



Compiled by

Johan van Heerden
Factory manager Unitemp

Unitemp - Pre-Production Field Trial No.1 - Technical report

Unitemp Eco-band Development Project

Pre-Production Field Trial Details

Company:



Machine Type:

Seccor – Blow Moulder

Number:

SC1500D

Year of Manufacture:

2002

Screw Size:

90mm

Process Material:

HD Material

1.0 OBJECTIVE:

The aim of the pre-production field trial was to collect test data from the newly developed Unitemp Eco-band in an actual production environment.

2.0 APPARATUS:

The Unitemp Eco-band was installed on a typical blow moulding machine, as well as an open section of the barrel to reduce the heat loss of the system.

All the consumption details regarding the heaterbands usage before and after the installation will be logged by means of an Amso Power track logger, provided by Mondi Packaging. The obtained data will then be used with an analysis program called Powertrack to obtain the energy usage pattern of the heaterbands before and after Unitemp's insulation jacket installation.

A Testo 875 Thermal imager will also be used for thermo graphic comparisons between the two operating conditions.

3.0 TRIAL PROCEDURE:

An HD blow moulding machine, provided by Mondi- Packaging, will be monitored over a 72 hour production period without and with the Unitemp Eco-band installed.

The obtained data will then be used to form a comparison and to indicate a possible saving due to the installation of the Unitemp Eco-band.

4.0 RESULTS

4.1 DATA LOGGER

Please refer to the graphs below for the total amount of Active power used by the heaterbands over a typical period of 24hours for a system, with and without a Unitemp Eco-band.

4.1.1 - Secor Blow Moulder with conventional Heater bands

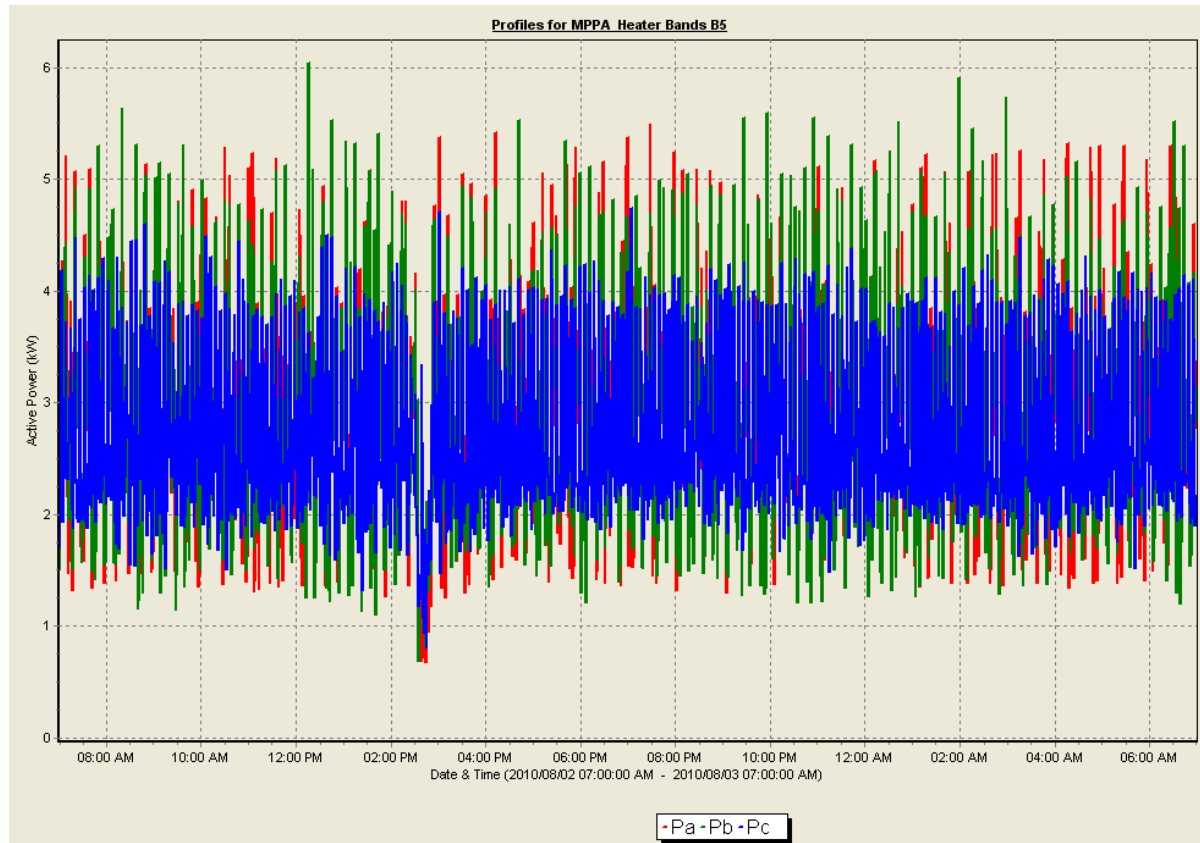


Figure 1 - Graphical representation of the energy usage with conventional heaterbands .

