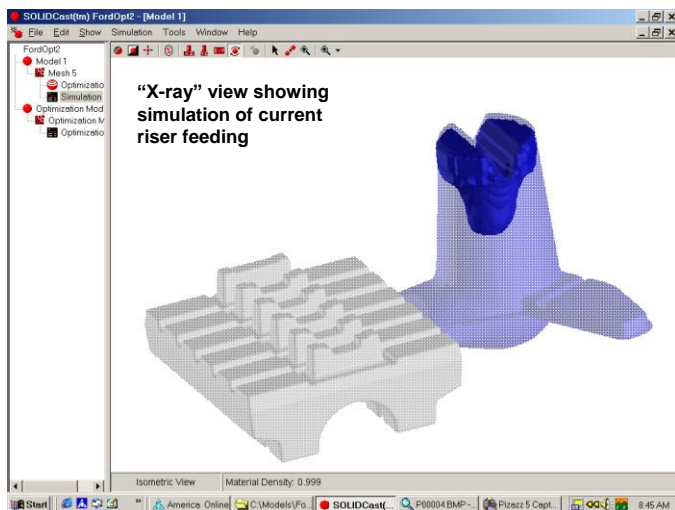


OPTI CAST

AUTOMATIC OPTIMIZATION OF CASTING PROCESS DESIGN USING **SOLIDCast™**

OPTICast™ is an amazing software tool that works in conjunction with the **SOLIDCast™** solidification modeling system. **OPTICast** uses Response Surface Methodology (RSM) to achieve the highest casting yields possible!



Original Riser Design – Cast Iron Alloy/Sand Mold

OPTICast actually automates the simulation process! Start with an initial design for a casting, with gating and risering, typically created in the **SOLIDCast** modeling system, using the Gating and Riser Design Wizards™. Then select the following elements:

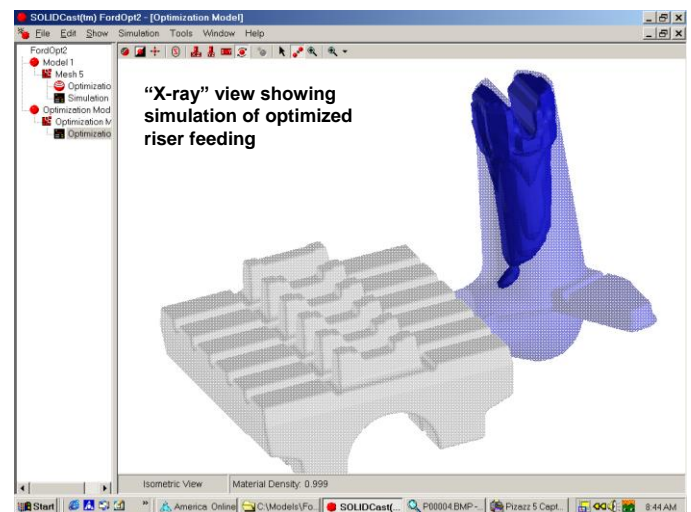
Design Variables: Elements that are allowed to vary, such as the height and diameter of a riser. It could also be the metal pouring temperature, or the preheat temperature of an investment shell or even the size of a gate or riser contact.

Constraints: Used to determine whether a particular design is acceptable. For example, a minimum acceptable yield percentage, or a maximum acceptable level of macroporosity. Many constraints can be used in a single optimization run.

The Objective Function: States what you are trying to achieve, such as maximize the yield, minimize shrinkage or minimize solidification time. You can have only one objective per run.

Once these elements are identified, launch the Optimization Run. This consists of a series of simulations in which the design conditions are varied under the control of **OPTICast**, model changes are made and simulation results are evaluated, all **completely automatically**, until the desired result is achieved.

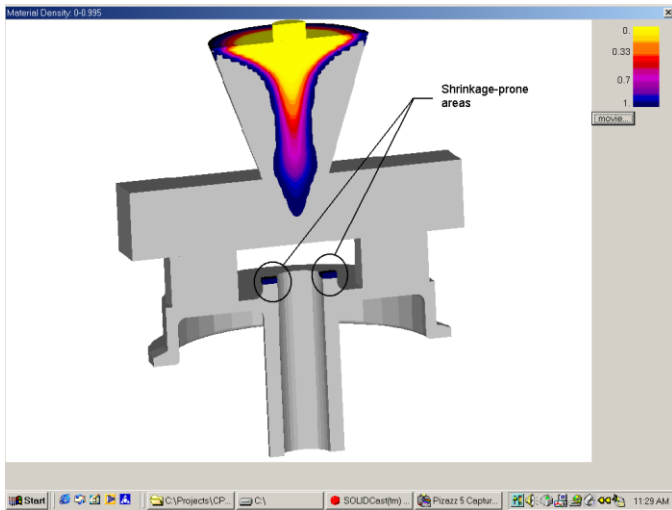
Using **OPTICast**, an engineer can start with an initial design and allow the computer to do the work of modifying the design and running simulations to achieve an optimum result.



