



Friday 11th October 2019 The Landmark London

HEADLINE SPONSOR

DISTRUPOL
A Univar company

GALLERY SPONSOR



CATEGORY SPONSORS

Goodfellow
Your global supplier for materials

MiniTec
THE ART OF SIMPLICITY

ANALOG DEVICES
AHEAD OF WHAT'S POSSIBLE™

LGMOTION
UK MOTION TECHNOLOGY SPECIALISTS

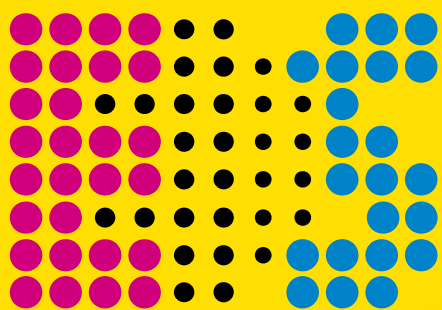
SOLIDWORKS

ORGANISED BY



newelectronics
Eureka!

THIS PAGE IS **AUGMENTED REALITY** ENABLED!



ENGINEERING DESIGN SHOW

www.engineeringdesignshow.co.uk

**16-17
OCTOBER
2019**

**RICOH ARENA
COVENTRY**

**1 GET
PHONE** **2 GET
APP** **3 GET IN
CONTROL**

**NOW
REGISTER**



BRING THIS ADVERT TO LIFE WITH REYDAR

Download the **FREE** Reydar app and scan this page to interact with the robot arm, watch video content and register for the **EDS 2019 SHOW**

Reydar requires a minimum of iPhone 6S using iOS 11.0 or a compatible Android phone using 8.0 Oreo to run. QR scanner required.



Download on the
App Store

GET IT ON
Google Play

HEADLINE SPONSORS



04 A TRANSFORMATIONAL MOMENT

The BEEAs are ten years old, but their founding principles remain wholly unchanged.

06 MAKING AUTOMATION ACCESSIBLE

The work of this year's Grand Prix winners could mean that SMEs can afford to join the fourth industrial revolution.

09 INNOVATION PAYS

A readiness to innovate and collaborate has seen this transmission and powertrain specialist double in size in five years..

11 NUCLEAR OPTIONS

Providing novel solutions to radiological problems, the work of Innovative Physics is truly making the world a better place.

13 DEMOCRATISING ROBOTICS

Developing an affordable way for companies to get into automation made Automata a winner for the judges.

15 A BREATH OF FRESH AIR

Overcoming the challenges posed by the development of a long-lasting and robust air quality sensor earned the judges' approval.

17 PUSHING PERFORMANCE

The use of innovative composites could reduce aeroplane landing gear weight by as much as 30%.

19 DISRUPTING DIALYSIS DELIVERY

By allowing patients to conduct dialysis at home, the SC+ has the potential to transform the treatment model.

21 GREENER GENERATION

A 23% reduction in greenhouse gas emissions made Bowman Power's ETC 1000 a winner in the eyes of the judges.

23 OVER AND ABOVE

A commitment to improving the image and understanding of engineering among young people is making a real difference.

25 EXCELLENCE CUBED

The UK satellite industry is no easy place to make your mark, but this year's winner has done that and more.

27 BEST OF THE BEST

An outstanding contribution to the development of medical technology meant that Design Engineer of the Decade had a truly worthy winner.

29 SPONSORS' PROFILES

30 JUDGES' PROFILES

 *The crop of winners in 2019 stands comparison with any of the last decade* 

A TRANSFORMATIONAL MOMENT

The BEEAs are ten years old, but their founding principles remain wholly unchanged



PAUL FANNING
EDITORIAL DIRECTOR
MA BUSINESS

A lot can happen in 10 years and, from the perspective of the British Engineering Excellence Awards, a lot *has* happened. Over that decade, we've enjoyed ten ceremonies, congratulated nearly 1,000 entrants and presented more than 100 winners with their trophies.

Over the years, the locations, faces and even the shape of the trophies have changed. What has not, however, is the fundamental purpose of these awards: to celebrate all that is best, most innovative and most deserving of praise and recognition in British engineering.

That's easily said, of course, but having been involved in most of the judging over the last decade I can bear witness that the rigour and laser-like focus on excellence that was there in 2009 was certainly still there a few weeks ago when the judges met.