<u>Information</u>	<u>Parameter</u>	<u>Date & Time</u>	<u>Value</u>	<u>Unit</u>
Description	MPPA			
Feeder	Heater Bands B5			
Graph Statistics	Recording Start	2010/08/02 07:00		
	Recording End	2010/08/03 07:00		
Energy	Import Active Energy		210.3	<u>kW per 24hr</u>

4.1.2 – Seecor Blow Moulder fitted with Unitemp’s Eco-band technology

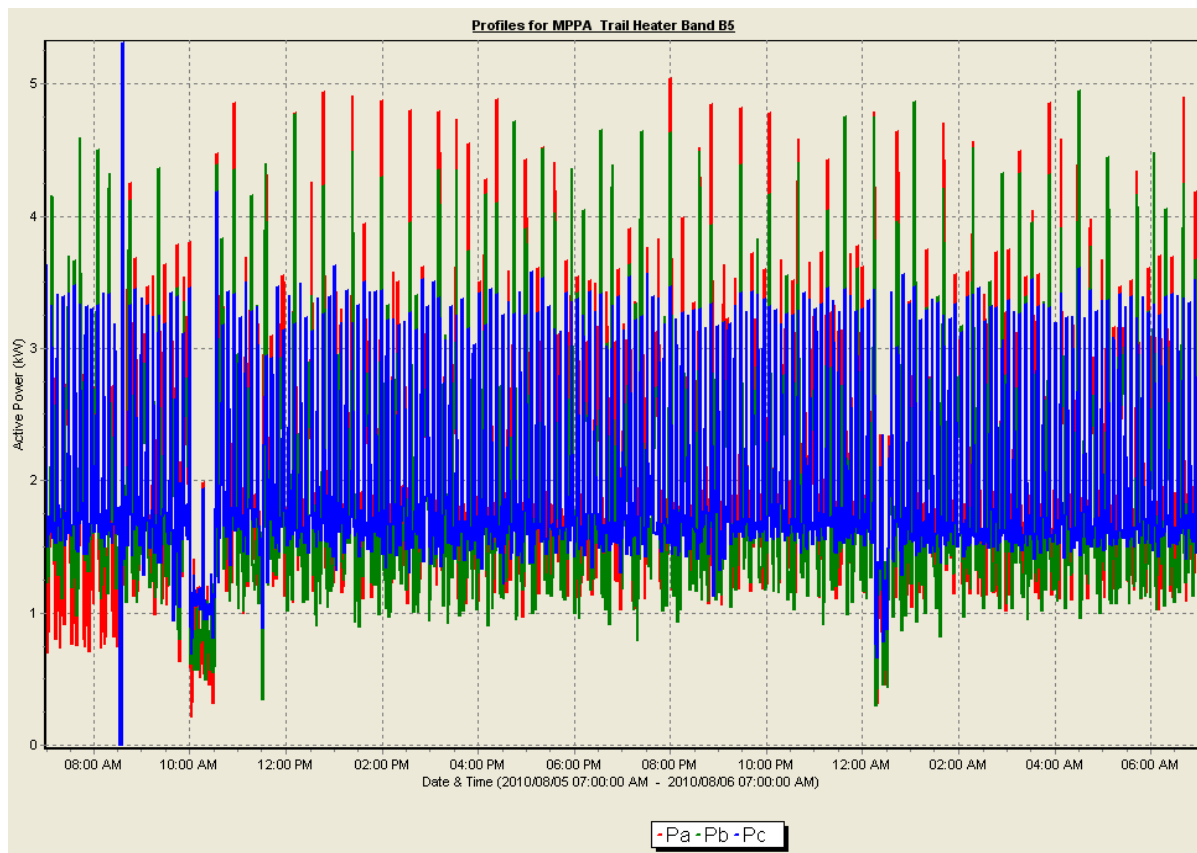


Figure 2 - Graphical representation of the energy usage with Eco-bands installed

<u>Information</u>	<u>Parameter</u>	<u>Date & Time</u>	<u>Value</u>	<u>Unit</u>
Description	MPPA			
Feeder	Trial Heater Bands B5			
Graph Statistics	Recording Start	2010/08/05 07:00		
	Recording End	2010/08/06 07:00		
Energy	Import Active Energy		149.9	<u>kW per 24hr</u>

