

STEAM CHAMBER DESIGN

Amara Raja Energy & Mobility Limited (ARE&M) is one of the largest manufacturers of energy storage products for industrial and automotive applications in India.

The diverse portfolio includes Lead-acid batteries, Energy storage solutions, Lithium-ion cell manufacturing, a wide range of EV chargers, Li-ion battery pack assembly, lubricants, and exploration of new chemistries, among others. Amara Raja's Industrial and Automotive Batteries are trusted globally and exported to over 50 countries worldwide.



PROBLEM STATEMENT

Amara Raja Energy & Mobility sought Mangal's Design Engineering Solutions to evaluate the effectiveness of their curing oven chambers. They aimed to devise an innovative design to streamline the curing process, reducing cycle time and enhancing overall efficiency.

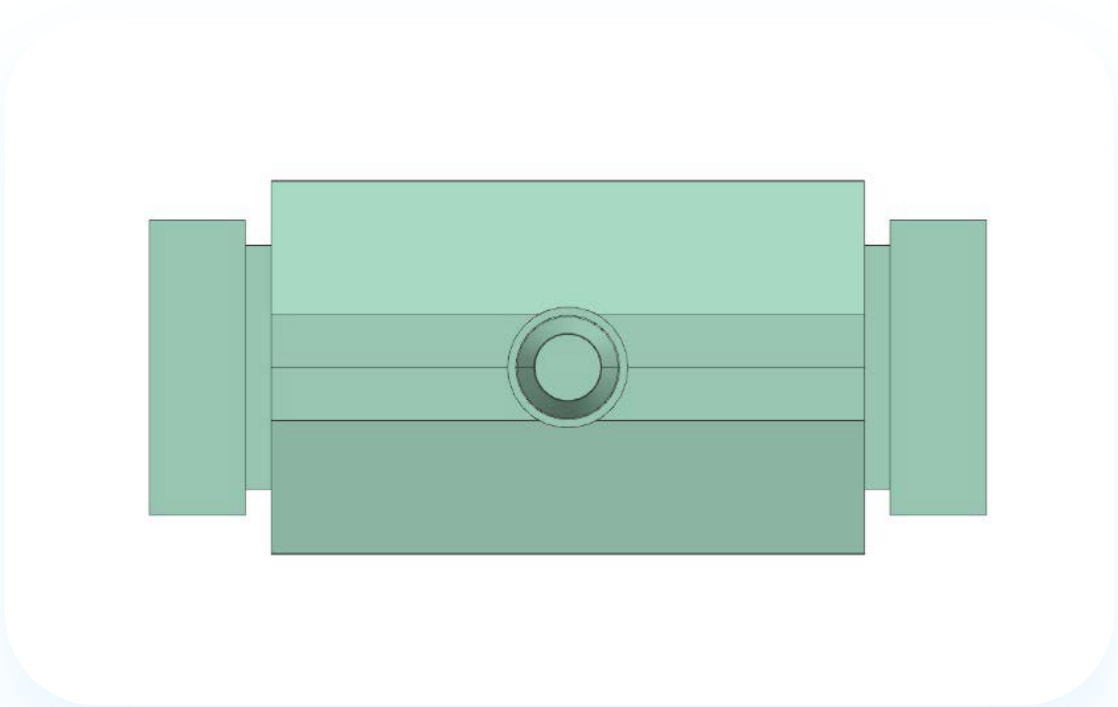
APPROACH

Design Engineering Solutions (DES) worked closely with the customer to assess various alternatives. It proposed segregating the two main cycles, steam and dry, and devising a tailored design to automate loading and unloading, thereby enhancing turnaround time.

