AI Can Solve Math. But Can It Struggle?

The real edge in energy AI isn’t speed—it’s the human mind’s capacity to wrestle with complexity.

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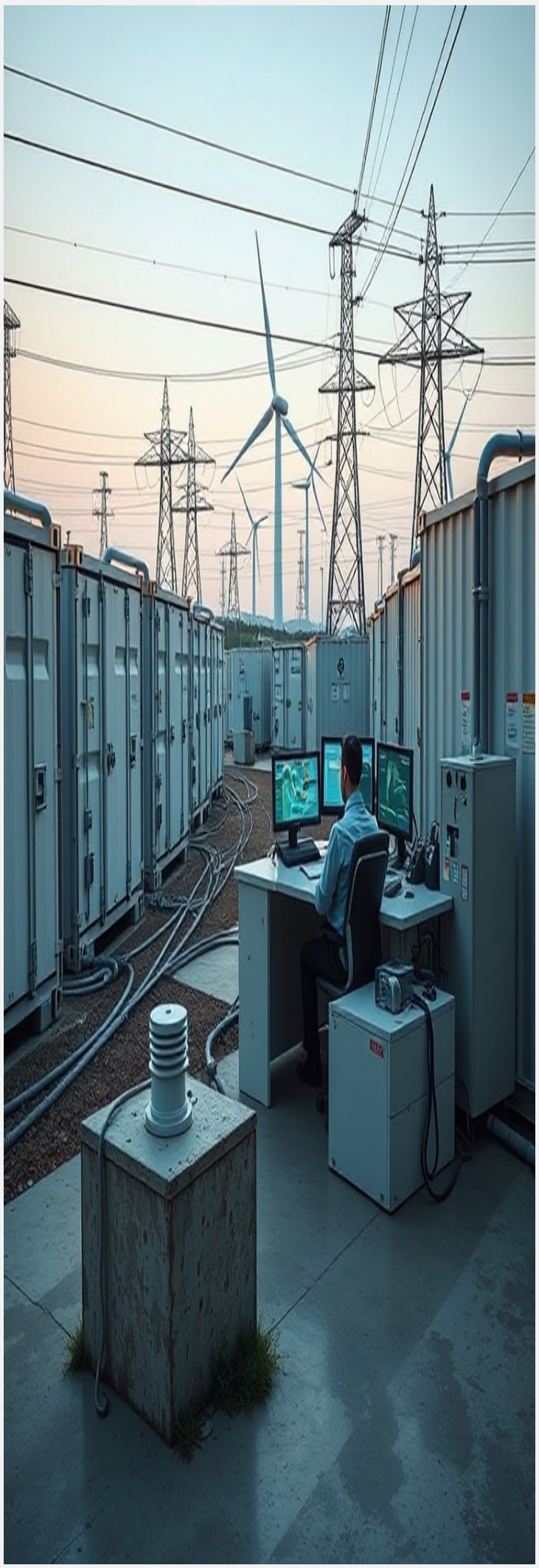
THE DATA

The act of struggling with a problem independently

Core Learning Mechanism

MIT Assistant Professor John Urschel emphasizes that true understanding emerges not from AI-provided answers, but from personal cognitive effort.

In the era of AI-assisted energy modeling, where algorithms can optimize grid behavior or simulate nuclear reactor dynamics in seconds, the most valuable skill isn't computational power—it's the human ability to engage in deep, unassisted problem-solving. When engineers and scientists bypass the struggle, they risk mistaking AI-generated outputs for genuine insight.



Source: Massachusetts Institute of Technology · Published November 17, 2026
https://news.mit.edu/2026/qa-why-building-math-muscles-remains-important-ai-era-1117

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Struggle Is the Training Ground

Engineers who have spent hours debugging a flawed energy model without AI don’t just know the answer—they understand the failure modes, the assumptions, and the boundaries of the system. This depth is not algorithmic; it’s experiential.



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AI Reveals the Limits of Automation

The danger is not overreliance on AI, but underdeveloped comprehension. An AI can optimize a battery storage cycle, but only a trained human can identify when that optimization breaks under rare load conditions—because only they have felt the weight of failure through struggle.

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