

Furnace refractory structure auditing

Michael Horsfield considers the importance of auditing the furnace refractory structure during a furnace campaign life and how the service achieves added value for the customer.

By analysing the results and conclusions of many furnace refractory structure audits carried out by Dismatec, a common direction from the auditing service offered towards added value for the customer is seen to be achieved. Types of added value achieved range from proactive maintenance scheduling to positive economics for organisation development.

Main items of customer added value being achieved from the furnace refractory structure auditing service are given in this review.

FURNACE DESIGNS FOR THE FUTURE

During each audit, a significant amount of accurate data is collated and developed over a period of scheduled audits. From this accurate

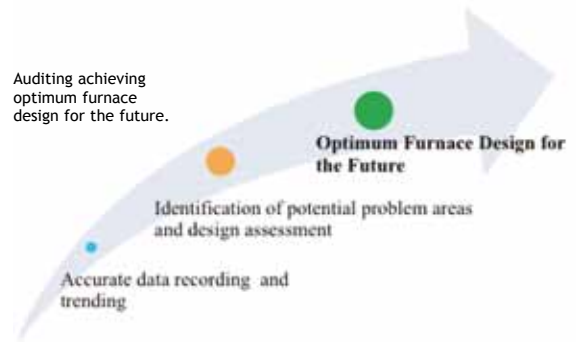
data, trending can be formulated in the form of temperature tables and structural condition charts for selected areas of the furnace.

The first audit on any furnace refractory structure is termed the 'benchmark audit', which acts as a reference against historical data collated over a number of audits. From this information, potential problem areas of the furnace refractory structure can be identified and selected for design assessment in order to eliminate them from a future furnace design and/or rebuild.

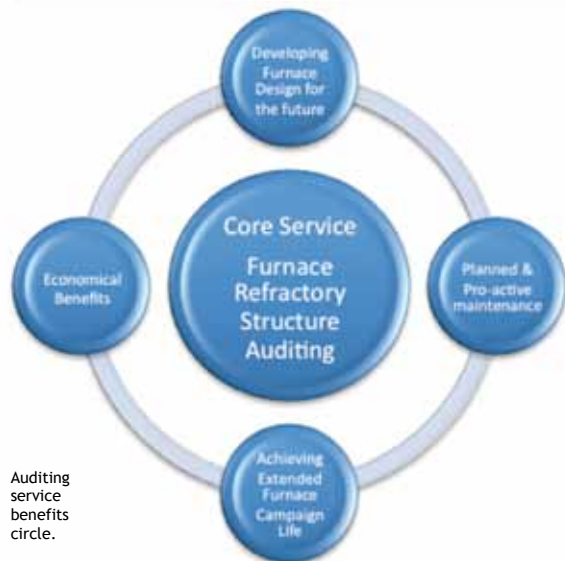
This ensures that any future furnace is designed to optimal standards and correct material selection is made to give a strong and stable structure for a long campaign life against internal wear characteristics.



Benefits of extending furnace campaign life.



Auditing achieving optimum furnace design for the future.



Auditing service benefits circle.



Auditing service, leading to economic benefits.



Scheduled auditing achieving planned maintenance and controlled finance.

PLANNED AND SCHEDULED MAINTENANCE

Auditing on a scheduled basis identifies potential problem areas of the furnace refractory structure at an early stage, allowing such areas to be monitored and corrective action to be taken at the appropriate time and most importantly, not too early or late.

For any identified potential problem area, the audit report gives recommended action to be taken, ensuring that a problem is rectified in the correct manner at an early stage before it becomes a major problem, where substantial resources and finance are needed. The auditing service creates a scheduled maintenance strategy and planned work programme to be carried out on the furnace refractory structure, maintaining structural stability and eliminating 'fire fighting' maintenance and minimising the risk of unexpected structure failure.

In turn, allowing a realistic maintenance budget to be set in place where finance can be controlled, with the added benefit of minimising maintenance costs throughout the furnace campaign life and the need for substantial capital to rectify a major unexpected problem is minimised.

EXTENDING THE CAMPAIGN LIFE

From experience, the auditing service is known to extend the furnace designed campaign life up to four years by introducing an audit schedule that increases as the furnace campaign life increases. This ensures that any potential problem area and existing problem area are monitored closely, changes in condition recorded and maintenance carried out at the correct time to sustain structural stability.

The extension of the furnace campaign life can be controlled to meet market demands to maintain or elevate the organisation's position in a given market area by scheduling the auditing service to meet customer needs.

Another positive aspect of extending the furnace designed campaign life is the additional time obtained to:

- Assess current state-of-the-art technology and adapt this to furnace design.
- Study future environmental and technical legislation to meet future criteria.
- Prevent the organisation from falling behind competitors in technical, sales and commercial values.
- Evaluate market sectors, segments and strategy.
- Develop the organisation's business strategy.

ECONOMIC BENEFITS

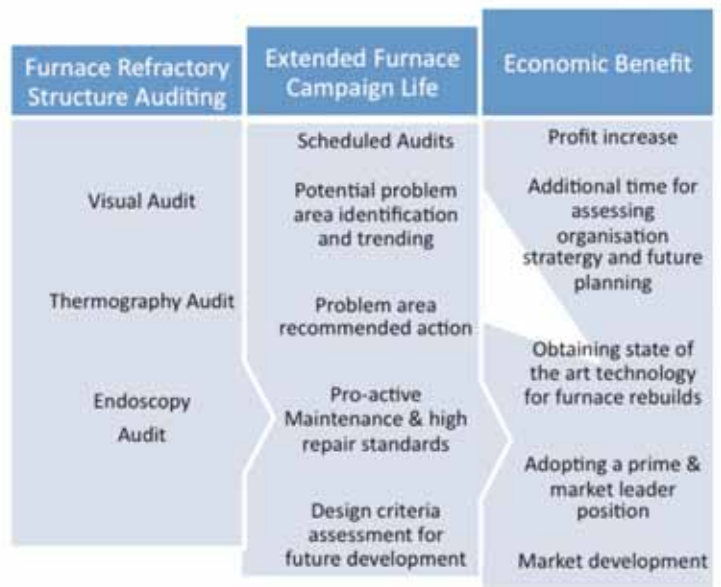
By using the auditing service and realising an extension to the furnace designed campaign life, the initial capital expenditure payback period has been realised at the end of the budgeted period and any production profits thereafter are additional to the organisation's projected accounts. Therefore, for a moderate cost to maintain the furnace during an extended campaign period, the commercial gain to the organisation is significant.

The time gained from extending the furnace designed campaign life allows an organisation to evaluate existing and new market sectors, segments and strategy in order to develop and grow in a positive manner for the future, realise additional sales and profits and secure market leadership.

CONCLUSION

Furnace refractory structure auditing is seen to achieve added value to an organisation in several ways to give both technical and economic benefits, maintaining or projecting an organisation towards market leadership. The Dismatec auditing service is a 'proactive tool', identifying potential problems at an early stage, helping to prevent unexpected and sudden refractory structure failure and thereby securing structural stability and extending furnace designed campaign life.

The results of the auditing service allow an organisation to develop its business plan, adapt to change more easily, keep in the forefront of state-of-the-art technology, adopt standards to meet future legislation criteria and realise economic benefits. ■



Auditing service benefits.

ABOUT THE AUTHOR

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FURTHER INFORMATION

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