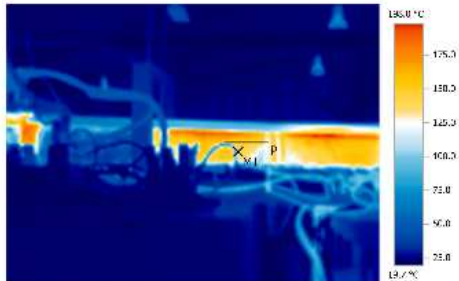
4.1.3 - Result comparison and Saving

Average energy consumption per hour: Conventional bands - **8.762 kW**
 Eco-band equipped - **6.246kW**

An averaged saving of 2.516 kW per hour was achieved resulting in a total saving of **28%** during the test period.. (Further savings can be expected if applied to the heads as well)

4.2 Thermo graphic report

4.2.1 With conventional Unitemp heater bands



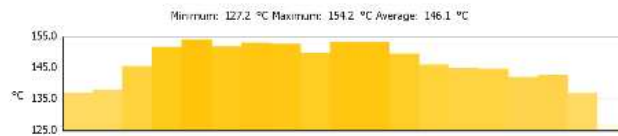
Picture parameters:

Emissivity: 0.95
 Refl. temp. [°C]: 20.0

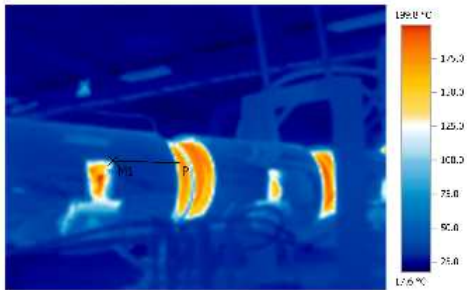
Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. temp. [°C]	Remarks
Measure point 1	133.0	0.90	20.0	-

Profile line:



4.2.2 Fitted with Unitemp's Eco-band technology



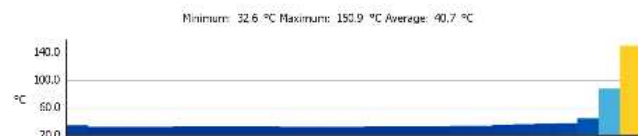
Picture parameters:

Emissivity: 0.85
 Refl. temp. [°C]: 20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. temp. [°C]	Remarks
Measure point 1	55.9	0.70	20.0	-

Profile line:



4.2.3 Summary

It can be seen from the thermal image comparison that by installing Unitemp's Eco-band, a reduction of the outer surface temperature of approx 58 % was achieved. Thus resulting in a reduction of convectional heat, and by thus increasing the systems efficiency which can also be visible from the results indicated in section 4.1.3

5. Discussion and Conclusion

The test results prove that Unitemp's new Eco-band solution significantly reduced the electricity consumption of the heating section on the barrel of the client's plastic converting machine.

When referring to the Thermal images in section 4.2.1 & 2 it confirms the drastic reduction of radiated heat, making work in close proximity to the barrel safer and more bearable.

It can also be expected that Eco-bands will have increased longevity compared to conventional heater bands.

We conclude that Unitemp's new Eco-bands not only decrease the client's energy consumption on a plastic converting machine, but also provide the client with a safer working environment. Eco-bands produce less radiant heat (less losses) thus reducing the carbon footprint and are a more environmental friendly solution.

6. Return of Investment

As the Eco-band development is nearing its completion, pre-production cost indications are that the Eco-band's increased cost over a conventional band has a payback period of around 6 months on an average size of band, based on a kWh rate of R0.50/kWh.

Unitemp wishes to thank Mondipak Plastics for the opportunity to run these trials in their blow moulding plant under normal production conditions.

It must also be noted that an application for patent has been filed reference number 2010/05711.

Johan van Heerden | Factory Manager

tel: 021 762 8995/ 076 027 7193
fax: 021 762 8996
email: johanvh@unitemp.com

unitemp cc

47 Flamingo Crescent; Lansdowne; Cape Town; 7780

www.unitemp.com