25 October 2012 • 8 Northumberland Ave • London

beea

british engineering excellence awards

Organised by

findlaymedia

EUREKA

newelectronics

Headline sponsors

Cambridge Consultants

Digi-Key Corporation

Sponsors

NATIONAL INSTRUMENTS

MOUSER ELECTRONICS a tti company

D YOUNG & CO INTELLECTUAL PROPERTY

anglia

RS

igus.co.uk

Contents

beea
british engineering excellence awards

"The highlight of this year's British Engineering Excellence Awards was the competition to be named Young Design Engineer of the Year."

Graham Pitcher,

Group Editor,

Findlay Media

Engineering Design Division

Graham Pitcher
Group Editor, Findlay Media
Engineering Design Division

Crank up the quality

Young Engineers and Green Product head the list

"In the end, the judges couldn't put the proverbial cigarette paper between Simon Pykett and Michael Aldridge."

One of the rewarding parts of judging the Awards on an annual basis is seeing the quality of entries continuing to increase. Now in their fourth year, the Awards are gaining momentum and particularly in the 'people' categories.

Yet it is a sad fact that the number of students deciding to study engineering at UK universities has declined steeply over the last decade or so. There's a number of theories as to why this has happened, ranging from the belief that engineering is 'too hard' to the belief that engineering holds no career prospects and doesn't pay as well as other careers.

But the number of engineering students hasn't declined to zero by any stretch and the graduates who are entering industry are seemingly of an ever higher quality. And the highlight of this year's British Engineering Excellence Awards was the competition amongst entrants to be named Young Engineer of the Year.

Deciding who would be Young Engineer of the Year was the hardest part of the judging process. Five engineers were shortlisted and each had qualities which would have seen them win in another year. In the end, the judges couldn't put the proverbial cigarette paper between Simon Pykett and Michael Aldridge. So, for the first time, we have joint winners of a British Engineering Excellence Award.

Many entries for the product related categories were addressing real needs and it took extended discussion amongst the judges before they agreed that the Grand Prix should be awarded to Parker Hannifin for the Racor Superimpactor crankcase ventilator.

One of the ambitions of the Awards is to highlight elegant solutions to real problems and Parker Hannifin ticked many of the boxes. Summarising, the judges said: "It addresses the real need to remove oil misting from diesel engines. It is a simple, elegant solution which is green, recyclable and requires no consumables."

I'm sure you'll join with me in congratulating the winners of this year's Awards and the companies and engineers who entered.

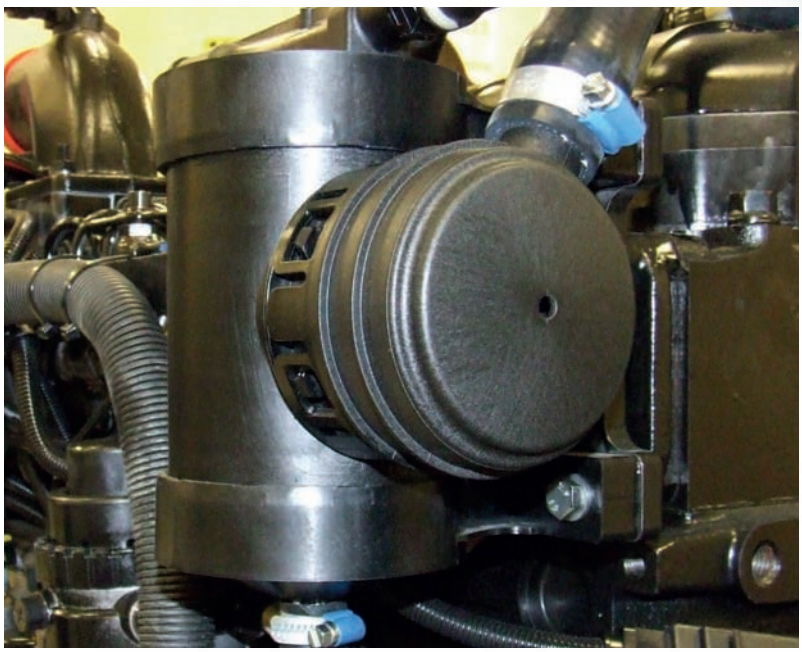
Green product blows by opposition

The winner of the British Engineering Excellence Awards was chosen by the Judges from the winners of each category. And with the standard of entries continuing to increase, the Judges faced a challenging task.

Being named 'best of the best' is a challenge and an honour – the entry needs to stand out from the rest. This year's winner was deemed by the judges to have addressed a real need through the development of an elegant solution to the problem of emissions from diesel engines.

Some 30million diesel engines are manufactured each year around the world for use in automotive, marine and industrial applications. It's no surprise to find that designers of these engines have focused on reducing the exhaust emissions, but there remains another problem: blow by. This happens when combustion gases under high pressure are 'blown by' the piston rings in the crankcase. These gases have to be allowed to leave the engine to avoid pressure build up and seal failure. But letting them travel through the exhaust system would result in increased emissions, so crankcase ventilators are employed to clean the gases and return them to the engine's air intake system.

The success in reducing the amount of pollutants – including NOx, hydrocarbons and particulates – is such that blow by now comprises 30%



Suitable for use with a range of diesel engines, the Racor Super Impactor reduces emissions in line with Euro 6 requirements, while boosting fuel efficiency. Recyclable at end of life, the device does not require consumables

Grand Prix 2012
Parker Hannifin
Racor Super Impactor CCV

of all emissions. Crankcase ventilation systems are currently used to help engines meet Euro 5 requirements, but requirements of future legislation such as Euro 6 will mean crankcase ventilation systems have to become even more efficient.

Parker's Racor facility in Yorkshire saw that oil-driven centrifuge systems were complex, costly and required significant integration into the engine block. So the R&D team looking to simplify the solution by using a compressed air driven system. Through a collaborative partnership with Leeds University, the team developed the Racor Super Impactor crankcase ventilator, which not only reduces engine emissions in line with Euro 6 requirements, but also boosts fuel efficiency.

The device operates by taking a small amount of air from the engine's turbo and using that to increase the separation efficiency of an inertial impactor.

It is also suitable for use with a range of engines. According to the design team, the SuperImpactor's modular construction means engine builders can adapt the device to their manufacturing process.

Alongside solving the problem of blow by emissions, the Super Impactor improves its green credentials because it doesn't include a filter, which would need replacing annually. Nor does it feature any rotating parts or electrical components. Meanwhile, the device is made from nylon PA66, which is recyclable – it can be melted and reused at the end of life.