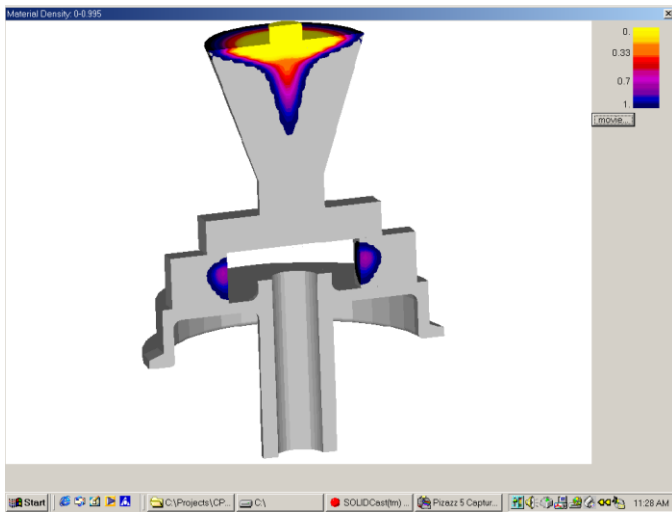
Cast Iron Casting with Optimized Riser Design

Now, for the first time, the technology of automated design is brought to the foundry in the form of a practical and easy-to-use design tool. **OPTICast** can help you to improve your **yield** and your **quality** to an **optimum point**, while freeing design engineers from the repetitive task of trial-and-error design.

INVESTMENT CASTING

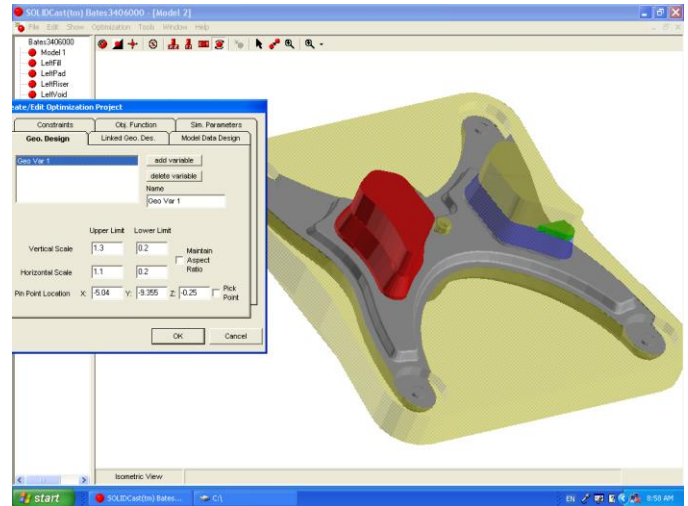


Original Gating Design with Shrinkage-prone Areas



Optimized Gating Design with Shrink-free Casting
15% Yield Improvement with Better Casting Quality!

PERMANENT MOLD CASTING



Original Gating Design with Riser and Pad Selected.
Aluminum Reverse Tilt-Pour.

Microsoft Excel - xBAB57C13.csv

Iteration						
Iteration	Geo Var 1 Vert. Scale Factor	Geo Var 1 Hor. Scale Factor	Material Density	Yield (Casting Wgt/Poured Wgt)		
1	1	1	0.99991	0.847897		
2	2	0.78	0.9963	0.882506		
3	3	1	0.995974	0.901359		
4	4	0.8	0.999491	0.859858		
5	5	1.19	0.997719	0.888457		
6	6	1.2	0.920447	0.858689		
7	7	1.3	0.92414	0.844472		
8	8	1.134364	0.946119	0.854724		
9	9	1.13442	0.946359	0.854655		
10	10	1.081879	0.961274	0.843639		
11	11	1.097882	0.956672	0.844229		
12	12	1.168009	0.937995	0.85589		
13	13	1.14641	0.94775	0.853958		
14	14	1.116189	0.956456	0.843517		
15	15	1.131109	0.951519	0.8536		
16	16	1.148376	0.948792	0.853889		
17	17	1.154295	0.94629	0.854103		
20	Design Converged: Small change in Objective Function					
21						

The Optimization Summary Spreadsheet.
17 Simulations, Without Operator Input.



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