



# Up in the clouds



Richard Reno

PES caught up with Richard Reno, Senior Executive, Renewables Segment, GE's Power Conversion business, to hear about their capacity to supply every aspect of a solar farm's lifespan, the importance of digitalization and Predix, their open cloud-based digital platform.

**PES:** We are pleased to welcome you to PES Solar/PV. Would you like to begin by explaining a little about the background of your organization and how you currently serve the solar/PV industry?

**Richard Reno:** Sure. We are Power Conversion, GE's electrification business. We provide electrical equipment and digital solutions that cover the life cycle of our customers' energy projects. Now you see, energy demand will continue to

outstrip supply in the years to come. To close this energy deficit, you need to continuously provide clean, affordable and reliable electricity. At Power Conversion, we do just that.

Let's take solar as an example. We are able to supply every aspect of a solar farm's lifespan—from finance to equipment to digital solutions and long-term service.

We were the first to launch a 1,500-volt inverter technology and the 1,500-volt system is rapidly becoming the industry



norm. We are also introducing silicon carbide to inverters to further unleash efficiency gains, which reach 99 percent weighted EU level.

Our experience with utilities and grid operators has allowed us to apply advanced solutions such as battery storage. Our SunIQ plant control system helps regulate real-time voltage and power to help plants operate more like conventional power plants.

We also see digitization as the next big opportunity. Operations could move to a predictive model, cutting labor costs and greatly reducing the risk of downtime.

**PES:** We have been reading and hearing about your data and analytics, why does GE think this is such an important field?

**RR:** Just as connected devices are making

headway on land, industries such as the solar sector are also ripe for the digital transformation to further boost its productivity and viability. To get to a point where this becomes more widespread, we have to look at the ability of solar plants to maximize their productivity and cut back on waste and unnecessary costs.

Whether we have a sunny day or a cloudy day is not something that we can control and so, being able to maximize that resource when it's available is critical. That means making sure that the assets generating solar power are working at peak efficiency and the unscheduled downtime is reduced to minimum. This is precisely where the opportunity for digital lies.

**PES:** What is Predix, who and what is it for?

**RR:** Predix is an open cloud-based digital

platform. GE created Predix to guide industrial companies through the complex digital technology and business transition, putting them in charge of their IoT journey. By using this comprehensive platform, businesses can create innovative apps on Predix that turn real-time operational data into actionable insights. Predix equips them with everything they need to rapidly build, securely deploy and effectively operate industrial apps.

By connecting industrial equipment, analyzing data and delivering real-time insights, Predix-based apps are enabling digital industrial businesses that drive the global economy.

**PES:** What are the advantages of using digital and what is the value you can bring to your customers?

**RR:** GE's own digital solar asset performance management (APM) solution



can provide operators with access to critical data in order to build a picture of operational effectiveness or lack thereof. The cloud-based nature of Predix also means that data can be stored and shared easily, no matter where the plant is.

It can also be deployed to optimize maintenance, as data can immediately flag obvious anomalies against its normal operation readings and help prioritize resources for maintenance or replacement if and before they start to fail. More critically, by establishing a baseline virtual model for the plant and simulating what it should be doing, under optimal working conditions, it becomes possible to fine tune parameters and enable assets to run at optimum levels.

It can further reduce maintenance costs by only replacing components that are showing the tell-tale signs of wear, which allows us to further achieve the concept of service resources management optimization. What we mean by this is that there is a need to have integrated tools that rely on accurate data to deliver predictive alerts therefore, accelerating service by ensuring as-needed dispatch of parts, engineers and so on.

**PES: What makes your software stand out amidst the competition and how do you intend to stay one step ahead?**

**RR:** Our Predix platform is equipment agnostic, meaning our digital solutions can be used for any solar farm assets regardless of its manufactures. It is an open platform that powers all of GE's software applications and allows GE, OEMs and their customers to create applications to support specific use cases. Its use throughout the industry will save tremendous amounts of money, as it eradicates the need to build multiple

platforms across companies.

Going forward, we are going to use silicon carbide inverters to replace current inverters to further boost plant efficiency. Combined, we anticipate SiC-based inverter technology and the Digital Twin can help optimize plant operation and can reach up to 20 percent cost reduction.

**PES: Do you have any projects on the horizon?**

**RR:** Yes, we are currently collaborating with key customers to install the digital APM, ready to harness insights from big data to optimize plant performance. We are excited to demonstrate to the world the potential of digital through these pilot programs.

**PES: Has 2017 been a good year so far for this sector of GE and how are things looking for the end of the year?**

**RR:** We are currently on track to demonstrate the digital promise through pilot projects with key customers. Once it is proven, the speed of digital transformation can only be accelerated as we see it quickly scale to enterprise-wide or industry-wide operations to resolve issues, drive productivity and increase efficiencies. Plant developers that invest now will not only see improvements in the short term, but will also be future proofing themselves for long-term performance gains.

We anticipate more customers and partners will come together to embark on this digital journey and together, we will build tomorrow's solar farms that are more efficient, cost-effective and optimize power generation.

[www.gepowerconversion.com](http://www.gepowerconversion.com)

**Richard Reno**

Senior Executive, Renewables Segment, GE's Power Conversion business

As the leader of GE Power Conversion's Renewables Segment, Rich has responsibility for the Solar, Wind and Hydro segments. He assumed this role in 2017. Prior to this, he led Power Conversions Global Projects Organization, covering all industry segments.

Rich joined GE's Power Plant Engineering team in 1993 as a controls engineer. He subsequently became a certified black belt, joined GE's rapidly growing e-Business effort, and moved into leadership positions in engineering, integration and project management within GE's Thermal and Hydro segments in the United States, Europe and Asia. He joined the Renewable Energy division in 2005 and took on an international assignment in Salzbergen, Germany where he led GE's 2.5 megawatt platform. After returning to the U.S. to lead GE's offshore wind platform, he was appointed General Manager of Product Management for of GE's entire wind portfolio in 2011. Rich then led Wind Global Project execution in 2012 and Global Fleet Reliability Operations in 2013 where he had responsibility for the availability and reliability of GE's global fleet of 22,000 wind turbines.

Rich was born in Hudson, NY. He received a B.S. in electrical engineering from Clarkson University, and lives in Burnt Hills, NY with his wife, Natalie, and their two daughters, Peyton and Kendall.