

Practical steps to forehearth optimisation

According to John McMinn, eight years of conducting forehearth performance audits in glass plants across the world has shown that the standard of maintenance and calibration of forehearth systems is unbelievably haphazard. Company status, reputation and size are no guarantees of forehearth performance. The installation of high performance systems or low technology systems is largely irrelevant to forehearth performance. Why is this?

There are a few simple explanations. Firstly, no matter how complex the forehearth system, many of its constituent elements are mechanical devices that require regular maintenance and recalibration. Secondly, there is an astonishing reluctance among maintenance engineers and instrument technicians to correctly calibrate combustion systems or retune PID parameters. Thirdly, the level of forehearth training provided by forehearth suppliers is often inadequate. Additionally, the forehearth platform is not a pleasant working environment and is visited reluctantly. And last but not least, how does a forehearth operator know what level of forehearth performance he has achieved?

Looking at the spout entrance tri-levels does not give much information on zone response times. Studying the fall of the gob is not a measure of the fuel efficiency of the system. Examining the data presented on the control system's SCADA screens is often misleading, since combustion outputs rarely reflect the amount of combustion being applied to the system due to de-calibration of the combustion air valve, leaks in the system or de-calibrated air/gas ratios.

Over the years, Forehearth Services has audited every mainstream forehearth system

– and quite a few that are best categorised as 'interesting'. The audit results demonstrate some systems are clearly superior to others but often when audited, the differences in performance are minimal due to de-calibration, lack of regular maintenance and insufficient knowledge of the system components.

DEDICATED TRAINING

Since its inception in late 2008, Forehearth Services has been dedicated to rectifying this situation. Most commercial companies, for obvious reasons, wish to retain their technical secrets. By contrast, Forehearth Services' aim is to disseminate its technical knowledge to as many glass plants as possible through five day forehearth training programmes.

The course provides a balance of theoretical and practical training. Theoretical training is ineffective without a strong practical element but practical training is equally ineffective without a sound technical grounding in forehearth technology and combustion and control technology. The training provides the ability to know why a change or calibration is necessary and the skills and confidence to make the adjustments.

Forehearth Services has

developed techniques that are used in forehearth audits to quantify the operational status of the complete forehearth system. These same techniques are taught in the practical training modules to provide trainees with the knowledge and skills required to determine the current operational status of the forehearth and the expertise required to return the forehearth to optimum performance.

Training should not be viewed as an expense. It is an investment in productivity, in technician skills and in plant and personnel safety. It improves pack rates through improved forehearth performance and reduced downtime due to unforeseen stoppages. Training can improve gas consumption through better calibration and improved setpoint profiles. Training can reduce container defects such as blister, seed and glass distribution through improved forehearth operation. The only question is why would a glass plant not want to train its forehearth operators, technicians and engineers?

Over 800 glass plant engineers across four continents have successfully completed the Forehearth Services forehearth training course, received their certificates and the 340 page forehearth training manual. Forehearth Services is proud to have trained these men and women and to have contributed to their professional development. ■

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