



system integrat

integrat vario gt

Dynamic cavity temperature control with CO₂



Brand-new perspectives and possibilities are offered by the dynamic temperature control with CO₂. This new and environmentfriendly procedure really provides a solution for heating and cooling of complex and thinwalled moulded parts. By using gaseous media for heating and cooling processes, soiled cooling channels are now a thing of the past. Basically it is true that gaseous media have the disadvantage to be bad heat carriers.

This applies at least to air that is only used for cooling processes under special circumstances. But in contrast, if the opportunities of CO₂ are exhausted properly, it offers an interesting alternative to conventional water temperature control.

Cooling with CO₂ is sufficiently tested and well-known. The high enthalpy of evaporation of the injected fluid accompanied by a temperature of -76°C offers an extremely efficient heat transfer. As far as cooling of long and thin cores or of narrow bars is concerned, cooling with CO₂ has already been applied with great success for many years. Nevertheless, the new feature is that heating is also possible with gaseous CO₂. In the vario gt CO₂ is compressed to a suitable pressure and heated close to the mould cavity.

In contrast to steam water and hot steam the medium is uncritical even in case of high temperatures. It does not tend to deposits and corrosion and has got excellent heat transfer characteristics, facts that make it ideal for dynamic temperature control. The high temperature gradient between hot and cold media is unrivalled and promises minimum cycle times.

The positive environmental effects are also an important benefit: The CO₂ applied is an extract of by-products from chemical processes, which would normally be emitted directly into the environment. Thanks to a new technique developed by Linde, ISK and gwk, however, it is refined and thus becomes suitable for the dynamic temperature control of narrow and otherwise inaccessible mould sections and complex part geometries.

In contrast to all other techniques, this temperature control method does not put any requirements on the cooling system, neither in terms of temperature, pressure, volumetric flow rates or water quality. The waterless temperature control is very well-suited for applications under clean-room production conditions.

