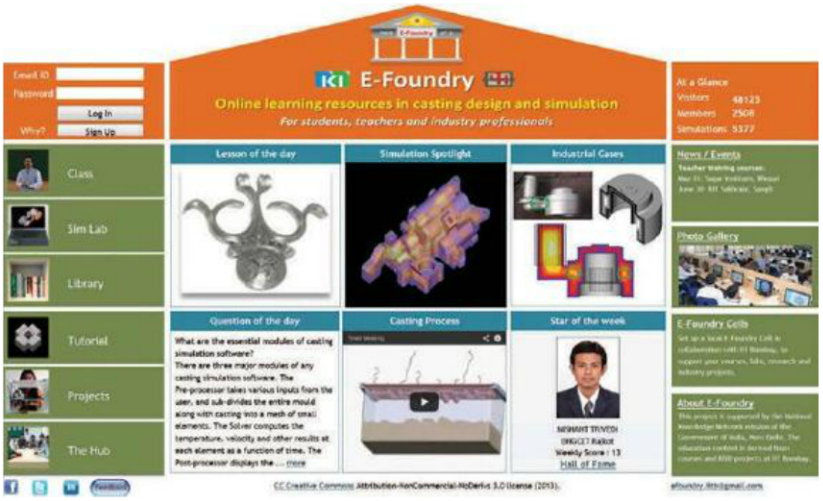
Indian Institute Offers Cloud-Based Simulation Lab

Considering the growth of automation, CAD and simulation technologies, the metalcasting industry faces an opportunity to coordinate and cooperate like never before. One professor at Indian Institute of Technology (IIT) Bombay, Mumbai, India, is hoping to use developing technology to educate, train and provide experience for metalcasting students and professionals.

Dr. B. Ravi, mechanical engineering professor at IIT, has launched the E-Foundry Network, a free online resource focused on casting design and simulation. The heart of the E-Foundry is a cloud-based simulation lab powered by a quick simulation algorithm that allows users to upload 3-D CAD files and view solidification temperatures in just a few minutes.

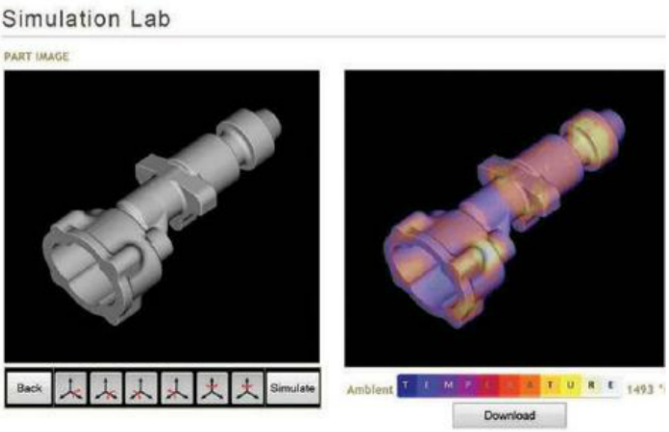


The E-Foundry includes a variety of education tools that are free to all visitors.

The casting model is uploaded to the E-Foundry server, which checks the file, generates a 3-D view and sends the image to the user's device for visual verification. After user confirmation, the simulation program on the server subdivides the casting model into a fine or coarse mesh, computes the solidification temperatures, and post-processes

the results to generate color-coded images. The user can save the images for future reference, all in less than 10 minutes. The color-coded results show the relative temperatures in different regions of the casting at the instant of solidification of the hottest region, allowing users to identify hot spots, cold spots and high gradient regions.

Based on these results, engineers can model the feeders, verify their design (location, shape, and size) and upload the model to the Sim Lab. Product engineers can check and modify part design (wall thickness, tapers, ribs, fillets, etc.) to ensure directional solidification and ease of feeding.



The simulation lab allows users to upload CAD models and view solidification simulation results within minutes.

The simulation is powered by an innovative AutoCAST-GVM algorithm recognized by India's Ministry of Science & Technology and Lockheed Martin, Bethesda, Md.

"The initial response is certainly encouraging," Ravi said. "Going forward, the E-Foundry team would like to involve other experienced teachers, consultants and industry experts, and develop a larger global platform for the exchange of knowledge and best practices."

Supported by the Indian government's National Knowledge Network, the project is handled by IIT Bombay, which supplies content and updates the website. Since its launch at the start of 2013, the website has attracted more than 49,000 visitors and 2,600 members. Those members have simulated more than 5,500 castings on the cloud. While a majority of visitors are from India, the site continues to gain views from the U.S., Germany, China and other countries with developed metalcasting industries. MC