

# Wind farm developer assesses sites 20 times faster and cuts power use by around 75 per cent with Dell blade cluster



- Green efficiency
- HPC



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*Peter Stuart, Technical Manager, RES (Renewable Energy Systems)*

## Customer profile

Company:	RES (Renewable Energy Systems)
Industry:	Energy
Country:	United Kingdom
Employees:	680
Website:	<a href="http://www.res-group.com">www.res-group.com</a>

## Business need

To build more wind farms overseas, RES needed high performance computing. It wanted a power-efficient solution that was compact and easy to manage.

## Solution

Dell consultants designed and implemented a Dell blade cluster, running Platform Computing software, supported by Dell storage and protected by Dell ProSupport for IT.



## Benefits

- Potential wind farm sites assessed 20 times faster
- Power consumption reduced by approximately 75 per cent
- Staff time freed for strategic tasks thanks to efficient management solution
- Cluster footprint minimised with compact blade enclosure
- HPC availability maximised with Dell ProSupport for IT

Developers in the renewable energy sector rely on advanced weather models – produced using high performance computing (HPC) – to locate ideal sites for wind farms and solar plants. Sourcing IT solutions that actively support the move to a greener future by using energy more efficiently is a top priority.

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*Peter Stuart, Technical Manager, RES (Renewable Energy Systems).*

Voted one of the UK's top 50 green companies by The Sunday Times, RES (Renewable Energy Systems) is one of the world's leading renewable energy developers, having built more than 80 wind farms across the globe. The company is also expanding into new wind energy markets, including Turkey and South Africa. Previously, it ran wind simulations on a cluster of three Dell™ PowerEdge™ rack servers. However, to assess more complex emerging markets quickly and accurately, it needed to upgrade its weather models, for which a large HPC solution was needed. As RES promotes low-carbon energy technology, it wanted to minimise the carbon footprint of its computations. The HPC cluster also had to occupy as little space as possible, because RES needed sister company Sir Robert McAlpine to host the cluster, until it could build its own datacentre. Finally, RES wanted a simplified management solution because it lacked the resources to run a large-scale HPC cluster manually.

Because the company was pleased with its Dell servers, Peter Stuart, Technical Manager at RES, contacted his Dell account team. The team told him how RES could take advantage of advances in Dell and Intel® Xeon® Processor technology to boost HPC processing power, while minimising power consumption and server footprint. Says Stuart: “Dell responded quickly to our enquiry – far quicker than any of the other companies we approached. It immediately assembled a team, including a HPC consultant, who met us within days.”

### **Dell consultants collaborate with Platform Computing to deliver roadmap for success**

The quick response led RES to a swift decision to continue working with Dell. “We needed to implement the solution as quickly as possible to make the most of some business opportunities that were coming up in new wind farm markets. As our previous experience with Dell was highly positive, we felt confident from the start that it would deliver,” says Stuart.

### **Technology at work**

#### **Services**

Dell ProConsult  
– Workshop, Assessment, Design & Implementation (WADI)

Dell ProSupport for IT  
– Mission Critical option

#### **Hardware**

Dell™ PowerEdge™ M610 blade servers with Intel® Xeon® Processors X5550

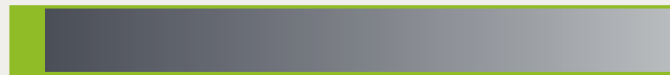
Dell PowerEdge M1000e modular blade enclosure

Dell PowerVault™ MD1000 direct attached storage array

Dell PowerConnect™ M6220 switches

#### **Software**

Platform Cluster Manager – Dell Edition



**Assess time potentially 20 times faster**



**Power use cut by around 75 per cent**

The Dell Global Infrastructure Consulting team (ProConsult) worked closely with RES to assess the company's needs and design the solution. Early on in the process, Dell consultants introduced RES to Dell Certified Partner Platform Computing, which showed the company how Platform Computing software would help make the most of the HPC cluster and streamline management processes. "As part of the Dell Workshop, Assessment, Design & Implementation process, our Dell account manager brought in technical experts from both Dell and trusted software partner Platform Computing – they worked together to create the optimum HPC cluster for our needs. This was great because it meant we avoided dealing with multiple providers. As a result, we were able to determine the right size for the cluster and get going quickly," says Stuart.

