The Gillette Company

PowerBoss Intelligent Motor Controller Evaluation Report

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Gillette Grooming Products

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1. Introduction

The purpose of this evaluation is to determine the effectiveness of the PowerBoss Intelligent Motor controller in achieving a reduction in power consumption of injection moulding machines and thereby giving a cost saving. Current IMC energy cost is £0.0352 / kWh. All calculations have been based on this cost.

2. Controller Description

The PowerBoss Intelligent Motor controller is a device for optimising the power consumption of AC induction motors that run with varying loads. Continuous dynamic control is applied to the motor by a microprocessor within the PowerBoss. Thyristor phase control is used to vary the motor terminal voltage in response to changes in motor loading.

3. Trial Plan

The purpose of the trial is to determine the energy cost saving associated with using the PowerBoss motor optimiser in moulding machines.

The PowerBoss 415-PBC-55 unit was installed to control the hydraulic pump motor in one of the Demag 420 Tonne elastomeric handle moulding machines at IPF that had been identified as a suitable application.

Power measurement readings were taken both without & with the PowerBoss operating. A subsequent long-term trial was then carried out to confirm the power savings and monitor for any adverse affects of installing the PowerBoss.

4. Installation & Operation

The PowerBoss unit was installed inside the electrical control cabinet of DM35 as shown in figure 1.

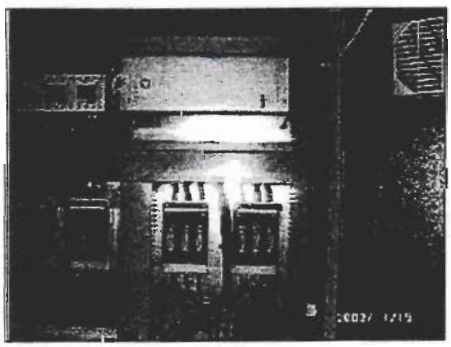

Figure 1

Electrical installation is between the existing fuses and star/delta contact set, allowing the unit to be removed and the existing control method to be reinstated quickly in the event of the unit failing.

5. Results

Initial data readings taken after PowerBoss installation indicated a reduction in kVA for the pump motor from an average of 20.043kVA to 18.868kVA. This equates to a 5.86% reduction in power consumption, effectively reducing the energy cost to £0.0331 / kWh. See figure 2.

Data collected during the long-term trial showed an average kVA values between 16.92 kVA and 19.26 kVA (3.9% to 15.58%) during the periods that the machine was running.

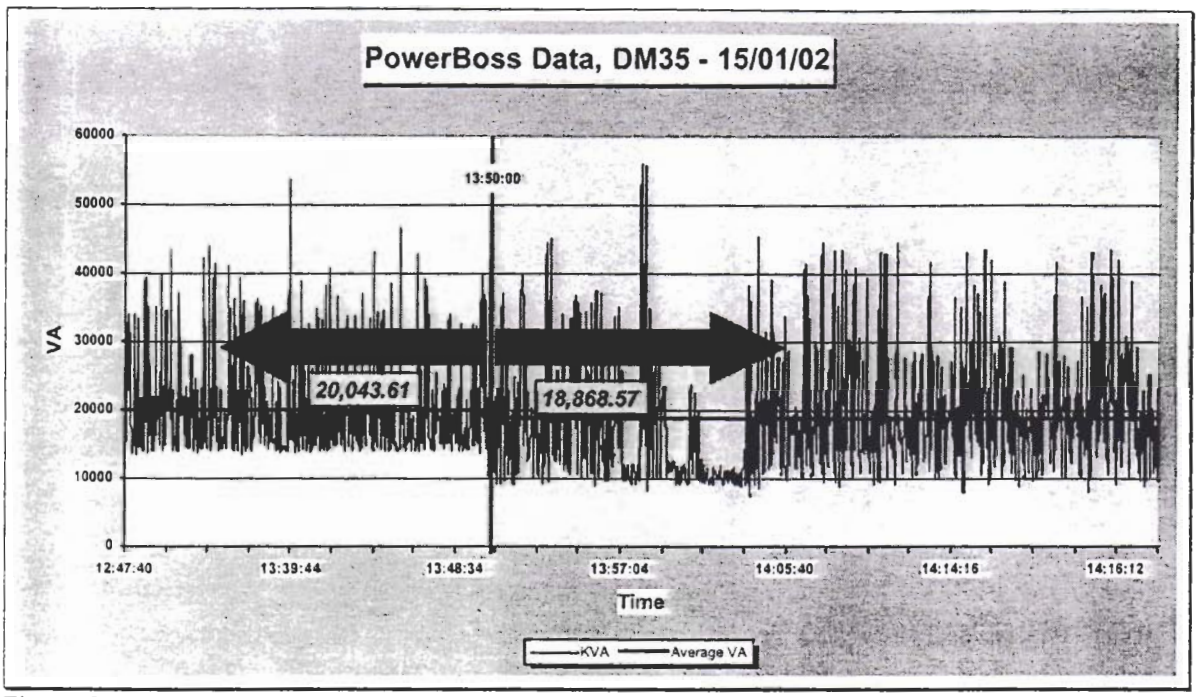

Figure 2 - PowerBoss Data (kVA)

Based on a machine running 24 hours / day for 345 days / year a saving of 5.8% would yield a return of approximately £976 / year in energy cost. At current PowerBoss installation costs the payback period on investment would be approximately 1.46 years (76 weeks).

There have been no reports of any adverse affects to the machine power supply or operating process following the PowerBoss installation. The PowerBoss has also so far proved to be reliable, again with no reported problems. Long-term reliability can only be established though experience.

6. Recommendations

The results indicate that a definite saving is made when using the PowerBoss device to control the hydraulic pump motor of injection moulding machines.

- PowerBoss should be fitted to existing moulding machines.
- PowerBoss should be fitted as standard equipment to all new moulding machines purchased by Gillette.