Data alone does not equal an effective digital programme

Digital technology has changed the way refractory health information is viewed, shared, and analysed. Jon Wechsel shows how PaneraTech's furnace monitoring platform can make data more meaningful.

Is a centralised digital record-keeping platform all that is needed for effective data-driven decision-making? At PaneraTech, we believe the answer is a resounding "no." The lack of comprehensive, transparent data is certainly an obstacle to furnace campaign management. Information can exist in silos throughout a company with no central place to access and no context for analysis. However, access is not the only important factor. A centralised platform of unclear or unhelpful data is no better than the silos. PaneraTech has been helping manufacturers transition to a data-driven culture by monitoring the right information at the right time with digital technology.

The first step, digital transformation, increases the visibility of all assets for all stakeholders. Just getting everyone on the same page sets the stage for better decision-making. A digital corporate memory of furnace activities protects information as experience retires away and builds a more sustainable operation.

The next step is to make sure that the information stored in that corporate memory is accurate, useful, and viewed in a context that supports good decision-making. By using the best available sensors for audits and inspections, manufacturers can act early and target maintenance and repair activities to specific areas as needed.

Digital furnace monitoring

PaneraTech's radar-based sensors detect issues one to three years in advance of other visual and thermal indicators. When this data is viewed as a refractory health index based on over one million radar measurements, it becomes clear and useful. Therefore, we have developed the Digital Furnace Monitoring programme. This programme helps manufacturers meet the above goals so that they can maximise furnace campaign life and lower the overall cost of furnace ownership. PaneraTech helps the customer decide which technology and tools will provide the most useful data at each stage of the furnace campaign.

When a customer enters the Digital Furnace Monitoring
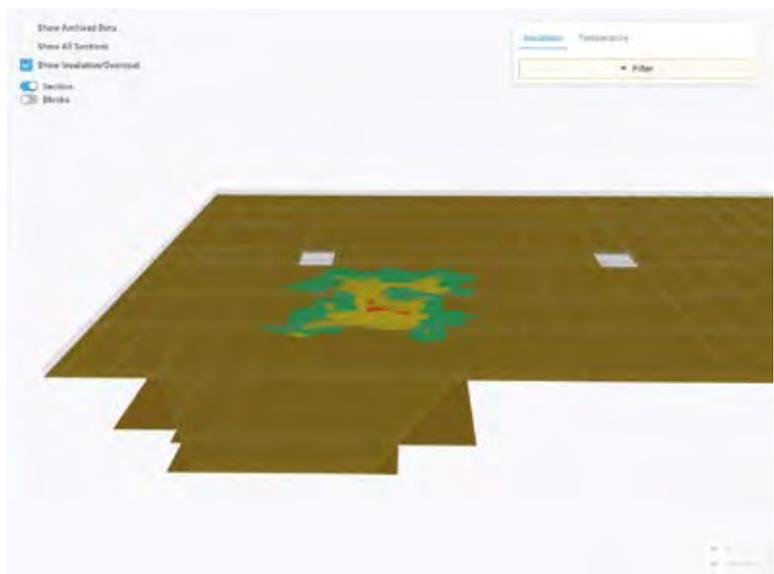
PaneraTech digital model of a furnace bottom.

programme, a schedule of services is created for each year of the anticipated campaign life based on our experience with hundreds of furnaces. Additional specific condition-based monitoring on a narrower scope can be defined as necessary throughout the campaign life. Routine monitoring is developed in collaboration with the plant to complement this schedule.