And the crop of winners in 2019 stands comparison with any year of the last decade. From the SC+ system that promises to transform the lives of those who need dialysis to the Grand Prix winner Automata that has brought effective automation and robotics within the budget of SMEs for whom such systems have previously been unaffordable, excellence, as ever, has been the watchword.

Nowhere is this more the case than in the winner of the special 'Design Engineer of the Decade' award, which saw every previous Design Engineer of the Year pitted against one another. Sebastien Cuvelier Mussalien's work has been outstanding and he is a worthy winner.

Sebastien is kind enough to credit winning the BEEAs in 2013 with giving him the confidence to start his own consultancy. To some extent, that win was a transformational event for him. This is not a question of claiming credit, however, but simply highlighting what the BEEAs were always meant to do. By recognising and publicising the work of engineers, we help build the profile and esteem both of them and the profession as whole.

As Sebastien put it himself: "When you get an award like that and you feel recognised, you feel like you can do anything. Winning gave me the confidence to start my own business."

That is what the BEEAs were started for and that's why they continue. We hope the BEEAs always retain that power.

 *Having been involved in most of the judging over the last decade I can bear witness that the rigour and laser-like focus on excellence that was there in 2009 was certainly still there a few weeks ago when the judges met.* 

A white plastic tube, tilted diagonally from the top left towards the center, is filled with bright blue, translucent polymer granules. Some granules have spilled out of the open end of the tube onto the white surface below, creating a small pile and several scattered pieces.

Design

With over 4,000 polymer grades to offer, our experts will work with you to consider all aspects of product, part and tool design to help you produce your products efficiently and effectively.

Develop

In partnership with Moldex3D, we can give you 3D simulations of how our polymer will flow through your design, so that you can troubleshoot and optimise product design before tool steel is cut.

Deliver

We know how important it is to have your material in the right place, at the right time, for the right job. By making significant investments in warehousing and logistics facilities, we can deliver in full, on time, every time.

Find out more at [Distrupol.com/design-develop-deliver](https://www.distrupol.com/design-develop-deliver)

info@distrupol.com | 0845 200 30 40

Find your solution at www.distrupol.com

DISTRUPOLSM
A Univar company

MAKING AUTOMATION ACCESSIBLE

The work of this year's Grand Prix winner could mean that SMEs can afford to join the fourth industrial revolution

Industry 4.0 is talked about almost endlessly, but for some small-to-medium-sized companies it still seems a near-impossible ambition to achieve. The sheer cost of the equipment – especially when it comes to robotics – puts it out of the price range of many, meaning they remain at a competitive disadvantage.

The work of Automata could change all that. Only launched officially in March this year, the company's Eva robot is an affordable and easy-to-use, while also being fit-for-purpose in an industrial context.

Automata is on a mission to democratise robotics. Founded in 2014 by architects Mostafa ElSayed and Suryansh Chandra, the company was born out of the need to find a cost-effective approach to industrial automation when the only options available were prohibitively expensive (£25,000+) industrial robots, or basic robot arms sold on Amazon for £2,000 that are little more than toys.

Following two years of intense development and iteration of both the hardware and software aspects of the product, Automata began running a series of customer pilots in 2016 to ensure it stayed on track and remained focused on solving customers real-world problems. With its team now at 40 people, Automata officially launched

commercially in March 2019.

Alongside product development, the Automata team has gone through an ongoing process of 'customer development', working very closely with a wide range of manufacturing (and other types of) businesses to thoroughly understand their needs, pains, challenges, ecosystems, learning, decision-making and buying processes and approaches to technology integration and deployment.

Through this process of learning and discovery, it became clear that in parallel with pressures to improve margins, SME manufacturers are finding it increasingly difficult to recruit labour for low-skilled, manual jobs. Without automation options they face a constant risk of losing contract to Asian competition. Rising labour costs and the challenge of fluctuations in order volumes has driven the need to automate the menial, mundane tasks – the worst jobs for people to do and low-hanging fruit for automation. Until now (with Automata's Eva priced at £5,000) industrial robotics simply haven't been affordable or accessible to SME manufacturers. Robots no longer need to be stronger, faster or more precise than labour, but they need to be versatile, flexible and quick to deploy – like labour.

The company's Eva robot is deployed in a wide range of use cases



and solutions, the most common of which are materials handling, machine tending (loading/unloading), spot glueing and lifecycle testing.

