

# Identifying winners in the DG scramble

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For the past century, the power sector has been fairly stable, composed of familiar structures, players, and technologies. However, today the sector is evolving at a more rapid and global scale than ever before: renewable resources increasingly supply our power (bringing a host of challenges with them), changing regulatory structures mean new roles for established players, and – perhaps most strikingly – the rise of distributed generation (DG) has empowered energy customers at all scales to generate their own power. In this way, DG circumvents the established power value chain, creating opportunities for a new cast of players to displace the utility in the role we think of as “the power company.”

Who will win in this emerging space is an unanswered question, and as both incumbent stakeholders and new entrants scramble to make their mark in DG, a tremendous opportunity is up for grabs. In a recent report, *Powering the future: evaluating the contenders that aim to rule the distributed grid*, Lux Research examined the players that are vying for that opportunity.

## Partnerships are stronger than the sum of their parts

DG “power companies” may take on different roles, such as home solar system installers, project developers, and microgrid operators. Regardless of business model, the best among them will provide a complete solution to customers – a DG system that generates electricity cleanly

and economically, stores energy to mitigate the intermittency of renewables, and interacts with the grid for the benefit of both the customer and the grid operator. Distributed renewables, energy storage, power electronics, and intelligent software are all critical to such a solution.

Organically building a portfolio that covers each of these key elements of a DG system is a massive challenge, and one that no company in the space today has mastered – but partnerships can fill in the gaps. This strategy allows each partner to specialise, excelling in its own area of expertise while leveraging the other to achieve breadth.

SunPower lands the top spot through masterful partnership, strengthened by relationships with startups Stem and Sunverge that round out its capabilities with energy storage and controls software. Interestingly, some companies are able to repeat this strategy and land in our analysis multiple times; for example, Tesla’s partnerships include both SolarCity and Sunrun – an excellent achievement, backed up by energy storage technology so industry-leading that it entices multiple companies to adopt its platform. For partnerships that work exceptionally well, acquisition can be a logical next step to cement the relationship, as Tesla is hoping to achieve by bringing SolarCity in-house.

## IT giants have work to do

Of all the elements of a DG system, software is the most multifaceted and holds the greatest potential for innovation today. Software systems simplify and

optimise at every point in a DG system, aiding with siting and design, scheduling and controlling the dispatch of assets, managing customers’ energy use, and improving distribution system operations. As the internet of things expands its role in the energy space, assets can be controlled seamlessly and intelligently, and big data brings better modeling and forecasting.

There are unique opportunities for IT players to bring value to DG, but these companies have so far taken a wait-and-see approach that puts them at risk of having to play catch-up. Titans like Google, IBM, and Cisco have yet to develop platforms for DG, leaving industrial conglomerates like GE and Siemens and a fascinating array of startups to fill the gap. Google is a particularly curious case; from its high-altitude wind company Makani, to its rooftop solar analysis tool Project Sunroof, to its home energy management capabilities through Nest, Google has dabbled in many disparate elements of DG, but without any integration between them. Oracle’s recent acquisition of utility customer engagement software developer Opower is a promising sign, but whether the company can expand that capability into a broader solution for DG remains to be seen.

## Change is happening quickly

The DG landscape is moving fast. Between May 2016 and June 2016 alone, SunPower’s parent Total acquired lithium-ion battery maker Saft, GE invested in distributed storage developer Sonnen, utility Engie acquired a majority stake in battery controls startup Green Charge Networks, and Tesla made its move to acquire SolarCity. The industry is young, with many players and no definitive winner. To stay on top, companies will need to continue to improve their technical and business strength, and not all will. In the coming months and years, there will be deaths, exits, and new entrants, as players continue to put together the pieces of the distributed grid of the future. MPS

## Data centre power

Fuel cell developer Ceres Power and reciprocating engine maker Cummins have won a US DoE award to develop fuel cell systems for data centres.

They will work on a modular solid oxide fuel cell system, based on the Ceres Steel Cell (pictured), targeting high electrical efficiency (60%), scalable up to 100 kW. Wider applicability to other markets such as commercial combined heat and power will also be considered. (Ceres has also recently announced it will begin trials of its prototype Steel Cell based home power systems in the UK later this year, supported by €600 000 of European funding, as it joins the ene.field fuel cell residential demonstration programme.)

If successfully implemented into data centres, the Steel Cell will enable data centre operators to cut current overall costs by more than 20% and reduce their carbon footprint by up to 49%. Data centres are estimated to consume nearly 2% of the world’s electrical power.

Meanwhile, MTU Onsite Energy reports an order to supply a total of 23 emergency generators with a total rating of 57 MW for a data centre in Amsterdam. The gensets will all be based on the 20-cylinder Series 4000 engine.

The data centre is operated by US company EdgeConneX, which already uses 80 MTU gensets for standby power requirements at its data centres in the US.



The diesel gensets are being supplied complete with a 30 000 litre fuel tank and will be installed in containers in order to meet noise control requirements. MTU’s Series 4000 engines produce their full electrical output within 15 seconds of start-up, thereby meeting the customer’s stringent project requirements. MPS