# CASE STUDY: CYCLE TIME OPTIMIZATION

IMMEDIATELY IMPACT THE COMPANY BOTTOM LINE WITH OPTIMIZED CYCLE TIMES


THE PROBLEM

The curing cycle time for a cold-box core is often the largest portion of the overall core production time. Sub-optimal gas flow can result in uncured sections of cores, "soft spot" surface quality defects and excessive cycle times. The problem is exaggerated for large "chunky" cores. Longer cycle times can result in reduced production and profitability. Alternately, one can maintain a high production rate with excessive cycle times at the cost of increased core making equipment, increased tooling demands, consumable usage and labor costs.
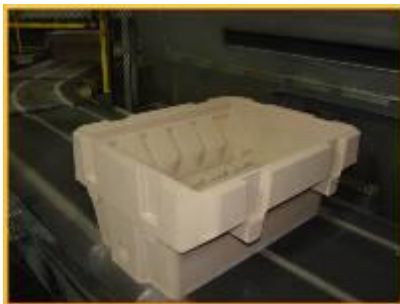
THE SOLUTION

Arena-flow is the foundry engineering software package used to model the filling and curing of sand cores and molds. In addition to Arena-flow's revolutionary core blowing module, engineers now have several options for studying core curing behavior. A steady-state air-flow analysis quickly reveals the efficiency of gassing head and vent layout selection. Often these calculations can be completed in minutes, allowing for many design permutations in a short time period. Alternatively, Arena-flow's proprietary cold-box curing module can simulate the transient curing of a core, often within one hour!
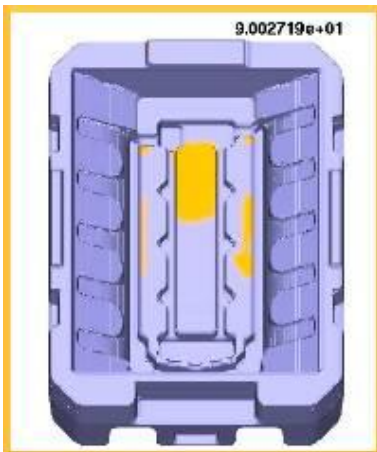
THE COST-SAVINGS

Arena-flow was used to model the blowing and curing of a large cover core for a precision sand package. A slight modification to the venting configuration resulted in a gas/purge cycle which was half of the original one during tooling design. Additionally, curing-related surface defects were eliminated due to an increase in the robustness of the process. The cycle time efficiency gains resulted in a need for fewer blowing machines than originally planned, resulting in a multi-million dollar savings over the life of the program.

YOUR FOUNDRY APPLICATION

Are your cycle times as low as they could be? Every foundry is different; think about the core you make that has the longest cycle time. What is the value of a 10 second reduction of that time? If your foundry is large, could the reduced production time mean you need less coremaking stations? If your foundry is smaller, does the reduction in cycle time mean more castings are poured in the same time frame?