In order to be able to come to market with an industrial-grade robot at this price point Automata has had to fundamentally re-engineer the entire hardware stack of a robot arm – including the powertrain, electronics and sensors – as well as building an intuitive yet powerful software platform that lets even first time users get up and running on a robot within minutes.



Automata set out to follow the 80/20 rule: achieving 80% of the performance of existing industrial robot arms currently on the market for 20% of the cost. To do this it redesigned low-cost alternatives to components with no commoditised options (and has patents on them). It also designed special assembly methods to build this at scale cost-effectively and used commodity components wherever possible.

Having launched commercially in March 2019, the company has now surpassed 150+ orders, with many

happy customers with successful deployments now making repeat multi-unit orders.

In addition to direct sales, the company is now building its partner and reseller network. As sales ramp up, it is currently focused on selling in the EU (to countries recognising CE certification) and its customer base spans 11 countries: the UK, Germany, Italy, Spain, France, Ireland, Netherlands, Switzerland, Denmark, Portugal, Austria. It will be launching into the US market in early 2020.

WHAT THE JUDGES SAID

“A company determined to democratise the use of robotics among small businesses and, with over 150 orders, it’s well on course to achieving this ambition”

SPONSORED BY

DISTRUPOLSM
A Univar company

Inspired by innovation



Passionate about engineering

INNOVATION PAYS

A readiness to innovate and collaborate has seen this transmission and powertrain specialist double in size in five years.

Drive System Design (DSD) is an innovative consultancy specialising in the engineering of transmission and future electrified powertrains. DSD's simulation-led approach has facilitated its growing reputation for technical excellence and agile development capabilities across the world. With expert teams of mechanical, electrical, control, test, and development engineers, DSD has the ability to collaborate at any phase, from concept through to analysis, design, development, and validation programs. DSD assists with turnkey solutions and subsystem or component development alike.

Current technology focuses include highly-efficient powertrain design optimisation (such as lightweighting and lubrication), control system development, eMotor design and control, and EV/Hybrid architecture specification.

Overcoming problems that have defeated conventional approaches by using innovative solutions is routine business for DSD. Its focus on innovation is highlighted by its investment in research: few companies of our size can claim to re-invest profits into research and facilities on such a large scale.

From developing new simulation tools to analyse EV powertrain architectures, to inventing an automated oil detection system that reduces breather test duration and frees up key staff, the DSD approach is consistent; innovative, first-principles thinking and engineering, leading to optimum results.

The tale of DSD's success can be told via its statistics. Since 2014, it has doubled its UK-based employee headcount to 96 full-time employees and significantly grown its US office from four



to more 30 employees. In addition, during 2019, the company identified significant opportunities in Asia, and is in the process of launching within this market, specifically in Korea where representation has already been established.

Expansion in the last 12 months has included significant investment in the UK site to increase employee capacity by more than 40. The company also invested in 2017 to add over £1m of value to its transmission test facilities, specifically expanding DSD's capabilities to test and develop electrified powertrains and associated systems. The group turnover exceeded £14m in 2018, in contrast to £4.8m in 2014.

WHAT THE JUDGES SAID

Drive System Design's expertise in EV drivetrains is crucial for this sector's future success and its innovative work will have a major impact in such a strategic area for the UK.

SPONSORED BY





AHEAD OF WHAT'S POSSIBLE™

FUSING IDEAS. INSPIRING INNOVATION. MOVING MARKETS.

Not because it's our job. Rather, our nature. That's why you can always expect a commitment to excellence. Straight from the hearts, minds and hands of Analog Devices' engineers.



#ADlahead

LET'S MOVE MARKETS
analog.com/awp/FUSION

NUCLEAR OPTIONS

Providing novel solutions to radiological problems, the work of Innovative Physics is truly making the world a better place

Operating in the nuclear, medical, and homeland security industries, Innovative Physics evolves current technologies to provide novel solutions to radiological obstacles for the benefit of customers and society.

The team, consisting of engineers, physicists and technicians, devote themselves to the development of new approaches to radiological detection. The company at its core has an extensive patent portfolio specialising in radiation visualisation, signal imaging, processing and sensor development artificial intelligence (AI) and pattern recognition algorithms.

