



University of Western Sydney

Solar Car Race Event

Case Study

Lenovo workstations and laptops power the Solar Car team with:

- Professional workstations that speeded up the design process
- Highly reliable laptops running continuously on the 3000km road trip

The Lenovo logo, consisting of the word "Lenovo" in white text on a red background, oriented vertically.

Lenovo ThinkStation D20 and C20 Workstations and laptops play a vital role in UWS

The ThinkPad Tablet 2 allows students to work online without compromising the interactivity of the face-to-face learning environment.

Background

Every two years, teams representing leading universities and technical institutes from across the globe complete the 3000km journey from Darwin to Adelaide for the World Solar Car Challenge. Now in its 27th year, the World Solar Car Challenge continues to showcase the development of advanced automotive technology, promoting alternatives to conventional vehicle engines for a sustainable future.

Introduction

In 2013, a group of engineers, designers and students from the University of Western Sydney entered the world's largest solar car rally event, sponsored by Lenovo Australia. Using Lenovo ThinkStation D20 and C20 workstations, the team simulated and designed their solar vehicle. When the time came to hit the road, the team used on-board Lenovo laptops in escort vehicles to process data and chart the journey in real time.

Lenovo's hardware played a key role in the university's participation in the event, from the design and simulation stage through to the role played by the portable devices on the journey itself. The University of Western Sydney (UWS) joined 44 teams from 25 different countries in the World Solar Car race from Darwin to Adelaide. From the development stages to the finish line, the UWS team spent one and a half years dedicating their time to bring their ideas to life using state-of-the-art resources.

Challenges

One of UWS's top priorities was to ensure the workstations they used in the lab would support computer-assisted design and engineering simulation software to ensure the dozens of hours the team spent designing their solar vehicle would not go to waste. They required professional workstations that were fast and reliable to support the mechanical, physical, and electrical component of the design process.

Once the project moved from the lab to the highway, portability and durability were paramount. The team used devices in escort vehicles to process the received data that was transmitted by dedicated electronics built into the solar car. They required a laptop that could stay on for the duration of the race; that was both rapid and efficient, with a strong battery life. "The team required one device to stay operating for the duration of the race to collect all data on the cars performance. This included solar cells, batteries, speed and motors," explained UWS' solar car team leader, Jay Manley.



"Lenovo devices stood out for their reliability, workmanship and durability. Even when one of our engineers spilled a two litre bottle of water on one of our laptops, it never stopped working. We just dried it out, fired it back up and it kept going"



Jay Manley
Solar car team leader,
University of Western Sydney

Lenovo ThinkStation D20 and C20 machines in the lab, Lenovo laptops on the road

Understanding the reliability and durability of Lenovo devices, UWS approached Lenovo for support in the solar car race. "After spending dozens of hours drafting and simulating the car on the big ThinkStation D20, our entire electrical team ran solely on the Lenovo Laptops during the race to collect data and diagnose faults. A great many problems arose from driving an experimental car 3000km down a desert highway but I can say that not one of them was from the Lenovo gear!" said Jay.

Results

Three weeks and several thousand kilometers later, the UWS car placed a respectable 11th out of 23 entrants in the Challenger Class. Jay said the ruggedness and efficiency of their Lenovo gear was a great help in their pursuit. "Lenovo devices stood out for their reliability, workmanship and durability. Even when one of our engineers spilled a two litre bottle of water on one of our laptops, it never stopped working. We just dried it out, fired it back up and it kept going," Jay said.

For Jay, "The devices were also critical for their efficiency and processing power; we could view the car's consumption the entire time, displayed on a custom interface. With energy consumption critical to the race, we needed a laptop with rapid processing power to chart our journey from start to finish." The Lenovo laptops ran all of the vehicle diagnostics. Once the cars were built, the team set up an interface on the laptops which could talk directly to the car's equipment.

Jay explained, "One laptop was required to stay on the whole time as it operated as a data server and recorded all the information live as the car drove along, via WiFi. By the time the race was over, the database was around 5GB." The media team also used Lenovo devices to edit and upload images on the road. "Without the computer processing power in the support vehicles, we wouldn't have been able to view what our power consumption was. All the information was translated from an ethernet cable and transmitted via WiFi on to a custom interface we built on the laptop. From there, we could work out whether to increase power or decrease power for efficiency," Jay said.

Lenovo® Key Facts

- No.1 in Worldwide Education Computing • No.1 in Australian Education Market
- A **Fortune Global 500** company
- One of the **Most Reputable Companies** according to Forbes
- Listed by Forbes as **10 Companies that are genuinely green**
- On the **Honor Board** of the **Hang Seng Sustainability Index** with an A+ rating
- **Major research centers** in Japan, China and the US
- **Manufacturing and assembly** facilities in China, India, Mexico and the US

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Jay Manley



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