# *Stem* Speeds Development with Model-Based Design

Stem, Inc., is a leading provider of energy optimization services. The company's flagship PowerStore product predicts energy usage and deploys stored energy at precise times to reduce peak loads, enabling commercial and industrial customers to cut their energy costs.

*David Erhart,*
*Vice President of*
*Engineering, Stem*
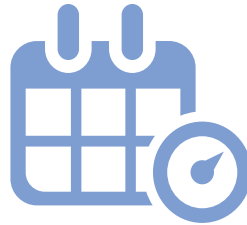
### What led you to look for a new way of working?

As VP of engineering, my goal is to mitigate risk and control costs. Most traditional workflows are slow, expensive, and painful; they often require several costly board spins and lengthy hardware debugging sessions. Our company was in its early stages, so saving weeks of effort and tens of thousands of dollars in board-spin costs would be a big benefit.

> We'll use Model-Based Design from now on because it **reduces risk, saves time, lowers costs,** and increases our confidence in our designs.
>
> —David Erhart, Stem

### Why Model-Based Design?

When our chief power electronics engineer joined the company, we were using scopes to debug designs in the lab. Instead of tinkering with the hardware, he just took a few measurements and returned to his computer. After a couple of days, he showed us **a plant model that exactly mimicked the hardware behavior. Simulations** identified the design problem and showed us how we could resolve it in the hardware. **The updated design worked immediately**, and we decided to use modeling and simulation on a larger scale.

### What results have you seen so far?

We thought we were taking a risk by switching to Model-Based Design, but in hindsight the switch significantly mitigated our risk. We designed our controller before hardware was available. We used simulations to find optimal inductor and capacitor values and debug our design. We moved into production with **just one additional board spin**. And we achieved IEEE 1547 certification about **25% faster** than usual.

**Certification Achieved 25% Faster**

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