Traditionally, radiation workers survey small areas meticulously (every square centimetre) with handheld meters. Not only is this cumbersome, but it takes hours to inspect.

This is why Innovative Physics' most notable product is a range of gamma-ray imaging systems known as the Hot Spot Locators (HSL). These innovative systems allow users to locate gamma radiation in real-time visually. The radiation information is overlaid on an optical camera.

Innovative Physics has demonstrated the use of this technology in the stricken area of Fukushima; helping the local government decontaminate/clean-up after the accident. By using the HSL systems, the user can detect, locate and identify radioactive contamination rapidly.

The quicker the area around Fukushima can be decontaminated, the earlier people can return to their homes, and the faster the area can go back to providing agricultural produce to the rest of the country.

Innovative Physics has also developed an artificial intelligence-based diagnostic tool to aid clinicians and consultants in the determination of treatment plans. The goal is to reduce the analysis of data from days to minutes.

Utilising similar techniques as the HSLs, Innovative Physics' proprietary meta-pattern recognition algorithms, developed initially for Homeland security combines both deep-learning and conventional ensemble classification approaches.

The organisation operates on an international scale working closely with foreign governments and business leaders across Asia, Europe and the USA. The company also offers custom, modular, flexible solutions to customers and collaborators.

WHAT THE JUDGES SAID

“Operating at an international scale and in a technically challenging field this is a great example of a small company providing novel solutions for the benefit of customers and society.”

SPONSORED BY



AHEAD OF WHAT'S POSSIBLE™





DS SOLIDWORKS

AUTHENTIC DESIGN **EXPERIENCE**

Dassault Systèmes, the **3DEXPERIENCE®** Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported.

Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world.



3DEXPERIENCE®

DEMOCRATISING ROBOTICS

Developing an affordable way for companies to get into automation made Automata a winner for the judges.

Automata is on a mission to democratise robotics. Founded in 2014 by architects Mostafa ElSayed and Suryansh Chandra, the company was born out of the need to find a cost-effective approach to industrial automation when the only options available were prohibitively expensive (£25k+) industrial robots, or basic robot arms sold on Amazon for £2k that are little more than toys.

Following two years of intense development and iteration of both the hardware of software aspects of the product, Automata began running a series of customer pilots in 2016 to ensure it stayed on track and remained focused on solving customers real-world problems. With its team now at 40 people, Automata officially launched commercially in March 2019.

The company's Eva robot is deployed in a wide range of use cases and solutions, the most common of which are materials handling, machine tending (loading/unloading), spot glueing and lifecycle testing.

In order to be able to come to market with an industrial grade robot at this price point Automata has had to fundamentally re-engineer the entire hardware stack of a robot arm – including the powertrain, electronics and sensors – as well as building an intuitive yet powerful software platform that lets even first time users get up and running on a robot within minutes.

Through this process of learning and discovery, it became clear that in parallel with pressures to improve margins, SME manufacturers are finding it increasingly difficult to recruit labour for low-skilled, manual jobs. Without automation options



they face a constant risk of losing contract to Asian competition. Rising labour costs and the challenge of fluctuations in order volumes has driven the need to automate the menial, mundane tasks – the worst jobs for people to do and low-hanging fruit for automation.

Having launched commercially in March 2019, the company has now surpassed 150+ orders, with many happy customers with successful deployments who are now making repeat multi-unit orders.

In addition to direct sales to manufacturers, the company is now building its partner and reseller network as sales ramp up.

WHAT THE JUDGES SAID

“A company that is delivering a cost-effective product that fills a massive gap in the UK and that provides SMEs with the opportunity to engage with automation, making Industry 4.0 a reality.”

SPONSORED BY

SOLIDWORKS



WE MAKE THINGS THAT
GO IN AND OUT, UP AND DOWN,
ROUND AND ROUND



ELECTRO-MECHANICAL SOLUTIONS FOR SCIENCE & INDUSTRY



*Medical &
Pharmaceutical*



*Energy &
Nuclear*



*Aerospace
& Defence*



Motorsport



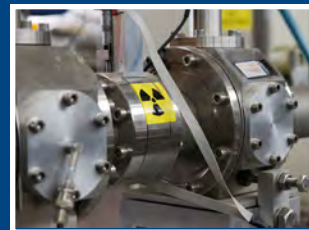
*Scientific
& Research*



Automation

LGMOTION

ENABLING BIGGER THINGS TO HAPPEN



lg-motion.co.uk

A BREATH OF FRESH AIR

Overcoming the challenges posed by the development of a long-lasting and robust air quality sensor earned the judges' approval.