Now, a centre of technical excellence in emissions technology has been created, taking the site's core competence beyond commodity products. Included is a $2million investment in a dynamometer to support the development programme.

What the judges said:

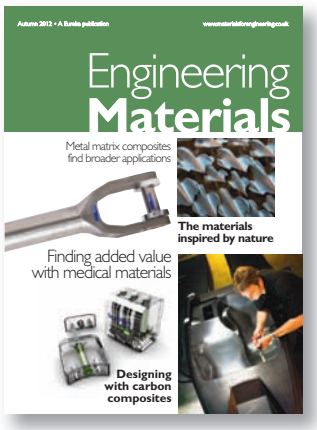
"Addresses a real need to remove oil mist. It's a simple, elegant solution; it's green, it's recyclable and it doesn't require consumables."

"An inventive engineering solution that solves a significant environmental problem and which has strong commercial drivers to a large potential market."

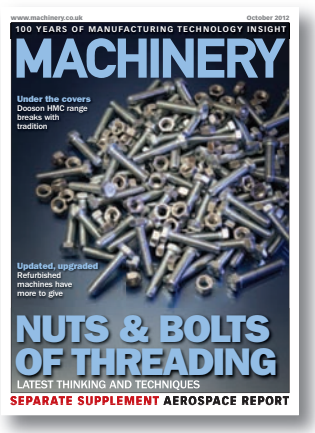
"Ingenious use of pressurised air from the turbo to assist efficiency in the removal/recycling of oil/fuel vapours."

"A pretty complex product that seems to have been well thought through and which has already seen some success."

Inspired by innovation



www.findlay.co.uk



Passionate about engineering

Transplant solution is a real Team effort

Five companies made it to this year's shortlist for Consultancy of the Year, ranging in size from a multinational at one end of the scale to a company with just 12 staff at the other. If that weren't enough, all shortlisted companies addressed a range of markets.

This year, the Judges were particularly interested in the skills which companies brought to bear, the breadth of projects they addressed and the timescales in which they delivered solutions to their customers.

Because of the range of variables, discussion took some time, but the Judges selected Team Consulting as this year's winner.

Team is a 25 year-old company which focuses on the design and development of medical products, systems and devices. Amongst projects which have been completed recently are drug delivery systems, critical care and surgical tools.

According to Team, two things have helped to grow its business: a focus on the medical sector; and the desire to save lives and make people better.

The Judges were particularly impressed by Team's development of a system which helps to keep a human liver alive for 24 hours,

avoiding the need for racing against time to get the organ to its recipient. During the project, Team worked with its customer to turn a room full of manually controlled equipment into a self governing unit that could be transported in an ambulance. Alongside monitoring the liver and keeping it at body temperature, the system needed to be battery powered, not too heavy and to fit a variety of vehicles. According to Team, the project required 'all of our expertise to create a product that will have a real impact'.

Clinical trials for the product have started and Team's customer expects to launch the product in 2013.

What the Judges said:

"A huge project with real impact in a challenging market."

"Excellent evidence of strong achievements."

D YOUNG & CO
INTELLECTUAL
PROPERTY

We have a proud history of supporting pioneering companies in emerging technologies.

Whatever your invention,
we will help you get the
best protection for it.

Proud sponsor of the BEEA
Small Company of the Year Award.

For more information please contact
Anthony Albutt, Patent Partner
+44 (0)20 7269 8550
aja@dyoung.co.uk
www.dyoung.com

Powering network quality analysis

The majority of companies working in the UK's engineering sector are small; many employing fewer than 20 people. Despite their size, they make a signficant contribution to the economy and, in many cases, to the UK's exports.

Companies are small for a number of reasons. One reason could be it's the best way for them to address their chosen market and to be agile enough to out manoeuvre their larger competitors. Others, meanwhile, may be on the way to bigger things.

The Judges were looking for a company with a sound business plan that could demonstrate success.

This year's winning company, Outram Research, applies specialist skills in analogue and digital signal processing and embedded microprocessor design to develop power quality analysers for utilities, network operators and other users. The products are used globally to troubleshoot power network problems.

First established by John Outram in 1980, the company developed the Ranger data logger and licensed the design to a number of organisations. However, he decided in 2003 that the data loggers were not achieving their potential and negotiated the return of the IP, a move which allowed Outram to design, manufacture and sell the products. This successful move has funded the development of new products, including the Outram FLM; the only portable instrument capable of determining current flow in a faulty electrical distribution network.

The company competes successfully against multinationals and ascribes its success to its attention to detail, its innovative approach, its service and, above all, its technology. Outram also believes that the FLM will be a key factor in the company's growth in the next few years.

What the judges said:

"Buying back the IP for its designs has brought new market opportunities and overseas success."

"A small company able to hold its own by virtue of its innovation."

Sponsored by

D YOUNG & CO INTELLECTUAL PROPERTY

Cambridge Consultants

the sky's not the limit...

Image courtesy of : NASA, ESA, SSC, CXC, and STScI

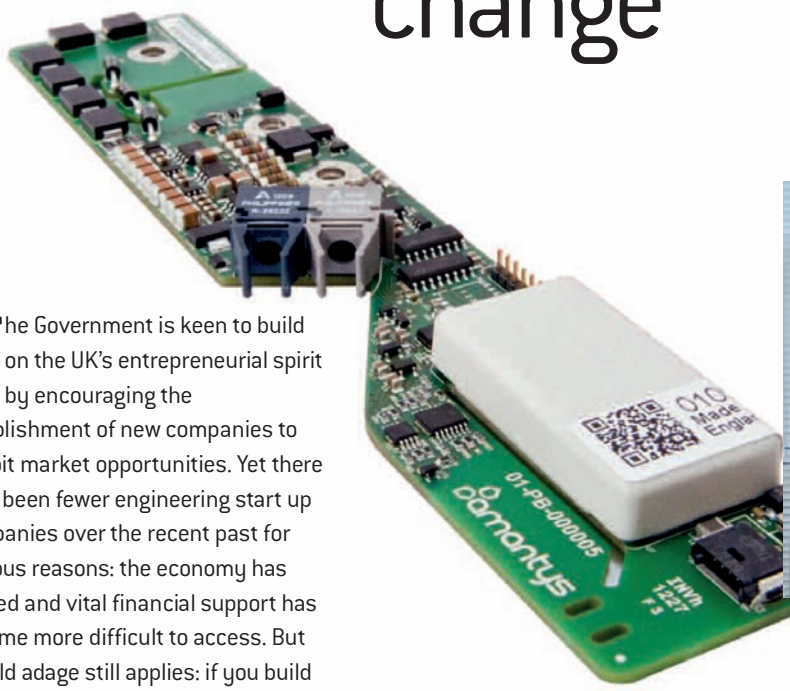
We're always up for a challenge. Whether it's creating the first round tea bag or antennas for the world's largest radio telescope, we like to boldly go where no-one has gone before. Turning ideas into reality is all in a day's work for us. We've been doing it for more than 50 years. So if you're looking for competitive advantage, the answer is Cambridge Consultants. Now, what's your question?

