



Working with industry and schools to light a spark in our future engineers

On November 30 2012, Cummins Power Generation, a global company that is also a committed and proactive supporter of the next generation of engineers, opened its doors to secondary students to host a new event in partnership with EBP Kent.

Welcome to the Energise Your Future final, the culmination of months of research and development to bring a genuine STEM challenge to year 8 and 9 students from eight Kent schools.

Those at the event knew this was special: one teacher commented: 'The kids are really motivated; talking about what they've done. It's really quite special. They seem very happy, committed and interested.' That was the point of the event, which was developed earlier this year as

a result of a challenge thrown down by Broadstairs-based Education Business Partnership Kent: 'Can you create an engineering project for young people that is new and challenging and will inspire them to seek jobs in STEM industries?'

With members of Cummins' international workforce, including two of their R&D specialists Marcus Smith and Chris Watcham, led by community involvement leader Sarah MacGregor, the company came up with Energise Your Future, a challenge giving students a hands-on experience of scientific research, offering a chance to work with professional engineers and mirroring their working day. Sarah said: 'This was a real challenge in itself for our engineers. We had to make sure the students were able to do the challenge, make it transferable and relevant to the curriculum.'

Behind the scenes, EBP Kent was the facilitating agent, gaining involvement from top industry partners, including Hornby, Vattenfall, Kent University and SEP—and a unique two-day challenge was born. On the Monday, student teams received seven power generator kits that they had to build: scaled down versions of real machines from the simple windmill through to the internal combustion engine and Stirling engine. Each school was allocated two engineers on the Tuesday to ensure the best professional support was offered, underpinning the genuine partnership between business and education. Throughout the day, students conducted their experiments in a bid to collect 'power points'

'Young people have a view of how to use science.' Engineer

'Nothing's stopping girls being scientists.' Y8 student

'The tension in our team came not from getting on but deciding which system was most efficient.' Y8 student

'When I was young I wanted to be teacher but after today I want to be an engineer.' Y9 student

'It's been really enjoyable seeing students being challenged.' Trainer



Energise your Future: students and industry working together

Well done to students taking part from...

Castle Community College, The Charles Dickens School, The Ellington and Hereson School, Hartsdown Academy, Mascalls School, Project 15, Sittingbourne Community College, Walmer Science College

which were measured according to how much energy was produced. In addition, the students created a presentation about the findings and experiments. The winning team in each school was chosen to attend the grand final where they would present their project work to a panel of judges from the industry, and their peers, as well as taking part in additional challenges and a tour of the Cummins plant.

Hands-on, genuine industry experience

'Yes, this is an academic enrichment day,' said Ian Skeels, chair of judges and Cummins Six Sigma Black Belt (project manager) ' but it is more than that. This challenge is analogous with what we do in the office. We're an assembly operation, taking parts from suppliers and sister organisations to create a finished product so what the young people have done this week is to take parts from a supplier and conduct experiments to find out what works best. They've been challenged to work as a team and look at a piece of technology to accomplish an objective.'

Fellow judge Richard Irving, part of the development team at Danish company Vattenfall, which makes wind turbines, agrees that events like this mirror real life work situations. He said: 'The pupils have been working on engineering solutions and there is a clear thought process to get from A to B. They have encountered the stages in



Overall winner: The Ellington and Hereson School

Best Presentation: Mascalls School

Best Teamwork: Sittingbourne Community College

between, of technological advances, for example finding out how different site conditions can affect results. We have entire departments in Denmark that focus on specific problems so the guys here have had a smaller version of what our technological teams go through on a daily basis.' Clearly impressed by the knowledge shown in the students' presentations, Richard said: 'People think of engineering as being a mechanic under a car. It's nice to show a different side. The students are getting a practical application of what we do.' Ian adds: 'Our potential workforce is in that room. We need to show them the beauties of engineering; the beauties of science, that it's not something you learn off the whiteboard or the computer.'

Face to face: youth and experience sharing

The students have clearly assimilated the knowledge and this showed in their presentations. Martin Hillas-Smith, a design technician at Mascalls School in Paddock Wood, said: 'What surprised me was how children can look like they're not taking things in but when they were creating their PowerPoint presentations at school. they were energised and demonstrating that knowledge in them.'

This was backed up by some assured answers in response to questions from the judges. One team said: 'We were successful because we overcame problems.' The response from the judges was: 'We all face challenges, when things don't work well.' The running joke of the day revolved around Blu Tack. 'We used Blu Tack and a pencil to make our windmill go round,' admitted one team. 'Yes,' responded one of the judges, empathetically. 'We've also used Blu Tack to solve some problems.'

Breaking down barriers

There is a good mix of males and females – and this is part of the aim, breaking down the barriers to encourage diversity. Richard from Vattenfall says: 'It is a male-dominated industry and we're trying to get more girls into it. There's a good mix here, demonstrating it's a career for everyone.'

Sarah, from Cummins, says: 'As a major global corporation, we're looking for a diverse, sustainable workforce. We'd like our community to know we're passionate about living our corporate values, which includes corporate responsibility; on that point we want to inspire young people from our local area with the breadth and depth of what we do, from IT to HR, engineering to assembly, marketing and sales. The opportunities are tremendous and you don't need to be technical. You need to be stakeholder focussed, passionate about driving value into the diverse areas of our business. That's the key. Above all we're looking for diversity and passion. The beauty of events such as these is that everyone benefits. The young people learn about us and we hone our project management and presentation skills.'

Erin from Hartsdown Technology College said: 'I've started to look forward to science now since I've done this project. It's been great fun and has opened eyes to way science works – it's practical.' While Georgia from Charles Dickens School said: 'I really like science because I want to be a science teacher and I like finding out how things work.'

Learning across the curriculum

Getting teachers inspired is one of the additional benefits of the project and demonstrating that deep learning across the curriculum and skills development is taking place is a way of doing this. Martin from Mascalls said: 'The students have learned teamwork; they had to work tightly together, with limited time. They realised the importance of improvisation.'

This is backed up by Sonia Cottrell, head of technology at Hartsdown Academy. She said: 'The students have learned a lot of skills. They've learned that the first idea is not necessary best; they have thought their problems through and

M joined the day as part of Project 15, an alternative curriculum PRU. He won an award for his achievement in the lighthouse competition held on the day. He said: 'I've never done anything like this before. When I put my mind to something I can achieve. I thought the experiments were easy.' Back at school, he will now be encouraged to pursue mechanics and engineering as a career.

experimented, and have not been disappointed when thing so wrong. We had a few disasters on the trials but the children persevered and came up with lots of solutions. They used their brains independently rather than being prescribed work and this gave them a sense of achievement.' Swale Skills Centre works alongside its local secondary school to offer work placements and experience. Iain Mitchell said: 'Students had a buzz about this project; they've worked together. A teacher was surprised that the pupils were talking about their work, and were enthusiastic about it. They've learned about energy: how to use it and make it. As we are an engineering centre, any introduction to a large company willing to do this is good for them because it shows young people that engineering is a career choice.'