Working alongside air quality expert EarthSense's electronics engineers, Bluefrog Design developed the Zephyr®; a compact and robust air quality sensor. Packaging innovative electrochemical sensors and optical particle counters within a highly cost-effective product that is engineered to perform accurately across global climates and designed to measure pollution, temperature and humidity in the urban environment.

When EarthSense approached Bluefrog Design the sensor technology was not finalised. The Zephyr® uses cartridges to capture the gases and particulates it measures. Aware that new technologies or applications may emerge Bluefrog Design proposed a design that would be easy to re-purpose.

The solution is an extruded aluminium body enclosed with injection moulded recyclable polymer end caps. Enabling the product to change size by adjusting the length of the extruded part - without the expense of retooling.

The challenge was to package the sensors and optical particle counters within a common cartridge system, which is easy to service and replace, a major consideration when the Zephyr® can be deployed in remote locations. These cartridges are precisely engineered to provide stable airflow delivering accuracy levels of +/- 0.00005g/m³. The finished design is clean, attractive and discreet, without entirely disappearing into its surroundings.

The Zephyr® was launched in July 2018 and is already deployed worldwide. EarthSense and Bluefrog Design have exceeded the objectives by producing a product which met the entire functional

design brief from both the electronics and hardware perspective, but also produced a 'design icon' in this very traditional market.

Optimising the design through extensive prototyping and testing, Bluefrog Design sourced manufacturers and set up the supply chain for production, including parts manufactured by Bluefrog Design. New versions of the product are now planned to include those for mobile applications in aerospace and electric vehicles contributing to the future growth of EarthSense.

WHAT THE JUDGES SAID

Bluefrog demonstrated the importance of teamwork not just within the core design team but across the supply chain in an application that shows an awareness of how to make sure environmental monitoring is itself sustainable.





**Proudly Sponsoring
'Materials Application of the Year'**



Goodfellow

Your global supplier for materials

www.goodfellow.com | info@goodfellow.com | 0800 731 4653

PUSHING PERFORMANCE

The use of innovative composites could reduce aeroplane landing gear weight by as much as 30%.

The aerospace industry is one of many to face the challenge of finding suitable materials that will reduce weight and improve efficiency, whilst maintaining reliability and lowering whole-life ownership costs.

A two-year, £28m project, titled 'Large Landing Gear of the Future' has seen Aluminium Matrix Composites (AMC) manufacturer, Alvant, team up with high-technology group, Safran Landing Systems, with the aim to reduce landing gear weight by as much as 30%, thereby making a significant contribution to the aerospace industry's overall drive to reduce fuel consumption and carbon emissions.

AMCs are an advanced class of composite materials suitable for applications where conventional metals are expected to approach or exceed their performance limits. When compared to unreinforced metals, AMCs' advantages are numerous, including: greater strength, higher stiffness, lower weight and superior wear resistance, as well as lower coefficients of thermal and electrical conductivity.

AMCs offer an exciting potential to industries that need a step change in performance to meet ever stringent market and legislative demands. Alvant believes reinforced AMCs, such as AIXal, can offer reductions in weight compared to legacy materials, and are suitable for applications where typical metal alloys are expected to approach or exceed their performance limits.

Alvant's contribution, funded by £513,000 R&D support from Innovate



UK, is enabling the design, manufacture and testing of an AIXal brake rod which will target a 30% weight reduction over an equivalent titanium component, while maintaining a comparable strength to steel.

Alvant believes that, as well as offering this weight reduction of 30% compared to legacy material, AIXal's use of AMCs will give it advantages over carbon composite material such as higher transverse strength and stiffness, superior damage tolerance, and a higher thermal operating range.

WHAT THE JUDGES SAID

"This material application offers significant advantages over metallic and other composite competitors. Its successful partnership with Safran Landing Systems is playing a significant part in reducing the aviation industry's fuel consumption and carbon emissions."

SPONSORED BY

Alvant

Goodfellow
Your global supplier for materials

www.newelectronics.co.uk

newelectronics

8 October 2019

EMBEDDED SOFTWARE • AUTOMOTIVE ELECTRONICS • INTERCONNECTION



A NEW FRONTIER IN CREATIVITY

Is the use of technology helping to
support new forms of creativity in
the world of the arts?

