

## PERMASET VMT



Dwell-time controller for heat-treatment processes

Measurement

Control

Automation

# PERMASET VMT

Why is control of dwell-time so important?

- Are you really running your cloth through the stenter or hotflue at just the right temperature and speed when you are setting, thermosol dyeing, condensing, polymerizing or gelling?
- Do you know whether your fabric has reached the requisite temperature at the right time as it runs through the dryer, and stays long enough inside it?
- Are you running every quality at maximum possible speed?

Permaset VMT dwell-time controllers – the answer to these questions!

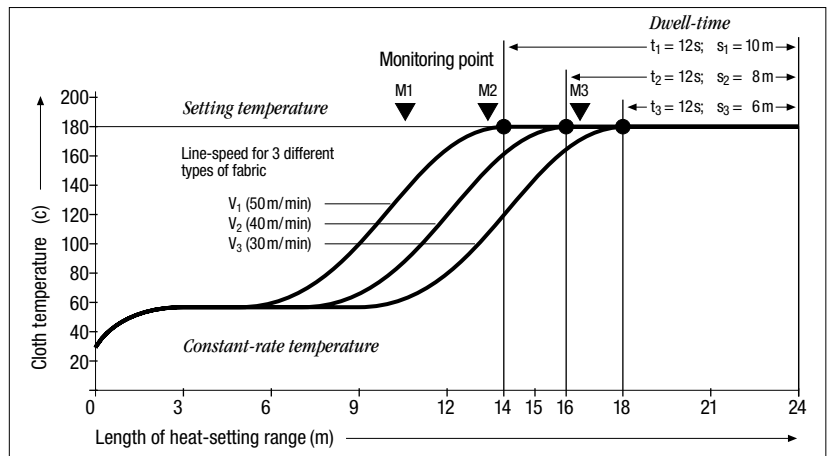
Dwell-temperature and time are the all-important key to effective heat-treatment processing.

## How does a PERMASET control dwell-time?

When wet cloth runs into a dryer, its temperature rises at first, then stays at the constant-rate level until the water content drops to regain proportions. The temperature of the cloth then begins to rise again. The closer it approaches the temperature of the hot circulating air in the dryer, the slower it continues to rise. Once it exceeds a specific threshold – setting temperature in other words – it has reached the temperature required by the curing or stabilizing process.

The temperature of the on-line material is monitored at several points along the length of the stenter by internally mounted, infrared radiation pyrometers. They register from a distance the heat radiated by the cloth as it passes underneath. A VMT PERMASET's infrared pyrometers can also be arranged across the on-line material (at the left, centre and right). These provide a visual indication of the distribution of heat inside the dryer.

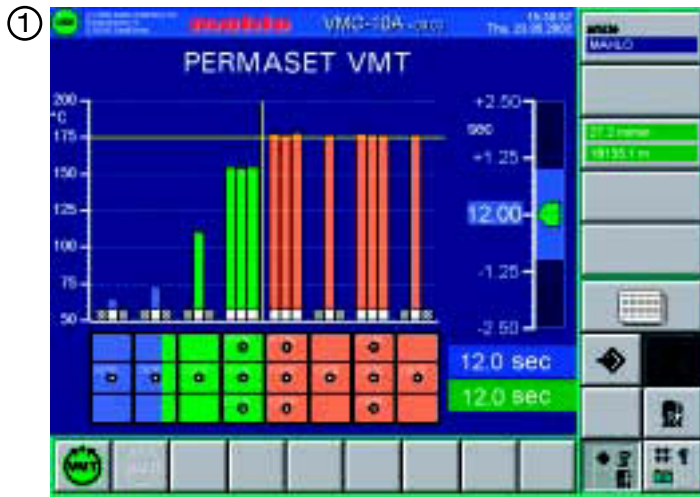
The point along the dryer where the temperature of the cloth really starts to rise varies in accordance with the material and line-speed. Control of dwell-time relies therefore on the zone in the dryer, where the temperature threshold is reached, being covered by at least 3 or up to 32 (or more if required) infrared pyrometers. The number is adapted to suit the specific processing range and material-related requirements. Additional pyrometers can be retrofitted at any time, and at little extra cost.



By controlling line-speed automatically, the time taken by a fabric to pass through a stenter can be reduced to a minimum.

# The PERMASET VMT principle

or control is everything!