Cambridge Consultants is part of the Altran group, the European leader in Innovation Consulting. www.Altran.com

ideasintoreality™

www.CambridgeConsultants.com

The power for change



The Government is keen to build on the UK's entrepreneurial spirit by encouraging the establishment of new companies to exploit market opportunities. Yet there have been fewer engineering start up companies over the recent past for obvious reasons: the economy has slowed and vital financial support has become more difficult to access. But the old adage still applies: if you build a better mousetrap, people will beat a path to your door.

In the technology world, many startup companies exist behind the scenes because they want to keep their powder dry, emerging into the light only when patents and funding are secured. So entrants to the Start Up of the Year category could have been set up as early as 2008. However, this year's winner is more recent than that, being set up in 2010 by former executives from ARM and an academic from the University of Cambridge. Amantys is targeting high power conversion across such markets as: electricity transmission and distribution; motor drives; renewable energy; and hybrid and electric vehicles. Amongst these markets, power requirements can reach the MegaWatt level, with voltages as high as 6.5kV. Through a combination of embedded intelligence and analogue control techniques, Amantys is addressing a market that it claims is worth $4.6billion and which is set to grow by 12% a year.

Its approach is to allow designers to optimise the efficiency of power converters and to improve system reliability. To enable this, it has developed advanced driver technology and communication techniques to export data.

Impressively, the company has raised more than £7million in funding and now has 14 staff, as well as its own high energy test and qualification facility. It has already made sales and is working with major customers to incorporate its technology into their products.

amantys

What the Judges said:

"Amantys has the potential to make a significant contribution to power efficiency."

"It has identified a huge and important market and has the key IP needed to improve power efficiency."

"Potential to succeed on a global basis."

Sponsored by

Cambridge Consultants

Anglia, proud sponsors of the
'Design Team of the Year' category,
is delighted to support
the BEEA Awards

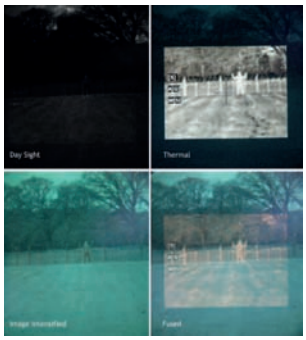
Supplying electronic components to engineers and designers for 40 years

anglia

www.anglia.com

40th ANNIVERSARY
1972 - 2012
Celebrating 40 years of service to the electronics industry

1240



Sights on the prize

The engineering world is typified by the design cycle – how long it takes to get designs finished and to the customer. And the design cycle is shrinking all the time, while the design challenge gets stiffer. A measure of just how good a design team is can be given not only by whether it hits the project milestones, but also by how well the team dealt with the bumps of varying size along the road.

Entrants to this category could have been working on electronic, mechanical or combined systems. And the teams could have been upgrading an existing product or designing a new one.

Winning the Design Team of the Year Award 2012 is the SAKER project team from photonics specialist Qioptiq. SAKER is an optically-fused weapon sight designed to provide military personnel with enhanced 'detect, recognise and identify' capability.

The Design Team faced a number of challenges. SAKER needed to be compact, lightweight and to have low power consumption. Innovations needed to be made in the package, the two objectives and image-combining optics. Reducing the package's size and mass meant the distance between the two objectives needed to be minimised. Having the two objectives closer together minimised the effects of parallax.

SAKER also features two channels: one digital, with image processing; the other analogue. Latency between the two channels was required to be less than 30ms. Detailed architectural reviews reduced this to 27ms.

Design commenced in October 2011, with a target date of June 2012 for SAKER to be unveiled at a conference. The design schedule called for a prototype to be ready by 1 June 2012. A change of date for the conference, along with the need to launch the system in the US, brought the delivery date for the prototype forward to 21 May 2012.

Only three months before the delivery date, the programme was two weeks behind schedule. Through a team effort, electronic design was completed early and PCBs were received two weeks ahead of plan and worked first time. FPGA software development was completed early, allowing the FPGA to be debugged and integrated on the PCB.

However, the original design featured a plastic beam splitter – and this was not going to be available in time. To meet the launch date, a glass version was purchased, requiring last minute changes to the housing and to the electronics.

Three days before the event, significant amounts of work remained, but two prototypes were delivered in time for the launch.

What the Judges said:

"A very challenging multidisciplinary design delivered on time by a really strong team."

Congratulations to ByteSnap Design, whose entry has been highly commended by the Judges

Tools to be a Better Engineer

NATIONAL INSTRUMENTS LabVIEW™

LabVIEW is making engineers and scientists in virtually every discipline better by giving them the power to do things they couldn't do before.

*"LabVIEW makes me better because **code reuse** saves time and effort."*

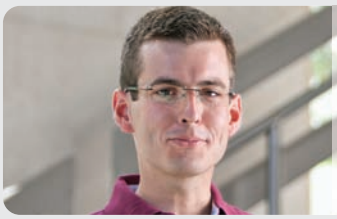
- **Dennis Hong**
  Associate Professor of Mechanical Engineering, Virginia Tech

Save Time and Effort by Reusing Existing Code
One of the most efficient ways to shorten development time is through code reuse. By taking advantage of existing code, whether it has already been written or is part of a resource library, developers and domain experts can focus on their applications rather than committing valuable time and resources to programming.

Manage Multiple Instruments From a Single Development Environment
Configuring different devices so that you can begin programming your system is often more time consuming than the function you're creating the application to perform in the first place. LabVIEW can span your entire hardware array and across multiple instrumentation types, ranging from data acquisition devices to field-programmable gate arrays (FPGAs).