**BRINGING YOU THE UK'S
ELECTRONICS DECISION MAKERS**

www.newelectronics.co.uk

DISRUPTING DIALYSIS DELIVERY

By allowing patients to conduct dialysis at home, the SC+ has the potential to transform the treatment model

Developed by Quanta Dialysis Technologies, SC+ is a small, simple and powerful haemodialysis system designed to provide greater flexibility around where, when and how patients manage and receive their dialysis therapy.

As a CE marked medical device, SC+ has been successfully piloted with the NHS, demonstrating clinical efficacy and performance compatible with traditional treatment regimens used in-centre. The innovative and patented technology behind SC+ is based on a design breakthrough that allows all dialysate fluid management to be conducted on a small, lightweight disposable cartridge. The small form factor and simple-to-use design are intended to enable a broader range of users - including patients themselves - to manage dialysis therapy delivery across a wide range of settings - from the clinic to the home.

The new version of SC+ features many new enhancements from the previous device, starting with a complete rethink of its industrial design making the new device look much more like a consumer electronic device than a medical device - a key 'must have' for patients treating themselves at home. The new design of SC+ has also led to simplified patient interactions, for example previously used stands and shelves have been removed and SC+ now allows patients to hang

treatment ancillaries and consumables from the side of the machine maintaining its clean aesthetics.

SC+ will disrupt the existing dialysis delivery model, creating a new market niche whereby patients are empowered and supported to treat at home - something that is currently lacking in the existing way dialysis is delivered. Through its innovative features and small, simple and powerful design patients will be able to take control of their lives and dialyse to live instead of living to dialyse. Patients have the opportunity of working full time - something that existing patients are unable to do due to clinic scheduling.

WHAT THE JUDGES SAID

"The application will have a transformative impact on the personalisation of healthcare, improving not only the quality of care that's available but enabling treatment to be carried out safely in the patient's home"



SPONSORED BY

newelectronics



MiniTec custom machine guards

Fast. Versatile. Simple.



“Our MiniTec machine guards were specifically built to address our factory’s health & safety requirements.”

Mark Wright,
Automotive Manufacturing



Proud sponsors of the New Product
of the Year (Aerospace) award

- » tool cabinets
- » safety guards
- » workstations
- » conveyors
- » customised enclosures
- » automated solutions

Find out how MiniTec
can work for you

01256 365 605

www.minitec.co.uk

MiniTec
THE ART OF SIMPLICITY

GREENER GENERATION

A 23% reduction in greenhouse gas emissions made Bowman Power's ETC 1000 a winner in the eyes of the judges

Diesel and gas reciprocating generator sets (gensets) are globally used to produce electrical power. Applications range from the support of both large (national) and small (e.g. remote community or island) grids, through to industrial sites, factories, mines, etc. and as a backup power source for critical operations such as data centres and hospitals.

For genset users there is a clear commercial drive to reduce fuel usage for the same power output (increase in system efficiency) or deliver additional power for the same fuel. There is also an environmental drive to decrease both pollutants and greenhouse gas emissions.

Bowman's electric turbo compounding (ETC) products enable gas and diesel-powered genset users to meet these challenges. By recovering waste energy from the genset exhaust, and converting it to grid-quality electrical power, additional power is created emissions free.

Bowman recently created its most cost-effective, reliable and efficient system, the ETC 1000. This new product met all the project requirements, including a 40% price reduction; 50% improvement in reliability and improved field maintainability with minimal maintenance required.

In addition to the low cost of power creation, ETC 1000 can achieve up to a 10% increase in total electrical power; a 23% reduction in greenhouse emissions; a 40% reduction in unburnt hydrocarbons; a 7% reduction in fuel consumption; and a 50% reduction in pre-heated engine load ramp time



natural gas, biodiesel and syngas, with over 400,000 engines globally that could benefit from our technology. Based on these engines, the system has the potential to reduce equivalent CO₂ emissions (including CO₂, NO_x and CH₄) by 417.9 Mt annually. This number is expected to grow to 480,000 in 2025 if current trends continue, leading to a further 20% saving in emissions.

WHAT THE JUDGES SAID

“A product that addresses, here and now, the emissions challenge. Whilst it offers an intermediary step it does so at a price point that is affordable.”