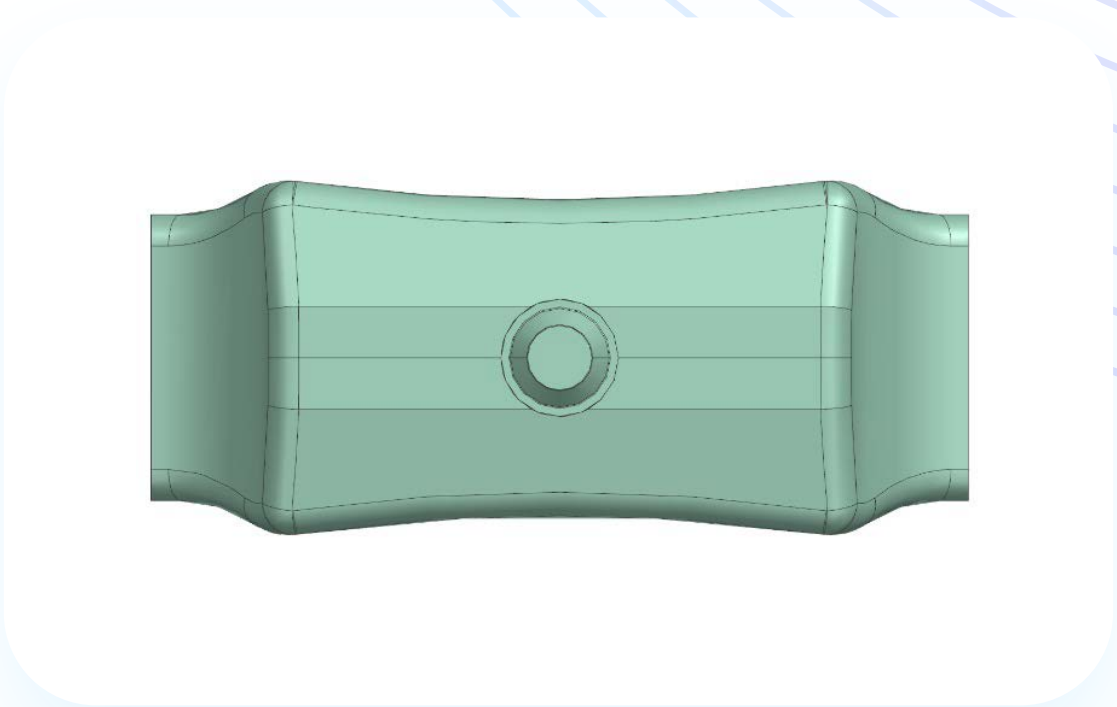


SOLUTION

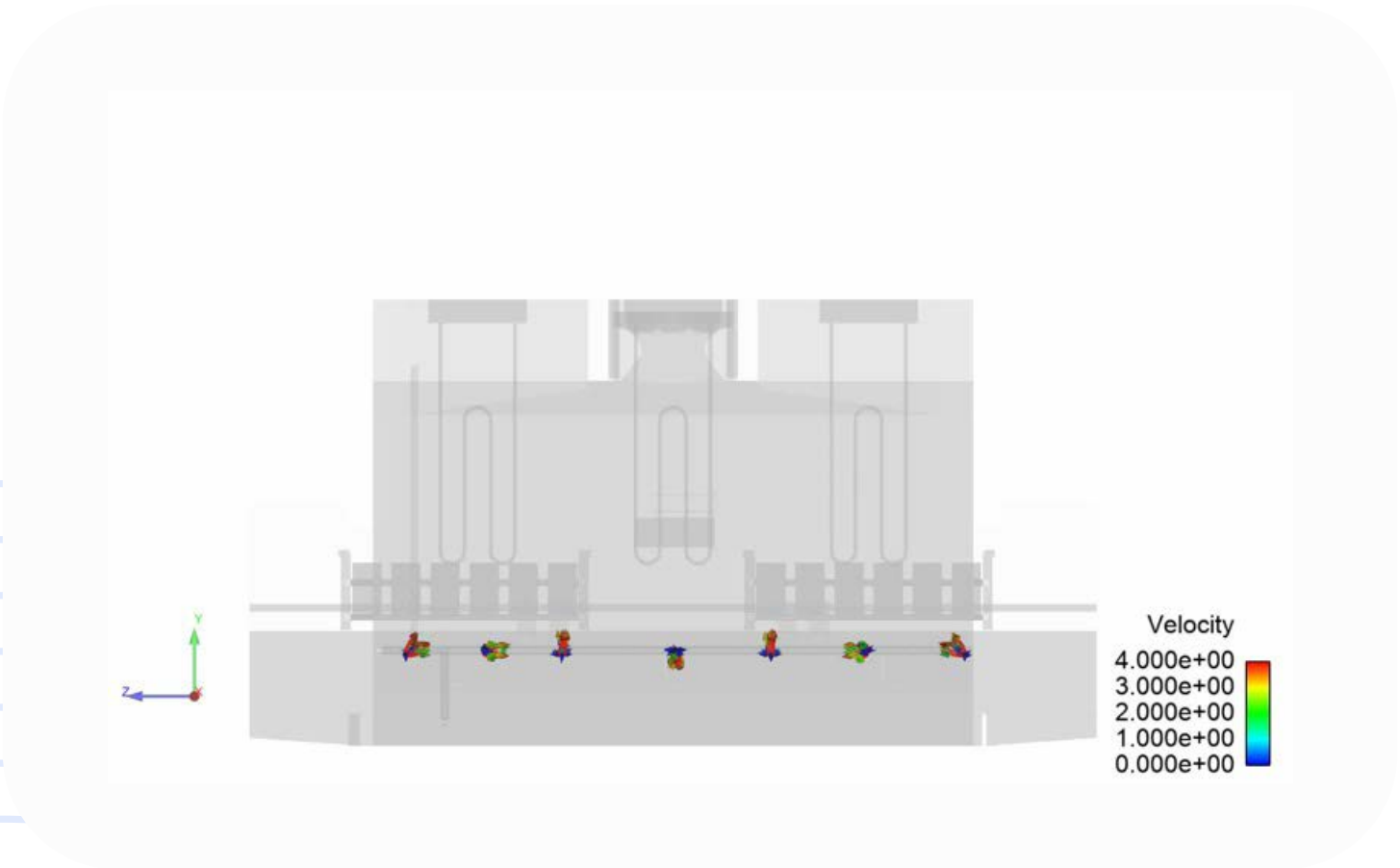
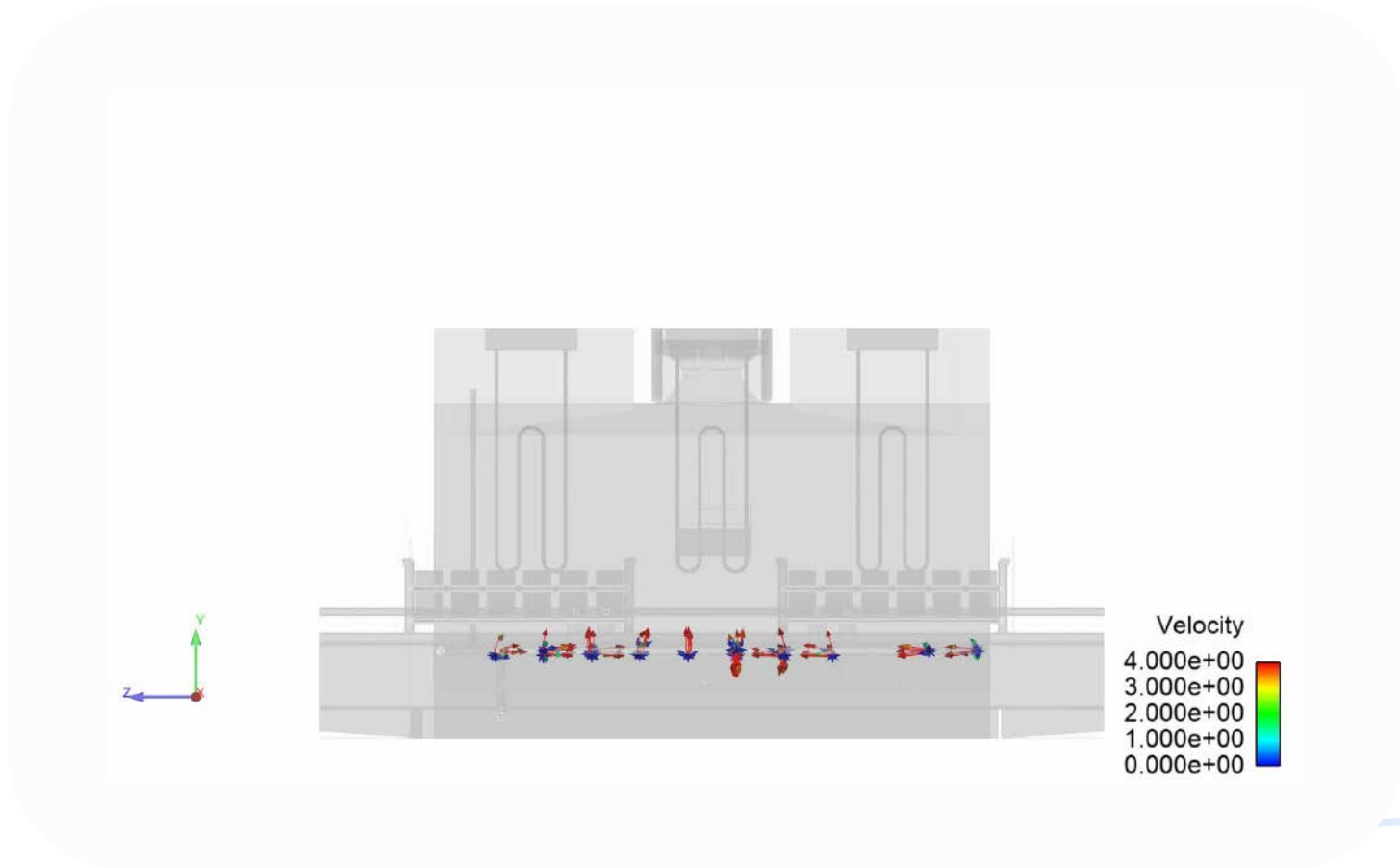
The team initiated by crafting a scaled-down model and employed digital simulation technology to validate the prototype. Based on the observations, final design iterations ensued, incorporating adjustments to nozzle positions and chamber profiles to ensure uniform and smooth flow, all facilitated through digital tools.



Current Design



Modified Design





OUTCOME

With a simulated new chamber design, the Amara Raja Energy & Mobility team successfully attained a consistent temperature of 80 degrees and effectively ensured symmetrical flow within the chamber. This achievement led to enhanced product quality and overall process efficiency.

As demonstrated in this case study, leveraging advanced engineering solutions can drive substantial enhancements in manufacturing processes. If your organization is facing similar challenges or seeking to optimize production efficiency, reach out to Mangal's Design Engineering Solutions today. Let us help you unlock new possibilities and achieve your manufacturing goals.

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