*"LabVIEW makes me better because the **integration** with hardware is so seamless."*

- **Laurel Watts**
  Principal Software Engineer



*"LabVIEW makes me better because I can **simulate** real-world systems."*

- **Peter Simonsen**
  Design Engineer, Embedded Software

Simulate Variables in a Virtual Environment to Ensure Product Quality
LabVIEW is an ideal platform for prototyping, designing and deploying high-quality products to market fast. You can use one development environment to quickly iterate on your embedded hardware and software designs and then reuse the best parts in a final product.

Create Elegant Applications and Create Them Simply
Creating a new robot starts with defining functionality using whiteboards and block diagrams. LabVIEW removes the need to abstract those into procedural code. Your whiteboard diagram becomes your code. Also, you have all of the functions at your fingertips to easily deal with the complex web of sensors, multiple-linked actuators and dynamic real-time control.

*"LabVIEW makes me better by making complex **control** simple and accessible."*

- **Dave Barrett**
  Director, Senior Engineering Program

*"LabVIEW makes me better because I can deliver **projects** on time, on spec, and on budget."*

- **Hector Guajardo Betancourt**
  Automated Test and Control Engineer

Reduce Your Test Time No Matter How Complex Your Product
The complexity of products that engineers need to test is increasing rapidly. Markets are demanding improved quality with additional features. LabVIEW reduces the time to test these products by helping you develop a flexible and efficient system that synchronises multiple measurements and analysis within your software. This results in faster inspection times across I/O.

Build Your Applications the Same Way You See the World Around You
The LabVIEW development environment provides the ability to build programs graphically by using intuitive icons and wires that resemble a flowchart. Because LabVIEW requires you to base the structure of the program around the flow of data, you are encouraged to think in terms of the problem you need to solve as well as conceptualise your application in a parallel view and not sequential.

*"LabVIEW makes me better because I can **program** the way I think."*

- **Christian Altenbach**
  Research Ophthalmologist

>> Find out how LabVIEW can make you a better engineer at **ni.com/labview/better**

01635 517300
uk.ni.com
info.uk@ni.com

Register now to attend the **FREE** NI Days 2012
The Queen Elizabeth II Conference Centre, London, 20th November | **uk.ni.com/nidays**

JOIN THE CONVERSATION: *Follow us on* *Search* **niukie**

NATIONAL INSTRUMENTS™

Making a super impact

Many product attributes can be described as 'green'. If power or fuel consumption is reduced, or less pollution is generated, then that product can be considered to be 'green'. But some companies attach the word 'green' to their products as a marketing ploy. Others do so with more justfication. And the winner of this year's Green Product of the Year Award falls into the latter category.

Parker Hannifin's Racor filter division is looking to mitigate the effect of blow by emissions, something said to comprise up to 30% of pollution generated by diesel engines.

In order to meet the Euro 5 emissions targets, engine manufacturers are using closed crankcase ventilation (CCV) systems to return cleaned blow by gas to the engine's air intake. However, Euro 6 requirements are sterner and CCV systems will have to be more effective.

The Racor Superimpactor CCV reduces engine emissions to the level required by Euro 6/tier 4 legislation. But customers have been more rigorous. One potential user required more than 98% of blow by oil to be recovered and for the device to be equally useful on new and worn engines.

The solution is lightweight and is made from environmentally safe recyclable materials. There are no rotating parts and the manufacturer says the device is cost effective. In fact, Parker Hannifin claims the Superimpactor CCV is smaller, lighter and more economical and has higher efficiency than its closest rival'.

The Judges were looking for a product which, amongst other features, was suitable for end of life recycling and used appropriate materials. Made from recyclable nylon PA66, the Superimpactor CCV works without using a replaceable filter, reducing the amount of hazardous waste generated.

Parker Racor

What the Judges said:

"Fulfilling a real need to reduce emissions from diesel engines."

"Green, recyclable and no consumables; what else do you want?"

