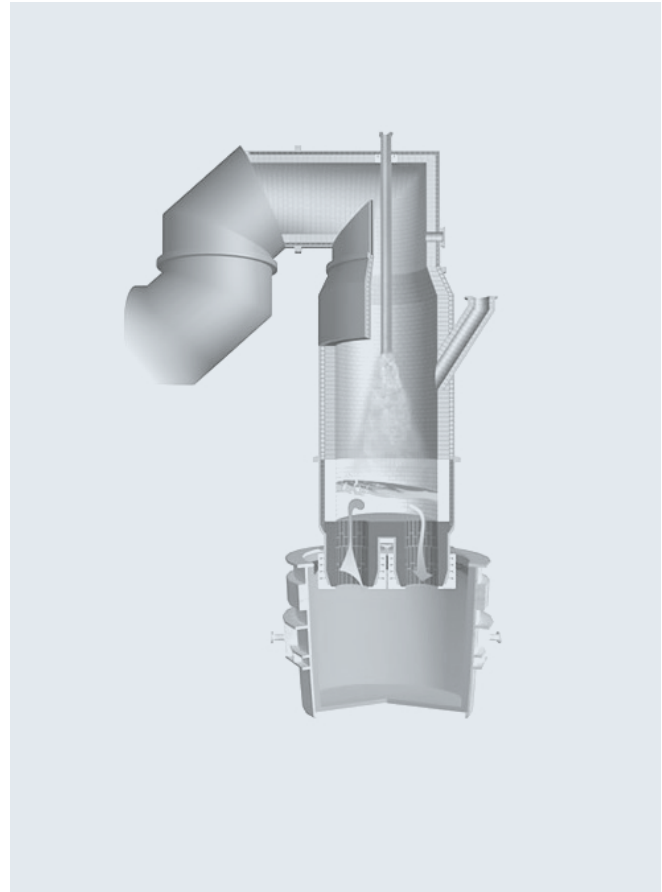
Desulphurization of liquid steel
(Decarbonization of liquid steel with CaCO_3)

Main features

Customized & tailored system layout
High adaptability to production needs
Low consumption of reagents
High throughput/performance
Short processing time
Reproducible process results
Use of existing top oxygen lance for injection
Durable equipment; low maintenance

Design parameters

Any heat sizes
Annual throughput per station: up to 2 million tons
Injection rates up to 250 kg/min
Ultra-low final sulphur content (≤ 10 ppm)
Mixture components CaO , Al_2O_3 , CaF_2 , $\text{Na}_3[\text{AlF}_6]$
Stable reaction products – no re-sulphurization



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