

AERODRY CONNECT

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Why Are Two Identical Moulding Machines Producing Different Parts?

Dear Partners, Clients & Team,

Imagine two injection moulding machines.

Same polymer | Same mould. | Same operator | Same processing parameters

Yet one produces flawless parts while the other struggles with flash, warpage, inconsistent dimensions and frequent rejections. Why?

The answer often isn't the machine. It's temperature.

While processors spend significant time optimising machine settings and material selection, mould temperature is frequently treated as an afterthought. In reality, it is one of the most influential variables governing part quality, productivity and process stability. An unstable mould temperature doesn't simply affect cooling - it changes shrinkage, crystallisation, surface finish, dimensional accuracy and cycle consistency.

In this edition of **Aerodry CONNECT**, we explore why precise mould temperature control has become a competitive advantage for modern plastics processors - and how the right MTC can transform process stability from the first shot to the millionth.

Because great parts aren't made by chance.
They're made at the right temperature.

– Aerodry Team



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Let's Talk Temperature Control

The Hidden Cost of Temperature Fluctuations

Temperature isn't simply another process setting. It is one of the most influential variables affecting part quality, production efficiency and profitability. While processors often focus on injection pressure, holding pressure and material selection, unstable mould temperatures quietly create problems that are frequently misdiagnosed as machine or tooling issues. The result? Higher rejection rates, inconsistent production and unnecessary operating costs.

What Happens When Temperature Isn't Controlled?

Temperature Condition	Impact
Mould too hot	Longer cycle time
Mould too cold	Short shots
Uneven cooling	Warpage
Temperature fluctuations	Inconsistent dimensions
Local hot spots	Sink marks
Poor circulation	Surface defects
Improper cooling	Internal stress
Variable mould temperature	Higher rejection



Every second saved becomes additional production capacity.

Why Stable Temperature Matters?

Maintaining a consistent mould temperature helps achieve:

- Better dimensional accuracy
- Superior surface finish.
- Reduce cycle time
- Reduced shrinkage variation.
- Faster cooling cycles.
- Lower rejection rates
- Improved mould life
- Stable process conditions
- Higher production efficiency

Common Defects Caused by Poor Mould Temperature

- Warpage
- Sink Marks
- Short Shot
- Flash
- Delamination
- Dimensional Variation
- Longer Cycle Time
- Internal Stress

Industry Statistics - Process Temperature Impact

- ✓ Up to 60% of injection moulding defects are linked to improper temperature or cooling conditions.
- ✓ Optimised cooling can reduce cycle time by 15–30%.
- ✓ Poor temperature control increases rejection rates by 20–40% in precision moulding.
- ✓ Cooling accounts for nearly 70–80% of total injection moulding cycle time.
- ✓ Energy losses due to inefficient thermal control can reach 15–25% of processing costs.



DID YOU KNOW?
Reducing cycle time by just 3 seconds on a high-volume production line can result in thousands of additional moulded parts every month - without investing in another machine.

Excellence Defined Uncompromising Quality, Every Time



UNDERSTANDING MOULD TEMPERATURE CONTROLLERS

Precision Heating & Cooling for Process Stability

Mould Temperature Controllers regulate mould temperature using controlled circulation of water or thermal oil. Closed-loop systems ensure uniform heat distribution and stable process conditions.

How MTC Systems Work?

1. Heating medium circulates through mould channels
2. PID Sensors monitor temperature continuously
3. Controller adjusts heating or cooling automatically
4. Uniform thermal conditions maintained inside the mould

Types of MTC

Water Based Temperature Controllers

- Fast heat transfer
- Energy efficient
- Suitable for standard applications
- Easier maintenance

Oil Temperature Controllers

- Higher operating temperatures
- Suitable for specialised applications
- Used for engineering plastics / elastomers
- Ideal above water boiling range

Industries Where MTCs Matter Most

- Automotive
- Medical
- Packaging
- Electrical & Electronics
- Consumer Appliances
- Engineering Components

Real-World Example

An automotive component manufacturer facing warpage and dimensional inconsistencies implemented an Aerodry MTC and achieved:

