

**COMMENTS BY ING. MICHELE OPERTO, SINALCO S.A.S.**  
**ON EC&S TECHNOLOGY**  
**AND RESULTS OF GREEN SAND RECLAMATION TESTS PERFORMED WITH A**  
**TSR SYSTEM**

Based upon my experience, I can say without any doubt that so far BHM technology has no competitor in foundry sand reclamation. The **EC&S BHM Thermal Sand Reclaimer (TSR)** system ensures unsurpassed results: 100% green sand, 100% chemically bonded sand and any random mixture of both sands, producing a reclaimed product whose quality is so good that no addition of new sand is required in the core room. The TSR is delivered complete of accessories enhancing the thermal system performances (cooler, dust collector).

**PERSONAL EXPERIENCE**

In my thirty years with iron and aluminium foundries producing components for the automotive industry, I learned a lot about the foundry process. In the course of the years I had the chance given to evaluate and test existing sand reclamation technologies.

In the 70ies Teksid built a new iron foundry (Teksid Crescentino). At that time, almost all of the cores were produced in hot-box and a thermal system similar to a pyrite baking furnace was installed for treating core rejects.

Results were quite good. Nevertheless this method was soon given up because it was not suitable for green sand reclamation. As a matter of fact, the quantity of green sand at Teksid Crescentino was at that time much higher than core sand, and its reclamation was a very important issue in the management of the foundry. Reclamation tests were performed with a pneumatic attrition system, but results were not encouraging at all.

At the beginning of the 90ies a FATA system was installed for reclaiming chemically bonded sands (core rejects). The basic system was completed with two mechanical units, one ahead of the thermal phase and one behind of it, for the purpose of improving the system capacity with a view to reclaiming green sand for reuse in the cold-box process. Results were not bad, but the target of using 100% of the reclaimed sand in the core room was never attained. The maximum quantity of reclaimed sand reused in the core room never exceeded 50%.

In the same years, big quantities of green sand (100-150 tons/day) were delivered to a contractor for a wet reclamation treatment outside of Teksid. Also in this case, the result was not bad, but the quantity of reclaimed sand reused in the core room was 30% as a maximum.

**“EC&S” TECHNOLOGY**

In the years 90ies we had the chance to make contact with Mr Gerald Reier, the man who invented this unsurpassed sand reclamation technology, then in the years 2000-2001, tests were performed with Teksid de Mexico's green sand.

The first cycle aimed at verifying reclamation results of green sand only. Results were excellent, far beyond expectations.

- 1) The TSR reclaimed all of the test sand (3 tons) without any problem.
- 2) The reclaimed sand looked clean and clear.
- 3) No calcined grains were found in the sand.

4) The grain size proved that the sand reclaimed with a TSR system is 100% suitable for reuse in the cold-box process.

The reclaimed sand was analysed in the Teksid de Mexico laboratory. Results of the analysis are:

<b>AFS</b>	<b>% Fines</b>	<b>ADV (pH=2)</b>	<b>LOI</b>	<b>Oolitic</b>
<b>51.96</b>	<b>1.22</b>	<b>7.60-14.6</b>	<b>0.035</b>	<b>5.0-6.0</b>

Knowing that a reduction in Acid Demand Value and an improvement in the bench life of the sand would make the reclaimed product absolutely suitable for re-use in the cold-box process, the system was tuned for a new test cycle.

The sand resulting from this calcining treatment showed unequalled chemical/physical properties:

<b>AFS</b>	<b>% Fines</b>	<b>ADV (pH=2)</b>	<b>LOI</b>	<b>Oolitic</b>
<b>51.01</b>	<b>0.34</b>	<b>5.2</b>	<b>0.031</b>	<b>1.93</b>

**Merits of the reclaimed sand**

Merits of the sand resulting from the second calcining treatment:

- **Strong reduction in the content of dark grains**
- **Minimum content of oolitic**
- **Excellent Acid Demand Value**

The reclaimed sand was definitely satisfactory and totally in conformity with Teksid requirements. 100% of the reclaimed sand was reused in the cold-box process successfully (see enclosure).

Note: The tests with Teksid de Mexico spent sand were performed with a 1 TPH system in use at GREGG INDUSTRIES, a foundry located in El Monte, California.

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