Sponsored by

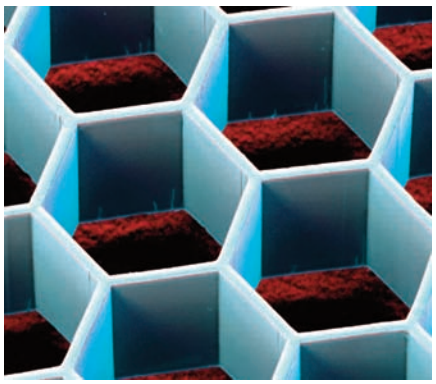
NATIONAL INSTRUMENTS™

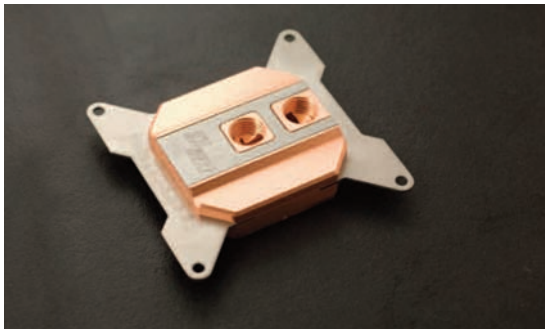
www.materialsforengineering.co.uk

Engineering Materials

A Eureka publication

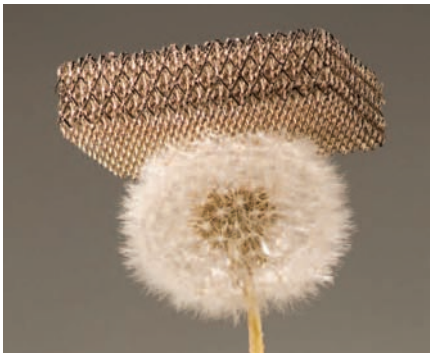
Covering technology transfer





Reaching 15,000 materials specifiers and buyers

Influencing INNOVATIVE **DESIGN**



A unique marketing partner

NEW FROM FINDLAY MEDIA

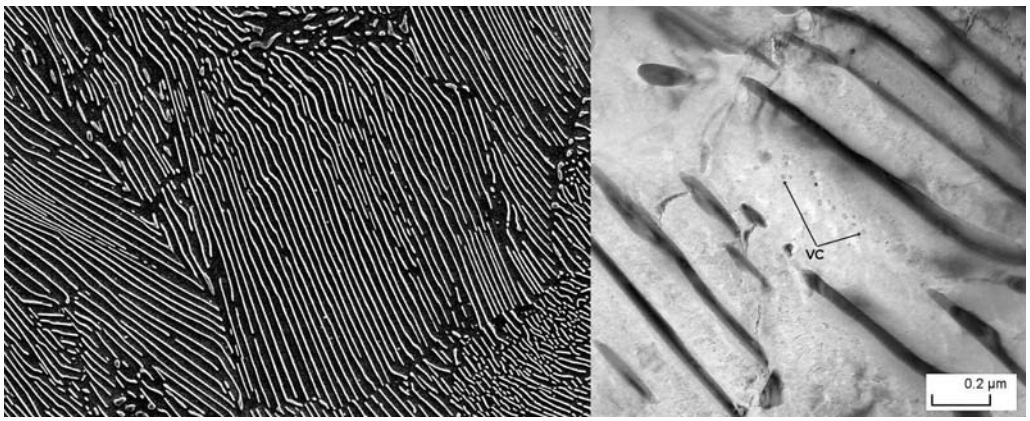
On track for rail success

Selecting the right material for your new design is an important part of the decision process. In this new category for 2012, we were looking for an innovative material which has helped to meet an engineering challenge and of how the material and its application have combined to offer a solution.

Although this was a new category, the entries were all of a high standard. But it was Tata Steel Europe's entry for HPrail which caught the Judges' eyes.

Work on HPrail – a special grade of steel developed specifically for railway applications – was prompted by the Hatfield rail disaster in 2000, which was said to have happened as a result of rolling contact fatigue (RCF). Although customers wanted a steel which had significantly reduced susceptibility to RCF, industry caution required extensive evaluation and testing, even before a move to track trials.

One of the consequences of RCF is the development of cracks which can lead to catastrophic failure. Cracks develop because of a mismatch in the rail's microstructure between ferrite and cementite – both constituents of pearlite.



Tata Steel's solution is to strengthen the soft ferrite by alloying additions of silicon and vanadium. Meanwhile, nitrogen levels are controlled to ensure the desired particles precipitate during manufacturing. Increasing the carbon content of the rail increases the proportion of much harder cementite and refines the overall microstructure.

HPrail has, so far, been installed at 14 trial sites across the UK's mainline rail network. These sites, which carry passenger and freight traffic, have been targeted because of their higher than average incidence of RCF cracking.

While Tata is targeting the UK and European rail networks, it says there is scope to supply the new rail grade to the Indian market.

What the Judges said:

"Innovation in a highly regulated, traditional industry that solves some very real issues."

TATA

Sponsored by

Engineering Materials

BEST OF CLASS: BROADEST OVERALL PRODUCT SELECTION

SOURCE: 2012 DESIGN ENGINEER AND SUPPLIER INTERFACE STUDY, HEARST BUSINESS MEDIA ELECTRONICS GROUP, NORTH AMERICA

THE INDUSTRY'S BIGGEST *CATALOGUE-LESS* CATALOGUE!

FREE SHIPPING
ON ORDERS OVER £50!

0.800.587.0991 • 0.800.904.7786

DIGIKEY.CO.UK

Digi-Key® CORPORATION

2 MILLION PARTS ONLINE | 500+ INDUSTRY-LEADING SUPPLIERS | NEW PRODUCTS ADDED DAILY

*A shipping charge of £12.00 will be billed on all orders of less than £50.00. All orders are shipped via UPS for delivery within 1-3 days (dependent on final destination). No handling fees. All prices are in British pound sterling and include duties. If excessive weight or unique circumstances require deviation from this charge, customers will be contacted prior to shipping order. Digi-Key is an authorized distributor for all supplier partners. New product added daily.

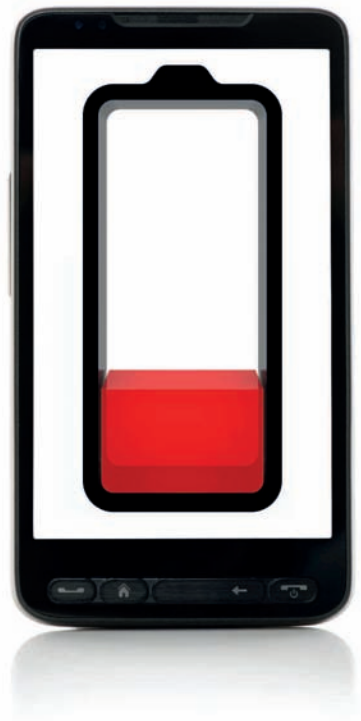
ecia ecsn member CEDA

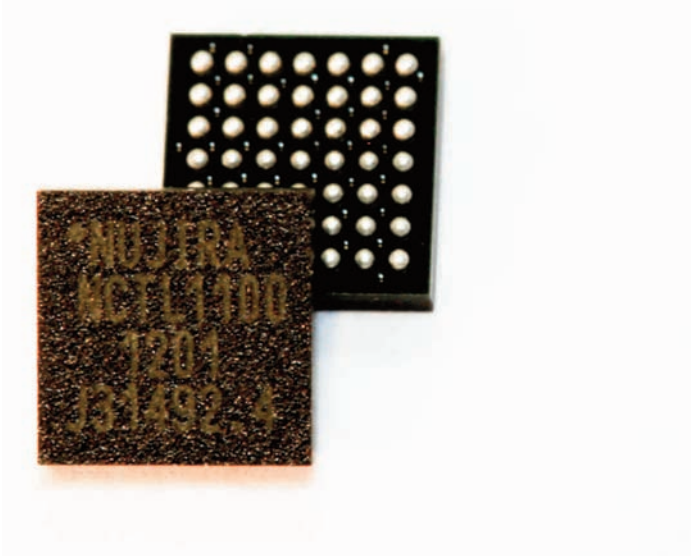
Pushing the envelope

Power consumption in mobile phones is a topic on which almost everyone has a view. From the consumer's perspective, it's all about how long your phone lasts between recharges. From a phone manufacturer's point of view, it's more about the heat generated by the device's components. While the problem is significant with current generation phones, it is expected to get worse when 4G phones are introduced.

In particular, one of the 'guilty' components is the power amplifier (PA). In a conventional configuration, the PA operates from a fixed supply voltage and is therefore often operating at less than maximum efficiency. Nujira believes it has solved this problem using envelope tracking, where the supply voltage is constantly adjusted to make sure the PA is running at peak efficiency for the given power requirement.