- 40% reduction in rejection rates
- 4-second reduction in cycle time
- Consistent part dimensions across all cavities
- Higher productivity with improved process stability

Meet the Aerodry MTC Series

Designed for precise thermal management across a wide range of plastics processing applications. Automotive

Key Features

- Heating capacity up to industrial-grade requirements
- High-efficiency circulation pumps
- PID temperature control
- Rapid heating & cooling response
- Stainless steel water circuit
- Multiple safety protections
- Easy-to-use PLC/HMI interface
- Compact footprint

Technical Highlights

- Temperature accuracy up to $\pm 0.5^{\circ}\text{C}$
- Quick response to process changes
- Energy-efficient operation
- Continuous circulation
- Automatic temperature monitoring
- Reliable performance for 24x7 production



DID YOU KNOW?

A reduction of just 3–5 seconds in cycle time can significantly increase annual production capacity without adding new machines.

More than 60% of moulding defects can often be traced back to poor process control - including improper mould temperature management.

Precision Temperature. Process Confidence.

Aerodry **MTC Series**
Reliable Mold Temperature Controllers

-  Precise Temperature Control
-  Stable Performance
-  Process Protection
-  Built for Productivity



Five Common Temperature Control Mistakes

- ✗ Using the same mould temperature for every polymer
- ✗ Ignoring coolant flow rate
- ✗ Poor water quality leading to scaling
- ✗ Delaying preventive maintenance
- ✗ Incorrect controller sizing

Maintenance Tips

- Inspect circulation pump regularly
- Check water quality
- Clean filters periodically
- Inspect hoses for leakage
- Remove scale deposits
- Verify temperature sensor calibration
- Maintain recommended flow rate



QUICK FACT

Many moulding defects are not caused by the machine. They're caused by inconsistent mould temperature.

ROI Focus - Quantifying the Value of Integration

Where ROI Comes From

- **Reduced Material Waste** - Closed conveying prevents spillage, contamination, and incorrect loading.
- **Lower Labour Costs** - Fewer manual transfers and less operator dependency.
- **Higher Machine Utilisation** - Machines no longer wait for material availability.
- **Reduced Rework & Scrap** - Consistent material quality reduces rejection rates.
- **Energy Efficiency** - Optimised drying and conveying minimise unnecessary energy use.

Typical Payback Timeline

Improvement Area	Typical Impact
Material loss reduction	1–2% savings annually
Productivity increase	10–20%
Downtime reduction	100%
ROI payback	6–12 months

A well-designed integrated system typically pays for itself through operational savings and efficiency gains.

Integrated material management transforms daily plant operations from reactive troubleshooting to predictable performance.



Aerodry at GCPRS 2026

Aerodry was delighted to be a part of Global Conclave on Plastics Recycling and Sustainability (GCPRS) 2026. The event brought together industry leaders, recyclers, and innovators to discuss the future of sustainable plastics and the circular economy. It was a great opportunity to exchange ideas, showcase our processing technologies, and connect with professionals driving the future of plastic recycling. We look forward to continuing these conversations and contributing to a more sustainable industry.



Q1 Sales & Service Performance Review Meet FY27

Aerodry's Q1 Sales & Service Performance Review Meet brought together all the teams for two days of collaboration, learning, and recognition.

From strategic discussions and market insights to team-building activities and our Awards Distribution Ceremony, the event celebrated achievements, strengthened teamwork, and aligned everyone towards our goals for FY27.

The event reinforced our shared vision, strengthened team spirit, and set the tone for a successful year ahead

From Aerodry Product Desk

Temperature control is no longer just about heating water.

It is about ensuring every mould receives the right temperature at the right time - every cycle, every shift and every production run.

Aerodry MTCs are engineered to deliver reliable thermal control with precision, helping processors reduce defects, improve efficiency and maximise machine utilisation.

Because when temperature remains stable, everything else becomes more predictable.

Let's Talk Temperature Control

Whether you're experiencing warpage, sink marks, inconsistent dimensions or extended cooling cycles, Aerodry's application engineers can help identify the right thermal management solution for your process.

From standard Mould Temperature Controllers to customised temperature control systems, we deliver solutions designed around your application - not just your equipment.

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