

Nomination: [Energy Storage Awards](#)

Apurva Somani: Outstanding Contribution to Energy Storage

It was considered unreachable. Experts said it couldn't be done, that it was unattainable. And then, in 1954, Roger Bannister did the impossible – he broke the four-minute mile. It was more than incremental progress – it was a momentous leap forward for athletics.

When talking energy storage, of course, we're not talking about running – but we are talking about achieving things that were thought too challenging and out of reach, and about technology leaps that significantly advance the industry. Technology leaps like cracking the code on DC coupling...and the Roger Bannister in this case is Apurva Somani, R&D Lead for Dynapower.

Everyone was talking about it, but nobody was actually doing it

With the rapid growth of solar power installations, there remained the issue of excess energy – power essentially going to waste during times of high generation and in oversized systems (the typical overage ratio is estimated to be 20% - 40%). What if there were an easier way to capture and store the energy in batteries and access it when needed, during times of peak demand, or of low power generation? Enter DC-coupled solar plus storage that offers significant performance and financial benefits:

- Higher efficiency achieved through fewer power conversions
- Less costly to install vs AC coupled system
- Less equipment needed so simpler to install and fewer components to maintain
- Increased project revenues through efficiency gains, clipping recapture, low voltage harvest, and ramp rate control

What Apurva Somani achieved

The Dynapower team drove substantial gains in developing the DC coupled technology – but it was Apu who led the initiative: he came up with the controls, a packaging strategy, a mechanical assembly plan, and an interconnection scheme. To achieve this, he cracked the control algorithm to allow the interconnection of a DC-DC converter on the DC bus without disrupting the inverter's MPPT, avoiding a negative impact on efficiency. This topology allowed solar developers and IPs to oversize their PV arrays even more and better optimize configurations where there may be interconnection constraints but no land constraints. Within months of Bannister's success, a steady stream of other runners also recorded sub-4 minute miles. Similarly, shortly after Dynapower released our DC-coupled technology, other manufacturers released their own solutions and cemented Dynapower's place as the pioneer of DC-coupling.

Where the technology is now

Dynapower continues to lead the market with many high-profile projects. Deployed by Dynapower and through our partner, SMA, DC-coupled technology is in wide use throughout the world. Of particular interest is a recent project (Dec 2022) done with RWE: Inden Mine, a utility-scale photovoltaic plant with integrated battery storage. Around 26,500 solar modules are deployed and generate enough green



electricity to power more than 3,500 homes. What's unique about this project is that it's built in an area previously used for opencast mining. It's almost a perfect illustration of the change from dirty to clean energy – what used to be mined for high carbon-producing coal is being transitioned to house a high-efficiency, dual-sided photosensitive PV array. The Inden installation is a model for several similar installations that are planned at other mining sites in Germany.

About Apurva Somani

Besides his technology leadership, Apu is an excellent mentor to other engineers and, in fact, having him onboard has been a powerful recruiting tool for Dynapower. His accomplishments are recognized, and young engineers are eager to work with someone of his professional and personal caliber. From one of his mentees: “My experience has been excellent with him. He makes it very easy for me to ask technical questions and troubleshoot software or control issues. He encourages discussion and questions, and values my input. He is my direct supervisor and does a great job in helping identify priorities when I have multiple tasks, and he consistently checks in to make sure I am clear on expectations and that I have all the resources I need. I believe Apu is Dynapower’s most valuable technical resource.”

Another engineer, newly graduated when he joined Dynapower, said “Apu has been a model mentor and a cornerstone in my first experience working in the industry. Apu was able to take me from a student with a bachelor’s in electrical engineering to a productive member of the Dynapower team. He was able to introduce me to controls engineering and gave me the support and tools needed such that I could succeed in the field.”

Conclusion

In conclusion, for Apu’s technical expertise, creativity in researching new approaches, dedication to finding a solution, and for his willingness to mentor the upcoming generation of engineers, we nominate him to receive the Energy Storage Award for Outstanding Contribution to Energy Storage.

Apurva Somani

Director, Research & Development



Dr. Apu Somani has been with Dynapower since 2012 and is responsible for the development of new products for the Clean Energy Business Unit.

During his time at Dynapower, Apu has helped launch grid-tied and off-grid power conversion product lines ranging from 100 to 3000kW. He was promoted to R&D lead in 2016 and led the recent investment by Dynapower in a hardware-in-the-loop (HIL) platform for real-time simulation of power electronic circuits and controllers. This investment has led to increased efficiencies in product development and troubleshooting. Apu’s leadership of the R&D team has led to several

patents and technical publications contributing to Dynapower's strong IP portfolio. Apu was further promoted to Director, Research & Development, in 2023.

Apu received his Bachelor's degree in Electrical Engineering from Indian Institute of Technology Kanpur in 2006, and his Ph.D. from the University of Minnesota in 2012.

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