Envelope tracking ability is offered by Nujira's NCT-L1100, the first device in its Coolteq.L range of envelope tracking power supply modulators. According to Nujira, the part can reduce the amount of wasted power by more than 50%, not only extending battery life, but also reducing heat





generation.

The NCT-L1100 also solves another challenge posed by 4G phones. While the 4G standard enables higher bandwidth, this is achieved through reduced PA efficiency. Using this device, multiband, multimode PAs can transmit 20MHz LTE signals using less energy than single band PAs in current 3G phones.

The technology has already been validated through system integration with two major platform chipset vendors and the NCT-L1100 is compatible with multiple air interface standards, including TDD and FDD LTE.

What the Judges said:

"The use of envelope tracking is a real industry first."

"It potentially solves the problems we all have with the mobile phone."

"A step change in technology."

Sponsored by

Our short-list of the year.

From left to the right: best bio-polymer iglidur® bearing ... best enclosed e-chain® ... best high speed xiros® ball bearing ... best large hoses e-chain® ... best small radius data cable ... best rotary e-chain® ... best electric drive drylin® ... best roller E2/000 ... best conductive ball bearing ... best detectable igubal® ... best low-noise e-chain® ... best e-chain® opener ... best removable ball & socket joint ... best PRT with seal ... best thermal chainflex® ... best zero-backlash drylin® ... of the year 2012!

igus® UK: sponsor of the British Engineering Excellence Awards

igus®.co.uk

plastics for longer life®

igus® (UK) Limited Phone 01604 677240 Fax 677245
sales@igus.co.uk order-service: Mon-Fri 8-8, Sat 8-12

Sweeping all before them

Once again, the Mechanical Product of the Year category threw up some interesting and varied entries. Shortlisted products ranged from a stair lift to a folding electric bicycle by way of a novel fastening technique. But the winner this year was the biggest of all products entered – a compact road sweeping machine.

While the C201 sweeper is based around technology developed by Johnston some 50 years ago, the C201 features a range of new design concepts, including what is described as a revolutionary four wheel steering system. Other benefits include better dust capture, better fuel efficiency and quieter operation.

While the previous model – the C200 – was a success in the UK, overseas sales suffered because the machine didn't offer four wheel steer. This left Johnston unable to tender for business, even though competitive machines were larger and more cumbersome.

There are more than 30 design improvements on the C201, ranging from a new chassis and engine mounting to a host of safety and comfort features. Designing a new chassis allowed four wheel steer to be added as a modular option.

The four wheel steer system improves manoeuvrability, but retaining the 80° steering lock of the two wheel steer variant. Additionally, the system can switch automatically between the two modes, selecting four wheel steer at low speeds.

Export success was a major design criterion, with the lower cost of ownership and increased productivity standing alongside the four wheel steer system. A European customer has found a fuel saving of 40% for its fleet of 40 sweepers, cutting the fuel bill by more than £1million a year. Further evaluation has allowed a 99dBA tag to be applied, making the C201 suitable for use in German municipalities.

Shortly after the C201's launch, Johnston won a contract for 300 units from the City of Moscow, including 225 C201s.

Johnston SWEEPERS

What the Judges said:

"A significant improvement over the previous product which has kept the company ahead in a competitive market."

"A 40% reduction in fuel consumption is impressive."

"Already a British export success."


DESIGNSPARK
NEW. FREE.
DESIGNSPARK PCB
VERSION 4
COMPREHENSIVE NEW LIBRARIES.
EASIER COMPONENT SELECTION & QUOTATION.
NEW PCB PROTOTYPING SUPPORT.
Discover today at
www.designspark.com
UNIQUE
RESOURCES BY
RS

Young Design Engineer of the Year
Michael Aldridge
4c Design

All-round excellence

Over the last decade or so, the number of students deciding to study engineering of all kinds at UK universities has declined steeply. There's a number of theories as to why this has happened, ranging from the belief that engineering is 'too hard' to the belief that engineering holds no career prospects and doesn't pay as well as other careers.

But even when students graduate, there is further 'wastage' as they elect to pursue careers outside of industry. Nevertheless, engineering graduates continue to enter industry and they are seemingly of an ever higher quality. And the highlight of this year's British Engineering Excellence Awards was the competition amongst entrants to be named Young Engineer of the Year.

Five entries were shortlisted and, for the first time in the history of the British Engineering Excellence Awards, the Judges were unable to decide on an outright winner. So this year, we have two winners.

Michael Aldridge graduated from Strathclyde University with a Master's Degree in Product Design Engineering in 2008 and even before graduating had started broadening his industrial experience. Among other projects, he designed: pontoons for the Loch Lomond Seaplane, industrial warehouses; and a water treatment plant for a distillery.

In 2010, he won an internship with 4c Design, providing the strongest of more than 80 applicants. According to the company, he would regularly work long hours by his choosing, looking to absorb the training and gain experience. By the end of the three month placement, 4c said he had made himself 'invaluable'. He also created a video to promote his internship which has become the benchmark by which 4c assesses applicants.

Aldridge has since been involved with a range of projects, including: developing a 'fresh outlook' on liferaft design; the complete design of an electric bike – which involves a patent application; and a machine which can bottle vaccine solutions under sterile conditions.

He has recently become involved with his local branch of the Institution of Mechanical Engineers, promoting the activities via his blog.

Robin Smith, managing director of 4c Design, who nominated Aldridge, said: "Michael has proved himself not only a well rounded design engineer, with a great grasp of the theory and the practical side, but also with his finger on the pulse of the latest design trends, innovations and engineering practices. He has demonstrated an aptitude to working at any stage of the design process, modifying his approach to suit as a project evolves."

What the Judges said:

"This entry just fizzes with energy."

"Demonstrates a breadth of undertakings in a range of disciplines."

Sponsored by

DESIGNSPARK

NEW. FREE.
MODELSOURCE

OVER 80,000 FREE SCHEMATIC AND PCB SYMBOLS
IN MORE THAN 20 FORMATS, INCLUDING PADS,
ORCAD, ALTIUM AND CADSTAR.

Discover today at
www.designspark.com

UNIQUE
RESOURCES BY RS

Handling the challenges

With a First Class Degree in Innovation and Engineering Design with German, Simon Pykett started working at Penny Hydraulics under the Knowledge Transfer Partnership (KTP) scheme – a three-way partnership between employers, universities and graduates. The scheme aims to help UK businesses to improve their competitiveness, productivity and performance by accessing the knowledge and expertise available within UK universities and colleges.

