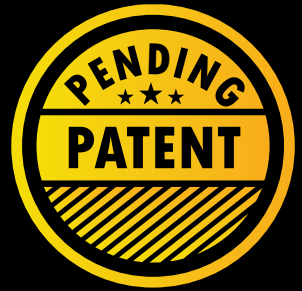




# PICCO®



## TEMPERATURE CONTROLLER

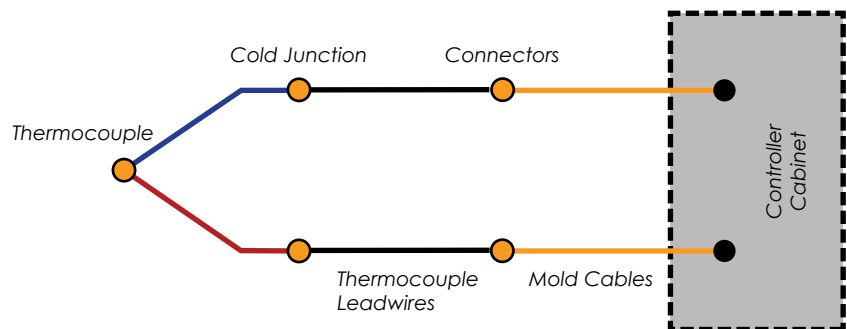
**In this white paper we will present some of the comparison between conventional temperature controller, together with our new patent pending PICCO® temperature controller and its benefits.**

Conventional temperature controllers mainly uses Proportional or PID controls with some comes with soft start controls working together with a series of mechanical and solid state relays in each of the control zones to supply heat. PID is one of the most popular methods of measuring temperatures due to its accuracy and stable control of temperatures in the plastic industry.

All these controls are dependent on the feedback from RTD/ thermocouples and the accuracies of the readings can be affected by its location of the sensing point and their material. They are usually housed in bulky cabinets that take up space in the already crowded injection machine areas. Taking a closer look at our RTD/thermocouples one of the most commonly used standard in the plastic industries are the "J" type thermocouples. Thermocouples are essentially making use of 2 different materials device that when heat are introduced it creates a potential difference at its measuring junction which is like converting heat energy into electrical energy measured in mV. Because the voltage is small, amplifiers have to be used to amplify the signals in order not to let the surrounding noises drowned out its signal and the conventional way of measuring temperatures from the sensing point to the temperature controllers have to run through long cables to relay the signals. In the temperature controllers these signals are then converted into digital display in the controllers.



Examples of 2 zones controller



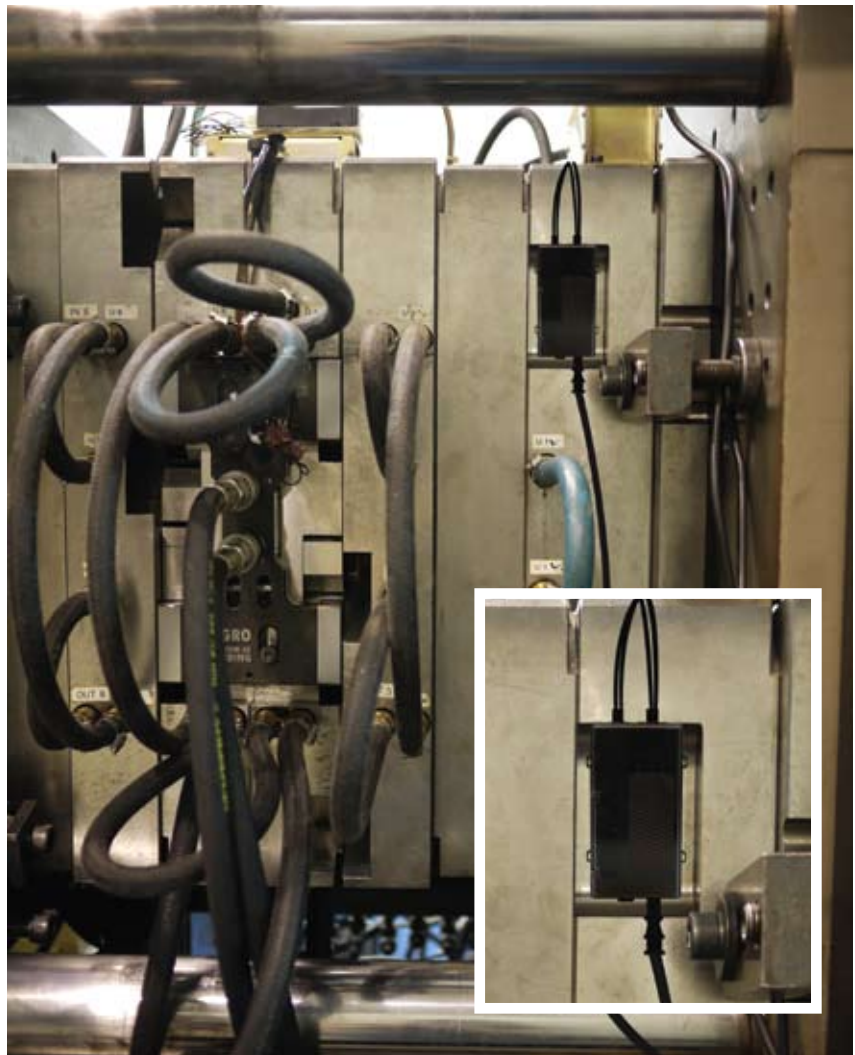
Example of controller with mold and power cable

Different controller makers use different types of mold connectors which whenever there is any change of controllers the mold connector will have to be changed. When human errors occur it may result in thermocouples wires wrongly connected to the heater supply and getting them shorted out which can be costly and time consuming. Any adjustment of the processing temperatures requires trained technicians.

