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"FIT" FLUX INJECTION SYSTEM IMPROVEMENTS



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The latest generation flux injection system, the FIT-15 from Pyrotek, features a range of further improvements to provide foundries with even more process benefits, as outlined by Pyrotek's Foundry Sales Engineer, Alan Matthews.

The system predecessor, Pyrotek's FIT-10, launched in early 2010, was the first generation of a simplified flux injection system designed to reduce the cost and maintenance associated with traditional flux injectors. The FIT design uses gravity flux feed, no moving parts and only inert gas pressure to deliver granular, fused or powdered fluxes to a metal vessel through a flux wand.

Traditional flux injection systems can be expensive for foundries to procure, involve significant operator training and, depending on the manufacturer, can be subject to frequent clogging and breakdowns. Clogging has traditionally been more of an issue with the common blended, powder fluxes used by many foundries, and can often be the reason why foundries do not take advantage of the benefits of flux injection.

Powdered injection fluxes can jam powered feed mechanisms, including augers and rotors, especially if the flux material

has aged and contains agglomerates. This leads to downtime and difficult machine cleanouts. More importantly, these equipment hassles, if chronic, reduce operator commitment to the process, dooming it to failure.

In such cases where flux injection is considered "too problematic", foundries will miss the benefits of flux injection which include the following:

- Improved casting quality from reduced inclusions and hydrogen in the metal
- Reduced plant emission and smoke (flux reactions take place below the surface with injection)
- Reduced flux usage (more efficient reactions sub-surface)
- Reduced melt loss from the dryer dross

Recent improvements to the FIT system have made the use of this simple technology even easier and more reliable than the original FIT-10 design.

The two main improvements are the sealed tank and increased flux flow rate

capability.

Sealed tank: The original version of the FIT-10 included an unsealed tank cover to protect against contamination. Pyrotek product and design engineers have now sealed the tank and improved its robustness. These changes add to the toughness of the unit and improve the inert gas pressure and flow that is delivered to the flux wand. Better pressure and flow to the flux wand overcomes backpressure that occurs when injecting flux into deeper vessels. Sealed tanks are now standard on all FIT systems. The result is an extremely reliable and repeatable flux injection cycle capable of handling a very wide variety of foundry situations, including melters, holders and transfer pots.

Increased flux flow rate capability: The original FIT-10 had the ability to inject between 0.5–1.4 kg/min (1–3 lb/min) of flux depending on gas pressure applied. An improved flux / gas management system option is now available that allows for flux injection rates of more

FIT-15 FLUX INJECTORS

The Pyrotek FIT-15 flux injection system is a small, portable and cost-sensitive mechanical fluxing station, designed for sub-surface injection of powdered or fused flux at a rate of 1–3 lb (0.5–1.4 kg) per minute. These units are designed without electrical connections and run solely on pressurized inert gas.

Process benefits include reduction of furnace floor buildup, flux consumption and smoke generation, resulting in improved metal quality.

The units can be used for delivery of both fused refining agents and powdered fluxes. Refining agents remove alkali metals as well as separate inclusions from the bath. Powdered fluxes remove inclusions and assist in keeping the furnace clean, which will increase the life of the refractory and reduce the amount of damage from physical cleaning.



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than 2.7kg/min (6 lb/min). This feed rate occurs reliably and without clogging, whether using powdered granular or fused fluxes. Higher injection rates will be of interest to foundries requiring to clean larger melting furnaces or to those plants that need to add refining agents in larger quantities with shorter injection times.

These upgrades have been accomplished without any negative effect on the other main FIT system benefits that include the following:

- System cost remains extremely low compared to the traditional auger or rotor fed injection systems
- Completely portable so furnaces throughout the plant can be cleaned

- Operators can be fully trained in use of the system in minutes
- No moving parts (no electricity required to operate) and free-flowing fluxes mean clogging and maintenance are minimized
- Reliability and cycle repeatability is maximized

The simplicity and reliability of the latest generation FIT systems allow foundries to affordably take advantage of all the benefits of flux injection. Contact your local Pyrotek sales engineer for more information.

www.pyrotek.info/fit