

That's reliability

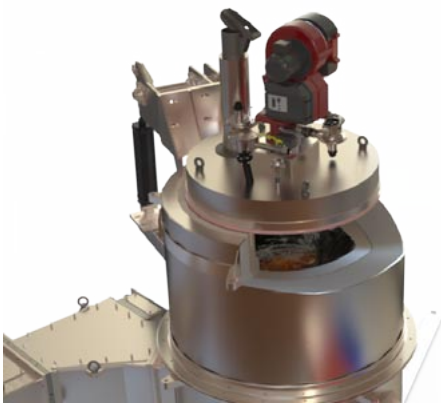
–weishaupt–

Case study

Reliable global support
for Pyrotek's EMP chargewell



Global support.



Pyrotek® EMP chargewell with Weishaupt gas burner

Successful collaboration with Weishaupt has helped further Pyrotek's dedication to enhancing the efficiency, safety, and reliability of aluminium processing. High-turndown, ZMI-version WM-G10 burners from Weishaupt are playing a critical role in the dry-out process of Pyrotek's EMP chargewell vessels.

For Pyrotek, it all starts with the controlled drying of refractory linings in its chargewell metal-processing vessels. This is paramount, since any thermal shock or uneven heating could potentially result in micro-cracks that later compromise vessel integrity, impacting productivity and safety when the refractory is dry and the vessel starts its operational life.

As Pyrotek engineering manager, Dean Fern, explains: 'Our customers run highly valuable processes with tight tolerances, so if something as fundamental as the refractory lining is not treated with care, it can set back an entire operation.'

Reliable global support is key

Pyrotek found itself re-evaluating the burner technology used on its EMP chargewell vessels, but not because the previous burner

manufacturer had failed on performance. 'We always got what we needed technically, but when we started installing and commissioning systems in more remote locations, often on different continents, having technical support time zones away became unmanageable,' recalls Dean. 'We couldn't get hold of suppliers when we needed them,' he adds. 'If you're in China and you've got an issue with the burner during refractory dry-out, you do need local support right there and then. That's vital for us as a business.'

That's where Weishaupt entered the frame. Known for both its proven reliability and also for its comprehensive global service network, Weishaupt ticked every box. For Pyrotek, it wasn't just the burner, it was the company's international presence and demonstrated commitment to long-term partnership that made the difference.

Bespoke controls

The chargewell plays a key role in Pyrotek's aluminium recycling and casting operations. The electromagnetic pump (EMP) circulates molten aluminium between a melting furnace and the chargewell vessel, creating a vortex that draws in scrap aluminium with minimal dross formation. Precise thermal control – both during the installation of the system and throughout its operational life – is essential to its safe and efficient operation.

The specified Weishaupt WM-G10/2-A ZMI burner is capable of firing on natural gas or LPG with a maximum turndown of 21:1. The burner is mounted on top of the chargewell, and is equipped with multi-pin connectors for straightforward electrical connection via flying leads. Its primary functions are to manage the chargewell's initial refractory dry-out, and to preheat the chargewell when starting after a

shutdown period. 'This isn't a simple matter of lighting a flame and walking away,' says Dean. 'We follow a tightly controlled heating schedule when we dry the chargewell, starting as low as 30 °C and climbing steadily to 800 °C over six or seven days, day and night.'

Each burner is controlled by a bespoke panel manufactured by Weishaupt. It incorporates a modulation controller programmed to precisely regulate each stage of the temperature ramp to prevent thermal shock. The ramp rate, hold periods, and maximum temperature are all tailored to the specific refractory requirements. Thanks to the 4–20 mA load-control system, the critical dry-out phase can be initiated independently before the rest of the system is brought online, a design improvement which Pyrotek credits to their collaboration with Weishaupt. 'With the control panel separated from the full EMP rig, we can start the dry-out independently,' says Dean. 'That flexibility has been a real advantage on-site.'

The burner's job is not finished when the refractory is dry and the chargewell begins operating. It serves two more vital functions: to maintain operating temperature when the chargewell is empty, and to prevent aluminium freezing when the metal is static. Positioned away from the furnace, the chargewell does not receive heat from it directly. Therefore, during downtime or periods of non-circulation, the burner fires to maintain molten conditions and protect the internal legs from solidifying, as this would cause costly blockages and



delays. The burner's high fan pressure helps to ensure sufficient heat reaches the base of the legs, even when firing against resistance from the furnace itself. 'We don't want heat venting from the top,' explains Dean. 'We need that heat forced down into the connecting legs. That was a key reason for specifying the ZMI burner from Weishaupt.'

Depending on project needs and geography, the commissioning of the burner is handled locally, either by a Weishaupt technician or a qualified local engineer. Burner documentation, certification, and wiring diagrams are supplied as standard, simplifying installation in any region. Pyrotek's head of installation and commissioning, Mick Clamp, comments: 'Quite simply, these Weishaupt burners are engineered for the job! I've never used a burner that's so simple to install, commission and remove. When you need to work across different plant designs and site standards worldwide, that synonymy with reliability is invaluable!' He goes on to say that every burner and control panel is specified and built to exacting country requirements, meeting local and international standards from CE to other country-specific gas and electrical standards. 'This attention to compliance not only aids import and commissioning but it also supports safe operation worldwide in varied regulatory environments,' adds Mick.

Efficient, compliant combustion

The Weishaupt WM-G10/2-A ZMI is a high-efficiency, high-turndown gas burner that is equipped as standard with digital combustion management. Its compact construction and adaptability make it suitable for Pyrotek's project-based business, while its compliance with stringent local regulations across the world ensures peace of mind for end-users.

For Pyrotek, the outcome is clear. Its EMP chargewell vessels are delivered faster, with greater consistency, and are protected against one of the most common long-term failure points: refractory damage caused by incorrect drying. Additionally, their customers benefit from shorter commissioning times, confidence in vessel integrity, and regulatory compliance.

Setting a new benchmark

Concluding, Dean reflects on the strength of the solution: 'We didn't compromise. We chose a partner and a burner that can be trusted, so our customers can trust us. The Weishaupt burner has proven its engineering strength,

offering robust build quality, precise thermal control, and reliable performance in every environment we've deployed it. From installation through to long-term operation, it performs exactly as needed, every time. It sets a new benchmark for the industry, an integrated solution that combines Weishaupt's world-class combustion technology with Pyrotek's tailored, client-focused engineering approach. It's not just fit for purpose; it has raised the standard.'



WM-G10 Weishaupt monarch® gas burner

