



**AW-LAKE**  
PROCESS FLOW MEASUREMENT



**APPLICATION SPOTLIGHT**  
Temperature Control in Metal Die Casting



## Temperature Control in Metal Die Casting



### APPLICATION:

Magnesium heat sinks are used to cool electronic circuitry installed in medical, automotive, and industrial applications. Thermal management is important to cool electronic circuitry to avoid failure. The magnesium sinks surround and seal the electronic circuitry to control temperatures. The heat sinks are manufactured in molds during a metal die casting process. Multi-channel temperature control of the die casting molds prevents mold corrosion and wear while ensuring a high-quality product is consistently manufacturing during the shortest production cycles.

### PRODUCT SUPPLIED:

- TRP High Temperature Turbine Flow Meters
- Inductive Pulse Amplifiers

### CHALLENGE:

Multi-channel temperature control guarantees exact control of each temperature control zone in the die casting mold to consistently produce high-quality sinks in the shortest cycle times. The focus is on the individual use of each separate channel. The cooling impulses are recalculated for each cycle depending on the return temperature of the thermal oil. A corresponding layout of the distributor components is required since the thermal oil reaches high temperatures up to 662°F (350 °C).

### SOLUTION:

Four AW-Lake TRP Turbine Flow Meters are used to monitor the temperature control circuit. Positioning the Flow Meters in every channel enables operators to regulate the temperature of each individual circuit and verify the insights gained from complex simulation procedures in engineering. Linking the meters with Inductive Pulse Amplifiers (IF Series) that convert the low amplitude signal into one readable and and compatible with the customer's control unit. Thanks to their premium construction (components and materials), the high fluid temperature is no problem for the TRP Turbine Flow Meters. What's more, the low weight of the impeller supports fast response times and short cycle times. Positioning the Flow Meters in every channel makes it possible to regulate the temperature of each individual circuit, simultaneously verifying the data previously gathered from complex simulation procedures in engineering.

### PRODUCT SUPPLIED:

- Thermal oil temperature control up to 662°F
- Temperature control units for magnesium die casting (avoids highly explosive magnesium-water reactions)
- Cost-effective flow rate measurement of temperature control circuits
- Verification of data from previous simulation procedures