...from a single source – right down to the details.

Hot metal desulphurisation plants.

Polysius offers turnkey hot metal desulphurisation plants which are precisely tailored to the production range of the respective steel works. All the plant components come from a single source, ranging from the tank vehicle unloading station via the silos for storing the desulphurisation reagents, the dispensers, the injection systems, the lance insertion and lance changing units, the slag skimming machines right up to the control room and electrical equipment, the MEPOL pressure-vessel conveyors and the metallurgical process computers. The Polysius scope of supply also includes the extension, modernisation and optimisation of existing hot metal desulphurisation plants, as well as field assembly, commissioning and such services as plant and process inspection.
Economical hot metal desulphurisation plants from Polysius – the market leader.

The prediction of high-grade steel qualities is no longer conceivable without targeted desulphurisation of the hot metal in ladles outside the blast furnace priories.

For hot metal desulphurisation outside the blast furnace, the dip-lance method is the most reliable and the most economical metallurgical process. For this reason, most steel plants worldwide reduce the hot metal’s sulphur content in charging and transfer ladles with the dip-lance injection process.

Process technology

With modern dip-lance pro-
cesses it is possible to desulphurise hot metal desulphurisation in a pneu-
matic injection of the-grained desulphurisation reagents into the molten metal with high mixing precision so refractory devices. This causes an intense mixing of the desulphu-
risation reagents with the hot metal. This dip-lance method can reliably reduce the sulphur content of the hot metal in figures as low as 0.001%.

It allows the use of several desulphura-
tion reagents, such as lime, calcium car-
bonate and magnesium, which remove the sulphur from the hot metal by chemical reaction and convert it to the slag.

There are many ways of con-
trolling the dip-lance processes to minimise the operating costs. One is to vary the desulphurisa-
tion processes so that batch operation is possible which must take account of the fact that the effectiveness of desulphurisation is not only a function of the desulphurisation injection site. Another way is to inject differ-
ent desulphurisation reagents during one hot metal treat-
ment session. The reagents can be injected into the molten metal individually, simultane-
ously or at injection intervals with the 
Monoinjection, Co-
Injection or Multi-injection pro-
cesses.

Which of the above processes causes the lowest operating costs depends on the opera-
ing and production conditions (such as the weight, tempera-
ture and sulphur content of the hot metal, the required fluid pressure, the blast furnace slag and the injection time), which can vary from charge to charge.

The selection of the optimum injection process according to the production conditions is a comprehensive knowledge of the necessary process knowhow. In today’s computer-aided hot metal desulphurisation process the quality of the process is thus determined by the quality of the metallurgical process computer and thus by the (proprietary) process knowhow.

Due to the large number of plants already supplied, Polys-
ius possesses comprehensive metallurgical knowhow. This is implemented in the metal-
lurgical process computer – and thus benefits all ma-
time customers all around the world. The metallurgical process computer calculates math-
ematical equations which reflect the regulations of hot metal desulphurisation so that every hot metal charge is individually desulphurised with the optimum process.

In plants designed by Polysius, such important components as the discharge control valve and the pressure controller are made of wear-
resistant ceramic to ensure a high plant avail-
bility in a Chinese steel plant. MEPOL principle.

Process technology

For economical operating costs of the hot metal desulphurisation process, Polysius offers a special injection technology under the proprietary name HERPS.

The core item of the HERPS technology is the process-oriented control with the harmonised measurement and control units for measuring, monitoring and controlling all operating param-
eters that have an influence on the process and the dosing precision.

Thus the Polysius HERPS technology ensures a high dosing accuracy for each desulphurisation reagent during the whole injection process.

Combined with the metallurgical processes this system ensures the cost-optimised desulphurisation of each hot metal charge.

High operating reliability and plant availability in combination with favourable operating costs and high process fluidity are the most important criteria for the quality of the hot metal desulphur-
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Injection lance in the lance insertion unit after the injection procedure.

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Metallic process computer in the control room. (Centre) Slag skimming machine – also remotely controllable from the control room.

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Hot metal desulphurisation plants.