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Redefining the Future of Responsible Industry



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“Accelerating Intelligent Engineering Through AI, Simulation and Digital Twins”

...says **Radha Krishnan, Founder and President, Detroit Engineered Products (DEP),** in conversation with **Kaushal Dighavkar,** as he discusses how AI, simulation and digital twins are transforming product development, reducing development cycles and physical prototyping, strengthening India's role in global engineering R&D, and shaping DEP's strategy for growth in the smart manufacturing ecosystem

Q How is DEP leveraging AI, simulation and digital twin technologies to transform product development and support the shift towards intelligent manufacturing?

>> For years, engineering has run like a relay. CAD goes to meshing, then meshing to the solver, then the solver to post-processing, and each transition consumes valuable time. At DEP, we have brought these steps closer together. MeshWorks, our CAE simulation platform, acts as the basis for pre & post- processing as well as optimisation. DEP AIWorks, uses the knowledge accumulated from a customer's own history of simulations and tests, letting engineers evaluate hundreds of design variations in the time it took to run one simulation. AI helps us explore faster, while physics-based simulation confirms what's worth building.

Digital twins expand this cycle. A well-built digital twin allows engineers to test operational loads and predict failures before a prototype is even created. Designs are validated against thousands of different cases virtually rather than in the lab, which saves cost. On the shop floor, the digital twin continues learning, and that is where intelligent manufacturing starts. Engineers don't need to babysit their meshes anymore; they become system designers, balancing crash, NVH and thermal performance. Physics remains unchanged, but decision-making pace accelerates.

Q How are MeshWorks and AI-driven engineering helping manufacturers reduce development cycles, minimise physical prototyping and accelerate time-to-market?

>> Earlier decisions only yield benefits if the subsequent processes can keep up. Most delays in product development are not caused by the solver, but by the need to rebuild models every time the design changes. MeshWorks solves this problem by allowing engineers to morph and parameterise existing CAE models instead of building everything from scratch, transforming hours of manual effort into automated processes. AI then evaluates thousands of concepts and filters out the weak designs. High-fidelity solvers validate the most promising candidates, and only these designs advance to the lab stage.

This changes the role of prototypes and testing. Now they are used less to find problems and more to confirm results. Physical testing still has its place, and safety certification will continue to require it. But each test delivers greater value, significantly reducing the frequency of late-stage rebuilds. The ultimate benefit here is time. Each month saved across the development cycle represents real value to the business, and this is what our customers care about.

Q What role can India play in advancing global engineering innovation, particularly in AI-led product development, deep tech and R&D?

>> Much of the work behind our development takes place in India, and I've seen the country's role evolve from inside. When we set up the Chennai centre in 2000, India was seen as a destination to implement somebody else's design. Today, more than 95 per cent of MeshWorks and AIWorks development happens in India, and our platform has been awarded Class A certification as an indigenous Indian software product. The dynamics have changed. Cost is no longer the primary reason global companies set up engineering teams in India; today it's about capability. Many captive centres now own complete vehicle systems, software platforms and simulation strategy. Indian engineers are defining algorithms and owning outcomes.

AI raises the stakes. India brings together three things few markets have at once: deep engineering talent, a strong manufacturing ecosystem and a domestic market eager to develop its own technology. Across deep-tech sectors, the focus is shifting from local assembly to core technology development. By training AI models on engineering data, Indian teams build sovereign IP. Industry, startups, MSMEs, academia and government are collaborating closely. With advanced product development and an ecosystem approach, India can now lead global R&D in key areas, not just be part of it.

Q What are DEP's key strategic priorities for the near future, and how does the company plan to expand its presence in the evolving smart manufacturing ecosystem?

>> Smart manufacturing only works when design, simulation and production talk to each other. That connected space is where DEP wants to lead over the next few years. We're well positioned for it. Very few companies bring both sides of engineering under one roof. MeshWorks and AIWorks give teams speed and scale, while our engineering services bring hands-on domain knowledge from real programs. AI runs across all of it, and each side makes the other stronger. Our priority is to make that AI layer the common thread in everything we offer, whether customers use our software, collaborate with our engineers or both.

India will drive much of that growth, and we're investing in our people and partners here. Beyond automotive, we'll go deeper with the aerospace, energy, electronics and heavy engineering industries that we already support.

Our goal hasn't changed since 1998. Help engineers build better products, faster. AI now lets us do that at a much larger scale. ☐