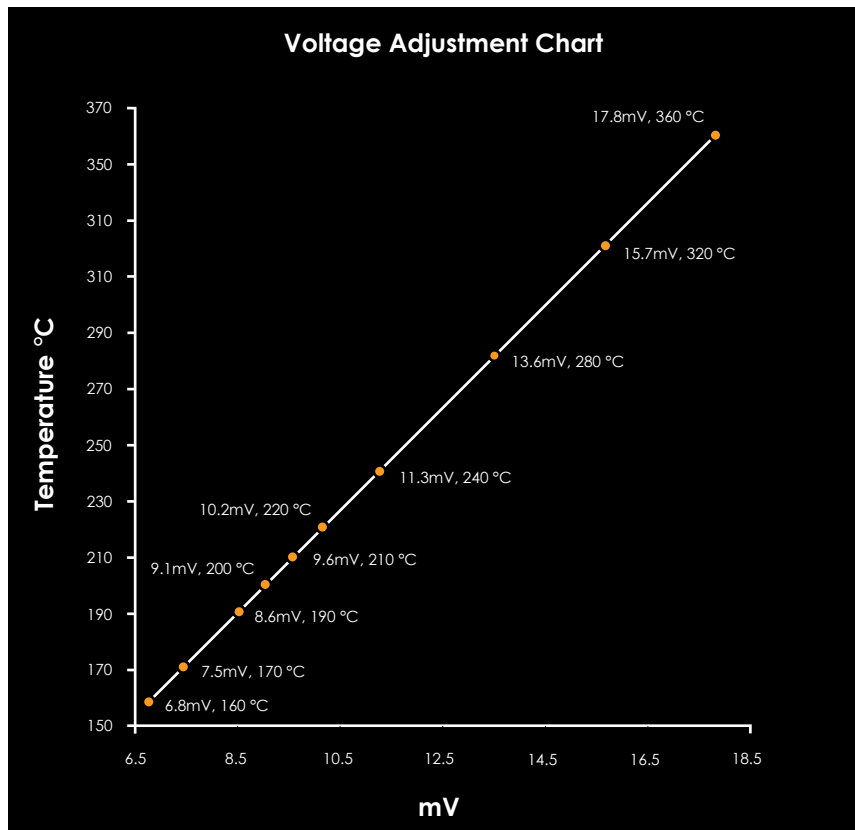
PICCO®'s design is based on the concept of a compact system that no external mold cables and bulky cabinet are needed. Each PICCO® controls 2 zones and the unit itself can be mounted directly onto the tool which not only saves space but it is also cost effective as after attaching to the tool the controller follows wherever the tool goes e.g. exported to other countries etc and also helps to reduce the need for any additional controllers that need to be standby in the event heat is needed to remove or service the hot runner outside the production floor or rewiring work in the event any change of the controllers.

As we know thermocouple produces a specific millivoltage at a specific temperature; therefore PICCO® can achieve accurate reading by taking the feedback of the amount of voltage (mV) against actual temperature to achieve the required temperature accurately (please see Voltage Adjustment Chart). Using our proprietary technology we can supply accurate and consistent temperature to the heaters similar to PID controls. PICCO® has 5 preset temperatures which cover a wide range of commonly used plastic materials processing temperature for the plastic industries for both technical and consumer parts. This gives the convenience of not having to set the temperature each time after the tool is down from the machine.

The controller comes with "WAIT" function which is about 70% of processing temperature to function as both startup and standby temperature instead of soft start controls for the heaters which may take up anywhere between 10 to 20 minutes to complete the soft start process before going into auto heating mode. By removing the need for long mold cables the temperature reading are accurate as there will be much less interference from external noise from stray electrical and magnetic fields.



*Picco mounted on a production tool*



PICCO® preset temperature range with corresponding mV

Material	Wait Temp	Run Temp	Voltage Ref
POM	160°C	210°C	6.8 - 9.6 mV
PP/ PS/ ABS	170°C	240°C	7.5 - 11.3 mV
PA / PET / PBT	190°C	280°C	8.6 - 13.6 mV
PC / PPO	200°C	320°C	9.1 - 15.7 mV
PPA / PPS	220°C	360°C	10.2 - 17.8 mV

Any need to fine tune the temperature can easily achieved through the 2 calibrating screws in the front of PICCO®. Using the corresponding readout from the Reference Wheel the user can recalibrate his required temperature by basing on the mV output reading from PICCO® through a multimeter. This unique design means the controller will be less likely to be accidentally tampered with.

With simple plug and play type of connectors PICCO® totally eliminate any human errors once the wiring is correctly fixed during the initial startup.

In conclusion PICCO® has removed the need for mold cables and with this there would be minimal signal lost with fast startup and response time and cost savings as the heater wires are connected directly to the PICCO®. The compact size means it can be mounted onto every tool and thus reducing setup time without the need of having skilled technician to adjust temperature.

Why not try a PICCO® today?

Author:

Mr John Lim

Technical Sales Manager, Meiban International.



PICCO® Reference Wheel



Calibrating Screws



[WWW.IMT.COM.SG](http://WWW.IMT.COM.SG)

INNOVATIVE MANUFACTURING TECHNOLOGY

11 Ubi Road 1, Singapore 408723

T: +65 6891 9800

F: +65 6743 3008

E: [sales@imt.com.sg](mailto:sales@imt.com.sg)