Technical News Bulletin

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360° Auxiliary Blow Mold Cooling for the NIS machine

Although the blow side VertiFlow cooling system is a very efficient cooling system, some container productions are limited by the blow mold cooling. The 360° auxiliary blow mold cooling offers a simple and reliable way to increase the cooling capacity up to 30% by supplying the outer cooling bore row during 360° with air.

The auxiliary cooling system is designed to work in addition to the existing well proven blow side VertiFlow cooling system. Combining auxiliary cooling and VertiFlow offers additional benefits:

- Higher cooling efficiency of up to 30%   Speed increase potential
- Possibility to influence the vertical   Optimized cooling conditions
  and horizontal temperature profile   = better glass distribution
- Reduced variation in temperature
  during the cycle   Longer mold life
- Modified molds can be used for   Interchangeability ensured
  Vertiflow operation without restrictions   = no additional mold costs
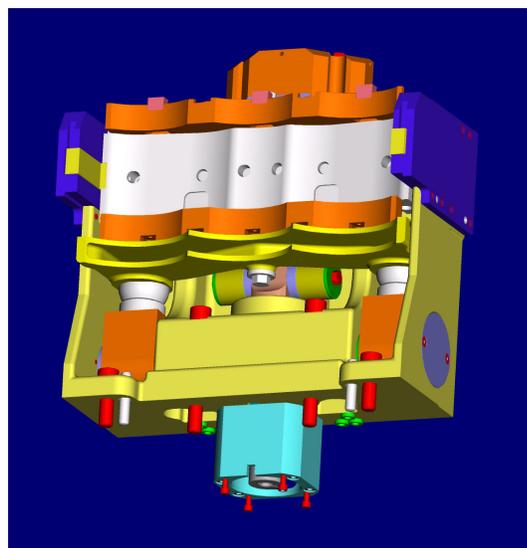

Figure 1 – 360° Auxiliary cooling mounted in the Mold Open Close mechanism

System Description

The new 360° auxiliary cooling system supplies air from the sides to the outer cooling bore row. The air supply is done via a telescopic tube which is mounted in the MOC actuator housing by a joint and a flange. The tube allows supplying air during 360°, including mold traveling and in the open position. A plenum chamber guarantees the even distribution of the air on the bores. The air supply can be timed by one on/off per side. The system set-up is illustrated in Figure 2.
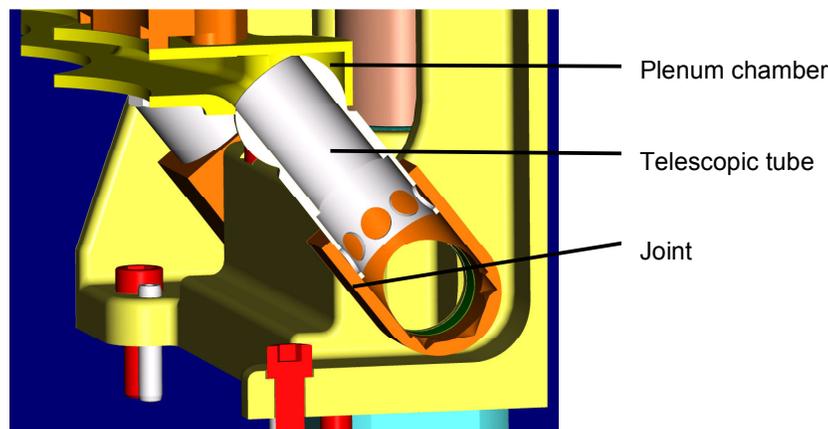
Plenum chamber

Telescopic tube

Joint

Figure 2 – Details of 360° auxiliary cooling mounting

In order to supply the air from the plenum chamber to the outer bore row bores have to be drilled perpendicular to the cooling bores, as shown in Figure 3 for an IS mold. These bores should have about the same diameter as the cooling bores. With this set-up it is possible to supply all bores of the second row except the most outer ones. If the 360° auxiliary cooling is not used and not mounted, the molds can be used on standard VertiFlow systems without any restrictions.
Alternatively a cut out can be used to supply the bores. However there will be an influence on VertiFlow performance when not mounting the auxiliary cooling.

![BUCHER emhart glass]

Figure 3 - Implementation of supply bores in the mold using bores (left – example for an IS type machine) and a cut out (right - example for an NIS type machine)

Specification

The 360° auxiliary blow mold cooling system can be ordered together with new NIS machines for 5``TG and 6 1/4``DG.
95mm QG operation is strongly restricted and is therefore currently not offered.
The cooling equipment has to be specified according to drawing 400-5199. Furthermore the blow side actuator 400-5197-02 and the cooling air supply 400-5231-01 are needed.
Whether existing machines can be retrofitted, depends on the specification of the machine and is therefore decided on a case to case basis.

Installation

In order to operate the auxiliary cooling the operating air has to be supplied to the on/offs. Two additional valves and timing events have to be available.

Ware Range

The plenum chamber of the 360° auxiliary cooling is mounted below the carrier of the MOC. The 35mm high chamber has to be fitted at the outer surface of the mold. This causes ware restrictions especially for QG operation.

Features and benefits

Higher cooling efficiency up to 30%	→	Speed increase potential
Possibility to influence the vertical and horizontal temperature profile	→	Optimized cooling conditions and better glass distribution
Reduced variation in temperature during the cycle	→	Longer mold life
Existing molds can be easily modified for auxiliary cooling operation	→	Very low transition costs
Modified molds can be used with and without auxiliary cooling	→	Interchangeability is ensured = no additional mold costs

References

Auxiliary cooling assembly drawing	400-5199
Listed on "Accessories for NIS machine"	400-52-00
Blow side actuator	400-5197-02
Cooling air supply	400-5231-01