Advised by Dell's consultants, RES opted for an energy-efficient HPC solution built on 16 Dell PowerEdge M610 blade servers with Intel Xeon Processors X5550, running Platform Cluster Manager Dell Edition software. Mounted in a Dell PowerEdge M1000e modular blade enclosure and connected with Dell PowerConnect™ M6220 switches, the cluster easily fitted into the space offered by Sir Robert McAlpine. In addition, to store the large volumes of data produced by its weather models, RES chose a flexible and cost-efficient Dell PowerVault™ MD1000 direct attached storage array. Dell implemented the cluster and storage in two days, with the management software implemented by Platform Computing consultants in three days.

Says Stuart: "Our Dell HPC solution is mission critical – without it we might miss out on opportunities to invest in new markets. Failure or delay was not an option, and, as we had limited HPC experience, we asked Dell to deliver a turnkey solution that was guaranteed to work. That's exactly what it did."

#### **Potential wind farm sites assessed 20 times faster**

RES now uses its Dell HPC cluster with Platform Computing software to analyse wind conditions considerably faster. This means that the company can quickly determine if there is sufficient wind for a wind farm on a given piece of land. RES then adds this to other factors, such as proximity to the grid and transport infrastructure, before deciding whether or not to invest. "Using our previous three-server cluster, it would take us around a year to map the wind in a country such as Turkey. Now we can complete the job in two to three weeks – approximately 20 times faster – which means we can get wind farms in place quicker," says Stuart.

Also, RES is able to run more advanced simulation models that offer greater accuracy and detail. This, in turn, makes it easier for RES analysts to evaluate outcomes and adjust models accordingly. As a result, RES managers have a firmer basis for deciding where to place the new wind farms, which helps minimise the company's risk. What's more, the HPC solution strengthens RES's position as a leader in its field of expertise, which increases its chances of picking up new business in future.

**"Our power consumption is around 75 per cent lower than it would have been if we had expanded our previous cluster to achieve the same computational power."**

*Peter Stuart, Technical Manager, RES (Renewable Energy Systems)*

## Power consumption reduced by approximately 75 per cent

Dell also met RES's energy requirements. Stuart explains: "Our power consumption is around 75 per cent lower than it would have been if we had expanded our previous cluster to achieve the same computational power, instead of switching to Dell PowerEdge blade servers."

Dell PowerEdge M610 blade servers are designed to deliver higher performance for less power. Their Intel Xeon Processors 5500 series proactively switch the servers into the lowest possible power state during periods of reduced demand. And the compact Dell PowerEdge M1000e modular blade enclosure has ultra-efficient power supplies and fans as well as an optimised airflow design that cool the chassis – together, these work to enable exceptional performance using less energy. "Our Dell HPC solution has both the performance and the energy efficiency we need. In this way, Dell supports not only our international expansion but also our commitment to cutting our carbon footprint. We see that as hugely positive," says Stuart.

## Staff time freed for strategic tasks with simplified cluster management

In the past, RES could manage its small cluster manually. However, the company lacked the resources to run a large-scale HPC solution in the same way. The Platform Computing software implemented as part of the Dell HPC solution has solved the problem. "We're delighted that Dell introduced us to Platform Cluster Manager, Dell Edition

software. It lets us manage our entire cluster through a single interface, which means we can complete tasks such as operating system upgrades quickly," says Stuart.

Platform Computing management software automates many of the processes that RES completed manually in the past. Says Stuart: "Platform Cluster Manager automatically allocates resources within our Dell HPC cluster and gives us a clear picture of the jobs that are running on the system at any one time. Our staff are freed from routine tasks, which means they have more time for value-added work such as analysing results or configuring new calculations."

## Dell ProSupport maximises availability

RES chose to maximise availability for its HPC solution with Dell ProSupport for IT, Mission Critical option, which offers the security of on-site service within four hours. Without wind maps, the company cannot assess land for new wind farms, and any delays to computations can mean lost investment opportunities. "Our HPC solution is at the heart of our business, and Dell ProSupport for IT Mission Critical option helps us ensure that it's available at all times. As a long-term customer, we'd always been pleased with Dell's service, so we felt confident in working with its consultants on this project. We haven't been disappointed," says Stuart.

For more information go to:  
[dell.com/casestudies/emea](http://dell.com/casestudies/emea) and  
[dell.co.uk](http://dell.co.uk)

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