



BHM Thermal Sand Reclaimer

Reclamation for Both Chemically Bonded and Clay Bonded Sands

Among the technologies filling a demand for cleaner, more efficient plants, **EC&S** offers a sand reclamation process that's clean and efficient, with no moving parts.

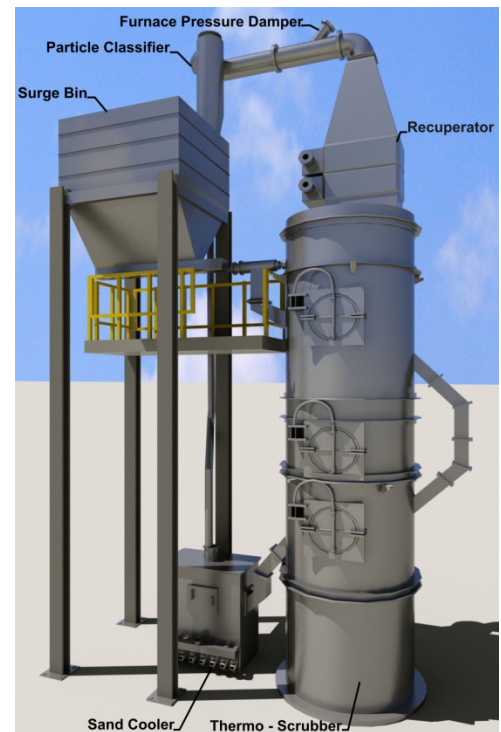
While mixing and handling sand are among the most carefully managed processes in many foundries, the task of reclaiming both chemically bonded and green sand is gaining an increasingly important role. With its positive impact on both operating costs and environmental control, reclaiming sand is among an emerging class of clean plant technologies.

EC&S is a single source supplier of a wide range of clean-plant technologies — air pollution control, acid gas treatment, hazardous dust conditioning, and off-gas cooling plus solid waste recycling. **EC&S** has been designing, engineering, and manufacturing environmental equipment for over thirty (30) years.

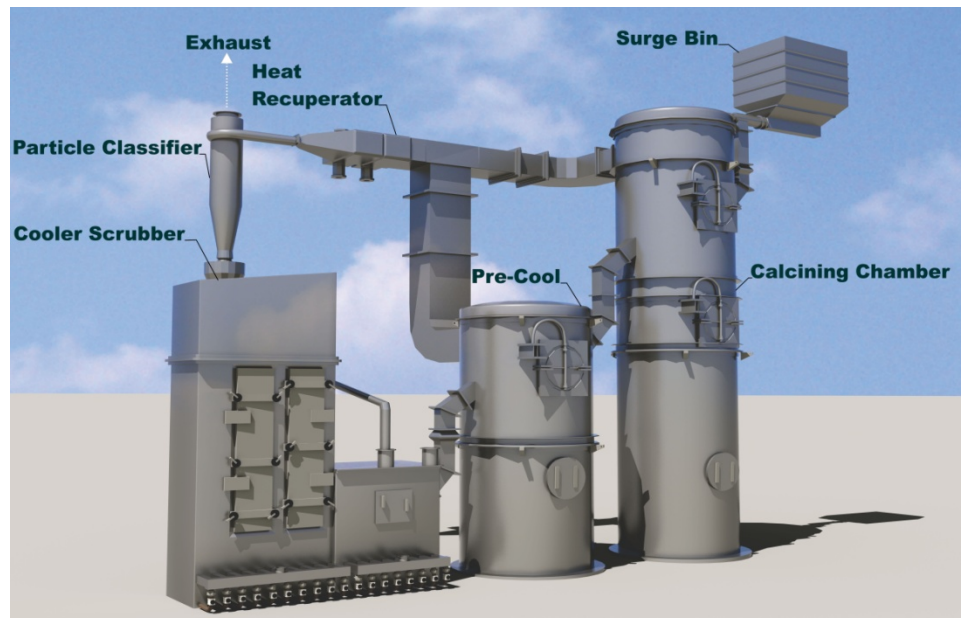
Included in its inventory of solutions are sand-reclamation systems designed specifically for foundries. The **BHM Thermal Sand Reclaimer** is the main component in two thermal reclamation system designs, accompanied by either the **COOLER** for chemically bonded sand reclamation or the **BHM COOLER-SCRUBBER** for clay-bonded sand reclamation.

