



CONSTANT WATTAGE OR SELF-LIMITING

WHICH CHOICE TO MAKE?

Electric heat tracing systems have been around for many years. Originally, they were in the form of series resistance, constant watt output heaters, like mineral insulated (MI) cables. This style of heater had to be manufactured to suit pipe length, output required and available supply voltage. Changes in any of these criteria would result in re-design.

However, technology advanced and parallel circuit trace heating cables that could be cut to length without affecting the watts per metre output were developed.

The two main types of trace heating are Constant Wattage and Self Limiting/Regulating.

Self Limiting heating tapes, having a semi-conductive heating core matrix, the resistance of which changes in relation to the temperature of the heating tape are very popular for heat tracing applications.

Early sales and marketing information also suggested that thermostatic control was not required. This is still the view of many potential users, although those more experienced have learned that a thermostat control can reduce system operating costs by as much as 90%!

The generally accepted view is that, whilst acknowledging the significance of their self-limiting characteristics, all self limiting tapes, from whatever source, have shortcomings when used for process heating. This is one of the reasons why it is recommended that, if self-limiting tapes are to be used, they are used for low temperature freeze protection of pipes and other simple systems where critical temperatures are not involved.

SELF-LIMITING HEATERS

The Positives:

- 1) As temperatures increase, the cable output decreases (Self Limiting).
- 2) Heating cables cannot overheat.
- 3) Easy to install.
- 4) Easy to terminate.

The Negatives:

- 1) The matrix core can be irreversibly damaged if subjected to high temperature.
- 2) Self-limiting heaters cannot be tested and monitored for correct operation as the output, and hence the resistance and current consumption is constantly changing.
- 3) Self-limiting heaters have very high start up currents at low temperatures.
- 4) Self-limiting cables are less flexible than Silicone insulated cables.

CONSTANT WATTAGE TAPES

Constant wattage heaters exist in various forms, of which the more popular zonal parallel circuit devices are the most convenient, since these may be 'cut to length', within practical limits, on site.

The Positives:

- 1) Can generally maintain higher process temperatures.
- 2) Easy to install.
- 3) Easy to terminate.
- 4) Heater output is always close to the manufacturers specification.
- 5) Generally do not exhibit increased start up loads.
- 6) The Nickel Alloy Heating Elements are unaffected by high temperatures and are not affected by thermal cycling.
- 7) Monitoring constant wattage tapes is simple and effective using resistance monitors or ammeters.
- 8) Flexible.

Negatives:

- 1) Higher wattage systems can overheat if incorrectly designed and or installed.

IN SUMMARY

Engineers and Installers using Trace Heating will always have their preferences as to the type of trace heating to use. This is why at ESH Trace Heating Ltd we offer a comprehensive range of both constant wattage and self limiting heating tapes to allow the end user to utilise the system that best suits their application and personal preference.

**If you are unsure on which cable to use for your application
please contact ESH Trace Heating Ltd for advice.**

The information provided in this technical literature is believed to be accurate and reliable; however, the user must satisfy themselves that the product is suitable for their application and the use of this information, and all use of such information shall be entirely at their own risk. ESH Trace Heating Ltd does not accept any liability for any loss or damage arising from the use of this information.