

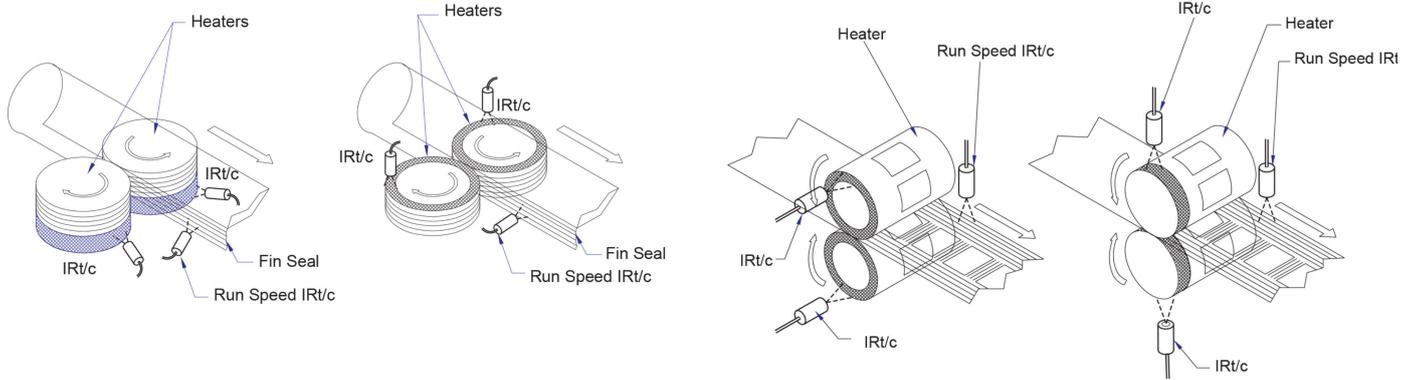
## #96: IRT/C NON-CONTACT HEAT SEALING TEMPERATURE CONTROL FOR PACKAGING MACHINERY (OEM & RETROFIT)

IRT/c infrared thermocouples can accurately control the temperature of rotating and moving stainless steel heaters common in the packaging industry, without touching the heaters.

Typically, uncoated stainless steel heaters are difficult for IR sensors to measure reliably because of reflected infrared signals that can change after a heater surface is cleaned. The solution to this problem is simple:

Choose an unused location on the heaters, as close as possible to the surface you wish to measure. Mechanically mount a surface that is reliable for the IRT/c to measure.

There are at least two choices for a reliable infrared target surface that meet the needs of the packaging industry (able to withstand repeated daily cleanings, durable to provide years of service):



## 1. Black, hard-anodized aluminum coated surface

A black, hard-anodized aluminum hoop, ring, disk, or strip can be used. The surface must be "hard-anodized". It can be mounted in place onto the steel heaters by using thermal epoxy, small screws, or other suitable mounting methods.

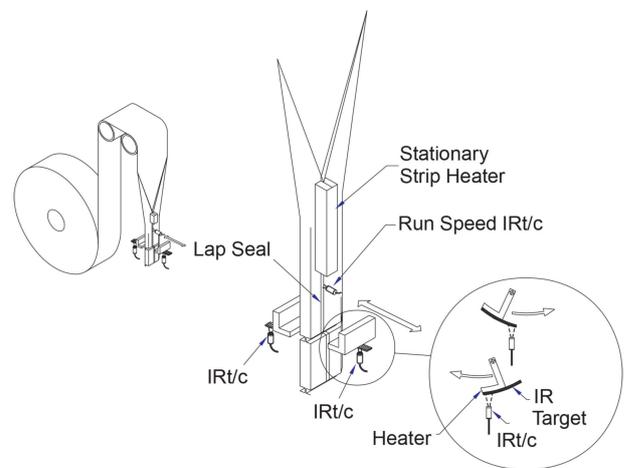
This method is very good for "retrofit" situations. The IR target surface can be added right onto existing heaters.

## 2. Teflon coating, directly applied onto an unused part of the stainless steel heaters

This is an excellent choice for OEMs that already use teflon coatings in other parts of their machines. Simply have a teflon coating added to the best target area prior to installing the heaters.

## "Open and Close" Heaters/Cutters - IRt/c control

For jaw heaters/cutters that "open and close", attach a small piece of coated metal to each heater head. This strip will come to the same temperature as the heater head as heat is conducted through the attachment point. The length of the strip should be just long enough so that the IRt/c sensor constantly looks at the strip during each "open and close" cycle giving a constant update of the temperature of the heaters.



## High Speed / High Performance Heat Sealing

For Rotating Heaters and for Stationary Strip Heaters, an additional IRt/c can be added to control the sealing much more accurately as the machine begins to increase speed. The technique is as follows:

1. During start-up, control the heaters using the sensors directly measuring the heaters.
2. As the machine speeds up, switch temperature measurement for the heater control system to a "run speed IRt/c". This sensor is aimed directly at the actual fin seal, or lap seal, just after it is formed by the heaters. The "run speed IRt/c" will measure the actual seal temperature directly from the seal itself.

### Explanation

By measuring the actual temperature of the seal during high speed running, the heater control can be very precise, on the order of a few degrees. This will allow very tight tolerance heat sealing. This system will automatically reduce the following possible sources of high speed heat seal error:

- Dirt build-up on the heater sealing surface that impedes heat transfer to the seal
- Packaging material changes in thickness
- Changes in pressure applied to the seal

The control accuracy of this type of high performance system can also allow the use of a wider variety of packaging material compositions on the same machine.

## IRt/c's - Reliable, Durable

The rugged IRt/c sensors need no power supply, and are designed for years of trouble-free operation in industrial environments.

No maintenance is required. The sealed IRt/c sensors can even be steam-cleaned.

For "dusty" packaging environments, we recommend using the IRt/c.3X or other IRt/c models with built-in air-purge system. With a small amount of air, the sensor window will remain clear.

With the Exergen IRtc2132 temperature controllers, even small packaging machines can now benefit from reliable IRt/c temperature control for thermal sealing of packaging.

If additional technical assistance is needed, please contact Exergen.