The **BHM Thermal Sand Reclaimer** by EC&S consists of close-coupled fluid beds providing calcining and pre-cooling on a continuous basis by means of hot air scrubbing and gravity transfer, all in the absence of moving parts. It provides single pass processing and finite temperature control. Efficiency is maximized through continuous processing, hot process yield, and high thermal efficiency. All **BHM Thermal Sand Reclaim Systems** include a PLC

based **Graphics Monitoring and Display System** allowing the systems to operate without continuous operator supervision. BHM's Thermal Sand Reclamation System for Chemically-Bonded Sand consists of a Surge Bin, the **BHM Thermal Sand Reclaimer**, the **BHM COOLER**, a Particle Classifier, a Waste Heat



Reclaimer for Chemically Bonded Sand



Reclaimer for Clay Bonded Sand

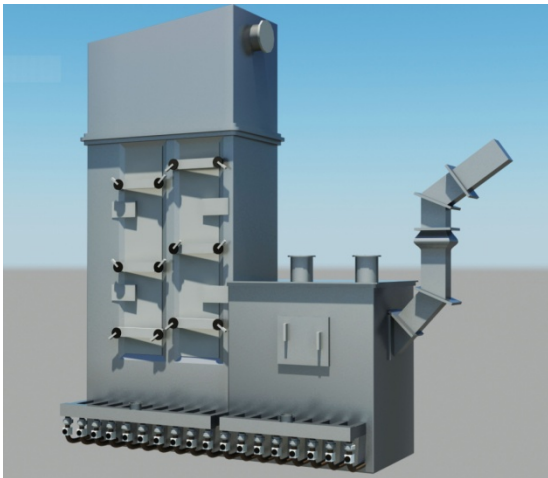
Recuperator and a Dust Collection System. This design effectively processes excess chemically bonded foundry sands for reuse in the core room, or as new sand additions in the molding sand operation.

The **BHM Cooler**, having an absence of moving parts just like the **BHM Thermal Sand Reclaim Unit**, is a conventional fluid-bed design wherein the fluidizing air causes the sand to behave much like flowing water, the sand being denser than air. The fluidizing air provides direct cooling while the finned water-cooling tube banks embedded in the fluidized bed of sand provide indirect cooling. Together these provide a high total efficiency of cooling. In the **BHM Cooler**, the sand travels over and under baffle plates in a serpentine path, the sand being adequately cooled before it passes over the final weir before exiting the unit. The described actions create rapid, intimate mixing that produces quick heat transfer from the sand to the fluidizing air, which carries the heat off as exhaust air. The water circulating in the finned cooling coils is externally cooled by a conventional evaporative cooling tower or closed loop water cooling system after being pumped through the coils.

Above the bed of sand is a freeboard space, kept at a slight negative pressure via the dust collection system integral to the sand reclaim system. In addition to drawing off the fluidizing air of the cooler, the exhaust system provides sand classification as unwanted sand fines are removed via the exhaust system.

The **BHM Thermal Sand Reclaimer** for clay-bonded sand works in much the same way as the system for chemically-bonded sand. It is purported to be the only sand reclamation system with the capability to process 100% clay-bonded sand, 100% chemically-bonded sand or a random mixture (mixed sands) of both sands. The reclaimed sand produced by the **Thermal Sand Reclaimer** has characteristics equal to or better than those characteristics associated with the new sand purchased by the foundry, a sand suitable for reuse throughout the foundry as new sand replacement, eliminating up to 95% of new sand purchases and a like volume of excess sand disposal.

In systems designed to reclaim clay-bonded sand a **BHM COOLER-SCRUBBER** replaces the **BHM COOLER** providing an additional step in the process. After a cooling process in the cooling section of the **BHM COOLER-SCRUBBER**, the sand moves into the scrubber section where the sand grains are withdrawn from the fluidized bed, forced up the blast tube and impacted against layers of sand grains being held against a target by the blast air. Giving up its energy, the sand falls back to the fluid bed, where it is collected and withdrawn again, and directed up the blast tube. This process is repeated as necessary to cause the binders, clay, and metallic oxides to dislodge from the sand grains. The dislodged material along with unwanted silica fines is drawn off in a controlled atmosphere and expelled to the dust-collection system.



BHM Cooler-Scrubber

Recirculation of the sand continues until the sand passes over the final weir, discharging from the **BHM COOLER-SCRUBBER**, ready for reuse by the foundry. This system, like the system for chemically-bonded sand, includes the **BHM Graphics Display and Monitoring System** complete with PLC Controls for unattended operation.

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