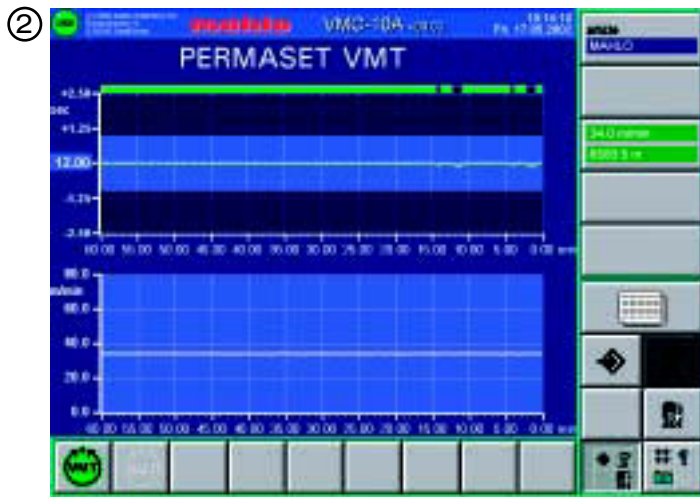
## How it works!

Once switched on, a user-interface appears on the touchscreen monitor. The system is then controlled by direct finger-contact with the screen's surface!

Screen displays:

①

- Shows the temperature-trend graph and target setting-temperature
- Temperature divisions with coloured sections relating to the separate processing stages
- Target / readout display for dwell-time (indicated in figures and in the form of a bar graph)



②

- Freely configurable histograms for dwell-time and line-speed, relative to time or passage count

## THERMOSET OMT

Monitoring cloth temperature to control moisture retention

The temperature of a material at the end of a drying process is a measure of the amount of moisture it retains.

The surface temperature of the cloth is monitored by a single infrared pyrometer at a suitable place at the end of a stenter. The requisite degree of moisture retention is then maintained constant by controlling to a set-point temperature the speed at which the cloth runs through the stenter.

Measurement of the temperature of a material to determine the amount of moisture in it has proved to be particularly expedient when drying synthetics.

Screen display:

As with the PERMASET VMT, temperature readouts are displayed in the form of bar graphics.



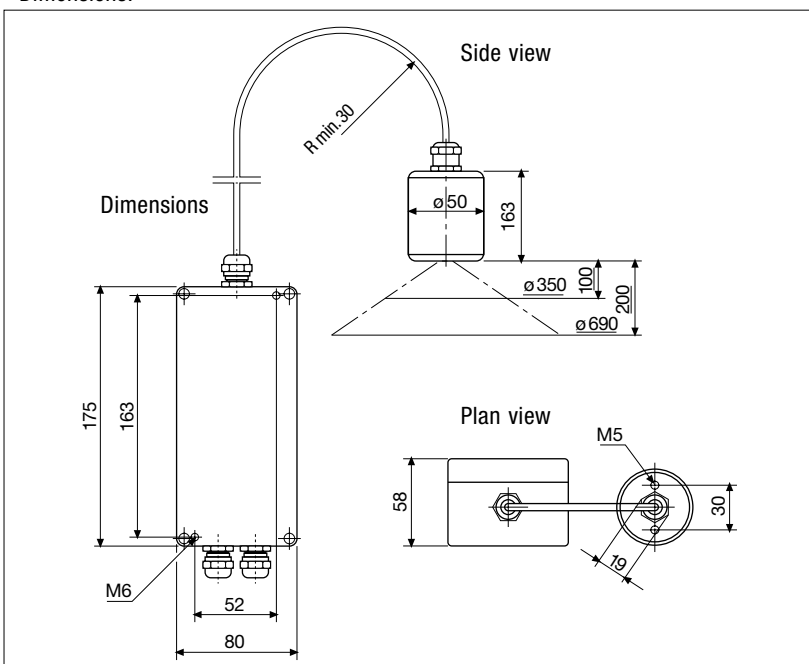
Typical assembly:  
An HP-250A sensor installed  
between 2 hot-air ducts

## Technical Data

Measuring range	0...+ 250°C	
Spectral sensitivity	2 to 30 µm	
Scanning area	Vee-angle 120°	
Sensor output signal	0-20 mA, 4-20 mA, CAN only together with host computer interface and basic unit: CAN-Bus, Profibus, TCP/IP, S3964R/Rk512	
Accuracy	≤ 1% of readout range (at 23°C)	
Response time	t 0,9 = 6 s	
Safe working temperature	Signal amplifier: 0...+ 85°C	Sensor plus cable: 0...+ 250°C
Safe storage temperature	Signal amplifier: -20...+ 85°C	Sensor plus cable: -25...+ 250°C
Climatic grade	KPA to DIN 40040 standards	
Auxiliary power	DC 24 V, -15/+10%	
	Max. 20 mA (reversible cutout and rev. polarity protection at input)	
Connection	2 cable glands PG 9 proofed to IP 65 standards	

Mechanical data	Sensor	Signal amplifier
Construction	Stainless steel enclosure (material no. 1.4301)	In diecast aluminium enclosure
	5 m Teflon insulated cable	
Proof standard	IP 65	IP 65
Weight	8,5 N (= 0,85 kg)	6,5 N (= 0,65 kg)

### Dimensions:



### Typical installation:

