ADDITIVE MANUFACTURED TOOLING INSERTS
for high pressure die casting (HPDC)

RECOMMENDATIONS FOR OPERATION & MAINTENANCE

- Use high-temperature media for cooling. Excessively low die temperatures in hot work steels can reduce ductility (toughness), which is crucial for die lifetime (e.g., resistance to heat checking, cross cracks). Cold water can sharply lower die temperature.
- Conformal cooling can significantly improve heat transfer from the tool surface. As a result, spraying time can often be reduced compared to conventional inserts.
- Conformal cooling channels can vary in size, sometimes as small as 2–3 mm. Ensure sufficient filtering of the cooling medium. For mechanical filters, use a 100-micron mesh. The voestalpine Cooling Liquid Filter is perfect for this.
- Pressure drops can occur due to varying cooling-channel dimensions. Use separate or additional cooling channel pump units to optimize flow rate and cooling medium temperature in each line.
- Conformal cooling channels can be close to the tool surface. Control and monitor cooling medium temperature and flow rate. Recommended flow rates: 1–10 l/min for 2–6 mm channels; 10–30 l/min for 6–10 mm channels.
- Check die channels for debris, lubricant, or other foreign objects before operation.
- Use thermally insulated hoses for tempering lines between the tempering unit and the die.
- Inspect fittings for blockages or restrictions that could limit the flow of the cooling medium between the tempering unit and the die.
- Ensure the cooling medium is maintained to maximize heat transfer. Additive dosing regimens must be followed, and the medium rinsed or changed per supplier recommendations.
- Prevent scale build-up in cooling channels to maintain optimal heat transfer. Use treated (softened) water whenever possible.
- Use sufficient water additives to prevent corrosion inside cooling channels.
- Where possible, ensure die cooling circuits are adequately deaerated—oxygen in water increases aggressiveness and can lead to corrosion.
- After each production run, clean the channels with an appropriate descaling chemical (recommended duration: 1–2 hours).
- When storing dies, rinse cooling channels with a corrosion inhibitor and dry them to prevent corrosion during non-use.

Contact our specialists for further support:

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