According to nominator Richard Short, Penny Hydraulics' sales director, Pykett has 'transformed the company's nuclear business. "He won a £160,000 contract within six months."

Originally tasked with developing a way to lift and handle spent nuclear fuel, Pykett took ownership of the project, developing an internal capability by winning and delivering a contract, rather than by seeking contracts after the capability had been developed. "His meticulous research paid dividends on the very first tender," Short noted. "And the need to overhaul the company's business processes required tact, diplomacy and determination."

The changes resulted in Penny Hydraulics becoming a quality assured supplier to Sellafield a year earlier than anticipated.

Along with working on more projects, Pykett pursued a Level 5 diploma in leadership and management, as well as an MSc with Sheffield Hallam University.

He has since secured business at other nuclear sites, including a £240,000 contract with Magnox. These successes have covered his costs and generated a profit.

Within Penny Hydraulics' nuclear division, Pykett now manages a team of designers, along with quality control and shopfloor personnel. He is the main point of contact for customers and chairs all client meetings dealing with design audits, functionality and load testing. "He has already achieved a phenomenal amount," said Short.

Pykett has mentored a placement student from Sheffield Hallam University for the last year, providing her with experience of the day-to-day activities in the design department of a leading engineering business.

He is an active member of the nuclear industry's Young Generation Network and is a past winner of the KTP Young Business Leader of Tomorrow Award.

Recently seconded to Magnox to provide advice on lifting and handling nuclear materials, his work has helped the company to save more than £600,000.

At Magnox, he has devised a remote controlled device which can sort fuel element debris of various shapes, sizes and weights. Included in the system was a telescopic ram conceived and designed by Pykett that is believed to be the first of its type.

What the Judges said:

"Highly impressive revenue performance in addition to his design skills."

Sponsored by

Texas Instruments
Authorized Distributor

maxim integrated™

FAIRCHILD SEMICONDUCTOR

ON Semiconductor®

Atmel®

MICROCHIP

freescale™

CREE®

VISHAY®

OSRAM
Opto Semiconductors

SILICON LABS

AVAGO TECHNOLOGIES

Infineon

NXP

Scan here to watch video

uk.mouser.com
Distributing semiconductors and electronic components for design engineers.

Authorised Distributor

Distributor for Semiconductors and Electronic Components

Purchase all the brands design engineers want and trust.
Come to Mouser for what's next from these industry leaders.

FREE SHIPPING ON ORDERS OVER £50

United Kingdom
Suite C, First Floor
Artisan Building
Hillbottom Road
High Wycombe
Bucks. HP12 4HJ, UK
+44 (0) 1494-467490
uk@mouser.com

uk.mouser.com

MOUSER ELECTRONICS®
a tti company

Dealing with the load

The best engineers go that extra mile, to use the popular phrase. It's not just a matter of producing good designs; alongside technical skills, there's the need for leadership as well as commercial appreciation – getting to know your customer's business and what they really want from you. And then, of course, there's inspiring the next generation of engineers.

James White has gained wide engineering experience from his time at Caterpillar's Desford facility. He's been designing structures, hydraulics and systems for use on the company's excavators and loaders. He's been able to bring projects in on time and on budget while meeting performance requirements.

A recent project saw White lead the development of three loader arm assemblies. The two-year project has, for the first time, given Caterpillar a family of loader arms with a common design for its backhoe products. The project also reduced the number of loader designs from five to three and increased manufacturability and assembly efficiency.

CATERPILLAR®

Nominator Andrew Smith, senior engineering project team leader, said of White: "He directed analysis, performance, electrical and hydraulic development teams through Caterpillar's design process and worked with suppliers to produce the optimum structural design, whilst ensuring this did not constrain cost-efficient, robust machine design. He hit all long and short term goals over the two year project."

White is named as the designer of an innovative clamp protected by design rights and has a patent pending for an element of the next generation loader arm design.

Meanwhile, he has been a mentor for an Engineering Education Scheme Project developing a tyre test rig. Over the six month project, he provided the team with guidance in planning, technical design, manufacture, report writing and presentation skills. He also supported the team during a three-day residential workshop.

He has so far given five work experience students an insight into engineering and is in the process of creating three engineering experience design projects for future students.

What the Judges said:

"A very tough category to judge."

"With examples of engineering excellence in a world class company – including holding a number of patents – he also finds time to mentor the next generation of engineers."

Eric Wilkinson, Chairman
Chief operating officer of Cambridge Consultants, Eric has managed projects as diverse as anti terrorism radar and something to liven up a can of beer!

Shaun Addy
Shaun, chief development engineer at Cubewano, has designed, built and tested high performance internal combustion engines for 26 years.

Andrew Burrows
Andrew set up i20 Water in 2005 to develop technology that would reduce leakage and burst frequency on water distribution networks.

Justin Cunningham
With a first class Engineering degree, Justin worked for Astrium Space before moving to journalism. He is currently editor of *Engineering Materials* and deputy editor of *Eureka*.

Ashley Evans
Chief executive of the Electronics Technology Network, Ashley was lately chief executive of Electronics Scotland and chair of the UK Electronics Alliance.

Paul Fanning
Paul has been a trade and technical journalist for more than 15 years. He took over as editor of *Eureka* in January 2010.

Kevin Page
Kevin is managing director of ICS Electronics, a marine electronics company.

Graham Pitcher
An engineer by training, Graham is an expert journalist who has covered the electronics industry for more than 30 years.

Robin Wilson
Robin joined the Technology Strategy Board in 2009 after 35 years in automotive manufacturing, including chief engineer for Rover's Chassis Systems.