Polaris continuous monitoring sensors.
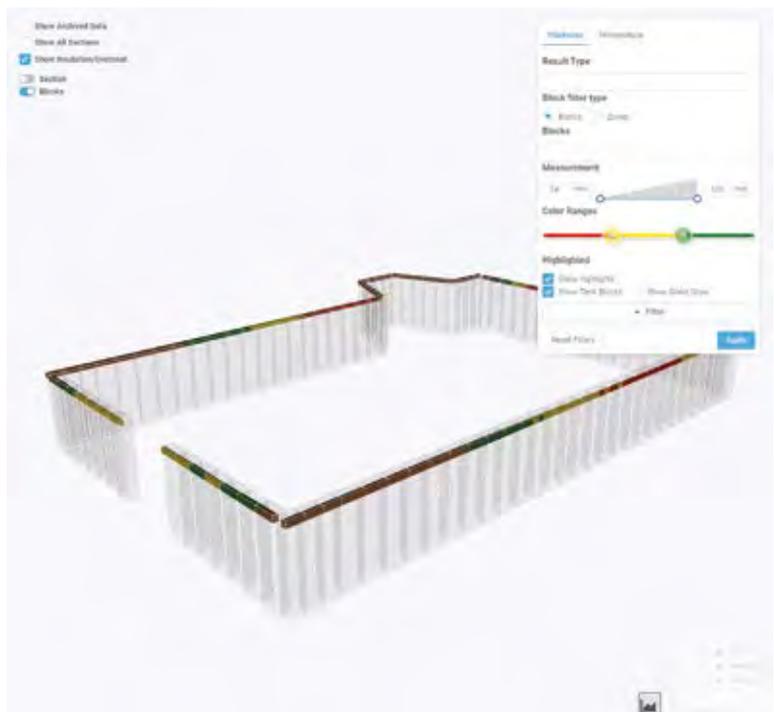
PaneraTech digital model of a furnace metal line.

This includes recommendations by the joint technical team that include daily, weekly, and monthly activities, scheduled furnace-walks in our software platform and QCODE/RFID tags in critical areas for digital proof of visual checks.

As this schedule is implemented, the manufacturer receives quarterly technical engagement and operational review of the furnace from PaneraTech. Our team works closely with plant management to recommend maintenance or repair activities and adjust the monitoring schedule as needed. Resources can be prioritised and allocated to the exact areas where they are needed.

In this schedule of services, we utilise many PaneraTech tools. Some of the 'tools' utilised in this programme are familiar to glass manufacturers, such as our portable SmartMelter sensors that scan the refractory condition. XSight, our furnace health management platform, acts as the command centre for the Digital Furnace Monitoring programme. XSight brings together all data gathered by the various technologies that are used to monitor the enrolled furnaces.

Some programmes include Polaris continuous monitoring sensors. These radar-based IoT sensors monitor refractory wear in real time at high wear and critical refractory areas, such as the metal line, throat, or electrode blocks. Data from Polaris sensors is visualised in our XSight platform, and manufacturers can set up alerts and alarms based on certain thickness thresholds.

Gauging refractory wear

A key part of Digital Furnace Monitoring is SmartAudit, which adds an 18-point radar spot check to a traditional furnace audit to gauge refractory wear. The radar spot check includes eight points on the metal line and ten points on high-risk areas to establish a health Index. When this information is combined with KPIs such as pulled ton/m^2, outlier furnaces with refractory issues can be identified early. This means the plant can plan resources accordingly to remedy the problem before it causes larger issues.

Our audits are consistent with FM Global Property Loss Prevention Data Sheets, including Visual, Thermal and Endoscopic inspections. This service will later be complemented with a Digital Endoscopy service that uses laser technology to measure the actual thickness of the super structure, such as crown and breast wall thickness.

Each of these services contribute to a successful digital programme. However, Digital Furnace Monitoring is more than the sum of a few advanced tools. The knowledge of our furnace experts and the AI-based refractory health index are both utilised to give the best recommendations for action according to customer goals.

Our goal is to give more meaning to 'data-driven decision making.' The right combination of human intelligence and technology, gathered into a digital corporate record, can support effective decision-making for furnaces based on the best data. ●

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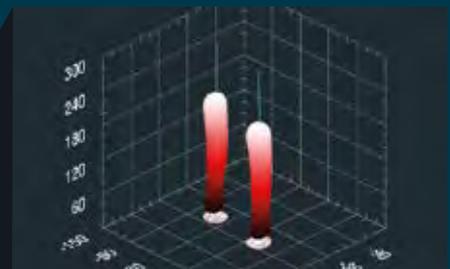web: www.paneratech.com