Controlling gases precisely for reproducible steel qualities
Molten metal treatment in secondary metallurgy places extensive demands on the converters or ladle furnaces applied. During the entire treatment, inert gases such as argon or nitrogen are introduced into the molten metal through floor nozzles in order to ensure it is mixed continuously. Mass flow controllers (MFCs) are responsible for the precise flow of these gases.

Do you want to control purging gases reliably and with very little effort? Are you looking for a solution that can be integrated quickly and makes your plant fit for the future? Discover more on the following pages about the advantages of Bürkert mass flow controllers.
/ Reliable gas supply / Exact gas control for molten metal treatment increases not only the service life of your ladle furnace. It is also necessary to ensure you can produce a wide range of steel qualities.

Conventional solution
Manual gas control during molten metal treatment is complex and not reproducible:
If the flow demand increases, the steel operator increases the purging gas supply. The high-pressure bypass is used for increased back pressure inside the ladle - caused by clogged purging plugs.

Caution
- Spatter can damage ladle lids and linings.
- If the slag breaks open during purity purging, the process is prolonged.
- Stress causes the furnace walls to clog and leads to wear and tear.
Flow control — Solution

/ Controlling gas precisely / Bürkert mass flow controllers (MFCs) ensure reproducible bottom gas purging. This allows you to set the flow rate automatically and with high repeatability. Thanks to the high control range, the mass flow of large gas quantities can be controlled precisely. If required, the MFC also controls high levels of pressure, thereby eliminating the need for a high-pressure bypass. This guarantees consistent quality and also protects your plugs. The digital version provides you with additional diagnostic functions and increases the efficiency of your processes.
Modernise your molten metal process quickly and easily with Bürkert MFCs. And there is no need for a high-pressure bypass – as this specification is already integrated in the high-pressure MFCs. This also facilitates start-up.

Digitisation of your gas control system provides you with all the aforesaid advantages and ensures your system is fit for the future in every respect. All data and measured values are available and documented at all times. This guarantees that your processes are reproducible. You can monitor several plants at the same time, which saves resources and ensures your independence. The elimination of ball valves and the lower overall number of components also mean: Less cabling and maintenance efforts. In addition, you save process gases, as everything is controlled precisely.
Plug-and-play systems: Why install individual MFCs when you can have a tailored system for your molten metal treatment in steel production? Be it a distributed solution or installed in a robust control cabinet: We assemble your gas mixing unit exactly according to your requirements – while you save time and money. The compact unit consisting of space-saving mass flow controllers arranged side by side, including valves, can be integrated into your plant in no time at all.

Automation saves time: Bürkert MFCs allow you to accurately control the flow of purging gases such as argon. This saves you time as your process basically runs without delays.

Conventional solution
- 70 mins per batch (on average)
- Approx. 9 manual interventions per batch
- 10 batches a day

Bürkert solution
- 45 mins per batch (on average)
- 0 manual interventions per batch
- 16 batches a day

You save 25 minutes per batch.
You can produce 6 additional batches each day.

Automation saves gas: Compared to the conventional solution, the automated control system saves around a quarter of the purging gas, shown here using argon as an example. You can use the saved gas for further batches – thereby optimising your profit.

12 Nm³ of Ar per ton of steel
1 batch: 95 t of steel = 1140 Nm³ of Ar

9 Nm³ of Ar per ton of steel
1 batch: 95 t of steel = 855 Nm³ of Ar

285 Nm³ of argon are saved
With these savings, up to 3 more batches could be supplied.
Flow control