Cambridge Consultants

For more than 50 years, Cambridge Consultants has led the way in innovative product development. It is the partner of choice for leading blue chip companies, as well as the virtual development team for ambitious start ups. Part of the Altran Group, it develops breakthrough products, creates and licenses IP and provides business consultancy in technology critical issues for clients worldwide. With more than 300 engineers, designers, scientists and consultants, it offers solutions across a range of industries.

www.cambridgeconsultants.com

Digi-Key Corporation

One of the leading, totally integrated, Internet based global distributors of electronic components, Digi-Key has earned its reputation through its total commitment to service and performance.
A full service provider of prototype/design and production quantities of electronic components, Digi-Key offers more than 2million products from more 650 quality name brand manufacturers. North American design engineers have ranked Digi-Key as the #1 Most Preferred Distributor (*UBM/EETimes Distributor Customer Preference Study, June 2011*).

www.digikey.com

anglia

Anglia is the UK's leading independent authorised distributor of semiconductors, optoelectronics, interconnect, passive and electromechanical components. A signatory of the ADS SC21 programme, the company holds AS9120, ISO9001, ISO14001 accreditations and IECQ-CECC qualification. Technical support spans a fast sampling service, specialist telephone advice and visits from field applications engineers, while an in house team of designers adds expert resources to help reduce product costs and accelerate development times.

www.anglia.com

D YOUNG & CO INTELLECTUAL PROPERTY

One of the principal European IP firms, D Young & Co specialises exclusively in patents, trademarks, designs, copyright and related IP rights.
D Young & Co understands the value of the ideas on which businesses are based and its experienced team works to protect, manage and enforce the IP that underpins your business.

www.dyoung.com

fm findlaymedia

Founder of the British Engineering Excellence Awards, Findlay Media is committed to UK engineering. With the most comprehensive range of manufacturing and engineering publications, websites and data in the UK – including *New Electronics*, *Eureka* and *Engineering Materials* – Findlay Media enables suppliers, associations and Government to communicate with the engineering community.

www.findlay.co.uk

igus.co.uk

Established since 1964, igus is the largest producer of injection moulded polymer bearings and reinforced plastic cable carriers in the world. igus is dedicated to providing the engineering industry with cost saving plastic technical products, summarised in the slogan "plastics for longer life". Benefits include no lubrication, less maintenance, lower costs, longer life cycles and short delivery times.
For more information, please call igus UK directly on 01604 677240, open from 8AM to 8PM.

www.igus.co.uk

MOUSER ELECTRONICS
a tti company

Mouser Electronics is an authorised semiconductor and electronic component distributor, focused on the rapid introduction of new products and technologies to electronic design engineers and buyers. Mouser.com, updated daily, features more than 3million products from more than 450 manufacturers. Mouser caters to European customers from local offices, transacting business in local currencies, time zones and languages, providing same day shipping to more than 375,000 customers in 170 countries. It also publishes multiple print catalogues per year.

www.mouser.com

NATIONAL INSTRUMENTS

Since 1976, National Instruments has equipped engineers and scientists with tools that accelerate productivity, innovation and discovery. NI's graphical system design approach provides an integrated software and hardware platform that simplifies development of systems that need measurement and control. This platform is used from design to production in multiple industries, advanced research and academia. The company's long term vision and focus has led to strong, consistent company growth and success for its customers, employees, partners and shareholders.

www.ni.com/uk

RS

RS Components is the world's largest distributor of electronics and maintenance products, with around 500,000 products sourced from more than 2500 suppliers.
RS brings its customers the latest technologies at competitive prices. Innovative ecommerce solutions enable its customers to manage all aspects of their relationshipwith RS online.
RS understands that engineers need new products quickly and is continually investing in making the product selection journey simple and easy to use.

rswww.com

2013: bigger and even better

The enthusiasm with which the inaugural Engineering Design Show was received by exhibitors and visitors convinced organiser Findlay Media that an event designed for design engineers is not only an idea whose time has come, but one that merits further expansion.

With this in mind, next year's event will triple in size. Occupying two halls at the Ricoh Arena – a floorspace of 6000m^2 – the show will take place on the 2nd and 3rd October 2013 and will host up to 250 exhibitors.

This expansion will include the growth of this year's popular 'Design For Manufacture' zone, offering even more scope for visitors to see the latest in rapid prototyping and additive manufacturing technologies.

The show will, of course, remain true to its founding principle of catering specifically for design engineers, but will also include a number of new elements. The most significant of these will be the launch of the Electronics Design Show, which will co-locate with the Engineering Design Show next year and occupy the whole of Hall 2.

Created by Findlay Media using its market-leading brand *New Electronics*, the Electronics Design Show will provide exhibitors and visitors alike with a unique opportunity to take part in an event aimed exclusively at electronic design engineers and will attract key decision makers from all areas of electronics design over the two days.

As with the Engineering Design Show, the Electronics Design Show will offer best practice learning and practical design ideas for visitors through conference and workshop sessions. The conference will provide 16 sessions over the two days, while the workshop programme will offer 20 practical and technical sessions.

Prior to launching the Electronics Design Show, *New Electronics* conducted extensive interviews with design engineers, using key job functions across electronic design to

Engineering design show

"Findlay Media has created a series of must-attend exhibitions to meet the needs of UK design engineers."

Ed Tranter, Executive Director

discuss their requirements for an exhibition, what it would need to include and their current level of event attendance. This revealed that, of the *New Electronics* audience, 68% welcomed the launch of the Electronics Design Show.

As if to further emphasise this resonance within the industry, the Electronics Design Show has already received strong institutional and industry support, making it a must-attend event for anyone trying to reach an audience of electronics design engineers.

Engineering Materials Live!

Further leveraging the strength-in-depth of Findlay Media's editorial offering, the Engineering Design Show 2013 will also see a new section specifically devoted to the engineering materials sector.

The decision to incorporate this element of the show is intended to capitalise on this year's successful launch of *Engineering Materials*, the latest member of Findlay Media's stable of design engineering titles. Launched to meet the increasing demand for information on the latest materials and their applications, *Engineering Materials* has been extremely well received throughout the industry. Reflecting this, incorporating Engineering Materials Live! into the Engineering Design Show is the logical next step.

Ultimately, co-location with the Electronics Design Show and the incorporation of Engineering Materials Live! represent not a departure from, but a continuation of the Engineering Design Show's most fundamental aim – to offer design engineers a comprehensive event focusing on their needs . These new elements can only complement this year's winning formula.

This year was great. We believe next year can be even better. We look forward to seeing you there.

To find out more about the Engineering Design Show 2013 or to book your place for next year, visit www.engineeringdesignshow.co.uk

beea
british engineering excellence awards

Headline sponsors

Cambridge Consultants

Digi-Key CORPORATION

Sponsors

anglia

igus.co.uk

MOUSER ELECTRONICS
a tti company

NATIONAL INSTRUMENTS

D YOUNG & CO INTELLECTUAL PROPERTY

RS

Organised by

EUREKA

newelectronics

fm findlaymedia

Findlay Media
Hawley Mill, Hawley Road,
Dartford, Kent DA2 7TJ
T: 01322 221144
F: 01322 221188
www.findlay.co.uk