SPONSORED BY

MiniTec
THE ART OF SIMPLICITY



**100% FOCUSED ON
ENGINEERING DESIGN**

October 2019

www.eurekamagazine.co.uk

DESIGN | INNOVATE | ENGINEER

Eureka!

FIRING FOR FUSION

AIMING FOR GAIN
WITH LOW-COST
PROJECTILE FUSION

**IN THIS
ISSUE**

P17
FUTURE FACE
OF BATTLE

P21
ENGINEERING DESIGN
SHOW PREVIEW

P33
THE END OF
DOWNTIME

P37
TURNING
TABLES



Access to **7.9 Million+** Products Online **DIGIKEY.CO.UK**

www.eurekamagazine.co.uk

OVER AND ABOVE

A commitment to improving the image and understanding of engineering among young people is making a real difference

An inspiring ambassador for engineering, in her role as education events manager for RS Components, Laura Giddings has achieved tangible results in improving perceptions around engineering, inspiring young people to pursue it as a career and helping educators with valuable and dynamic resources to bring STEM subjects to life in the classroom.

Her infectious enthusiasm has played a significant part in encouraging further STEM Ambassadors within RS, which she has increased from just 40 at the beginning of 2018 to 150 by the end of that year.

Her own passion for the topic, which was fostered from an early age by her father, who encouraged her to learn how technology worked before she could have it, has provided a solid foundation for the hard work she has contributed in her role at RS.

Having initiated, led and managed many events to promote STEM, created partnerships with synergistic organisations, developed materials to help educators and inspired people within her own organisation to get involved, the snowball effect of her efforts has had real impact.

This impact has been proven in the 2018 RS STEM Impact Report, which highlighted improving perceptions surrounding engineering, with 51% of 11-16 year-olds now happy to consider a career in engineering.

Additionally, 96% of teachers would recommend it as a career option to their pupils, and the 2015/2016 academic year saw a five per cent growth in engineering student applications at Higher

Education level. This represents a genuine and tangible measure of the effectiveness of Laura's contribution to the promotion of STEM.

Laura is absolutely instrumental in the RS STEM strategy, and the company makes no bones about the fact that there is no doubt that the significant strides the organisation has made in this area could not have been achieved without Laura's input.

WHAT THE JUDGES SAID

“Laura's energy, passion and personal enthusiasm as STEM education manager at RS Components shone through and her role, in an admirable corporate programme, has had a real and measurable impact.”



SPONSORED BY

Eureka!



Realise your vision

We have all the parts you need to solve your technical challenges and bring your design projects to life.

Never get stuck again. Our extensive range of semiconductors, passives and interconnects has got you covered. With thousands of brands you know and trust, you can count on us for the best solution.

Find the right parts at



uk.rs-online.com

EXCELLENCE CUBED

Hitting the ground running as a graduate design engineer means adapting quickly to the intricacies of product development. James Veale has done that and more.

In less than two years since joining automation consultancy GB Innomech as a project engineer, James Veale has helped the company to develop its first product line which has been subsequently spun out in a separate company called GiroNEX.

James was given a very early concept for a precision powder dispensing system and has developed it into an easy-to-use, automated system that can quickly and accurately dispense from 0.1 to 5000 mg of chemical powders into vials and capsules. The GiroNEX Cube is an automated 'dispense and weigh' system aimed at pharmaceutical R&D, QA/QC and other laboratory-based applications.

James's work at GiroNEX has included developing the core technology for autonomous powder micro-dispensing; designing and writing the system software; leading the product and design reviews; and demonstrating the technology and prototype systems to target customers to get their feedback.

His role has expanded into product management with inputs into commercial activities for the Cube product range including its positioning, branding, marketing, target applications and customers.

James is definitely not a backroom engineer and is equally comfortable demonstrating the technology or the latest system features to prospective customers. While at the same time encouraging them to feedback on what additional system features they need.

As a graduate engineer, James has



the skills and know how to make good engineering choices and to understand how those decisions impact current and future aspects within a project. His ideas are strong, well researched and thought-through, but he is also a real people person. He gets on with everyone and even if someone has very different views from his own he is adept at drawing out the best aspects, while being persuasive enough to sell his recommended strategy and to lead the team.

WHAT THE JUDGES SAID

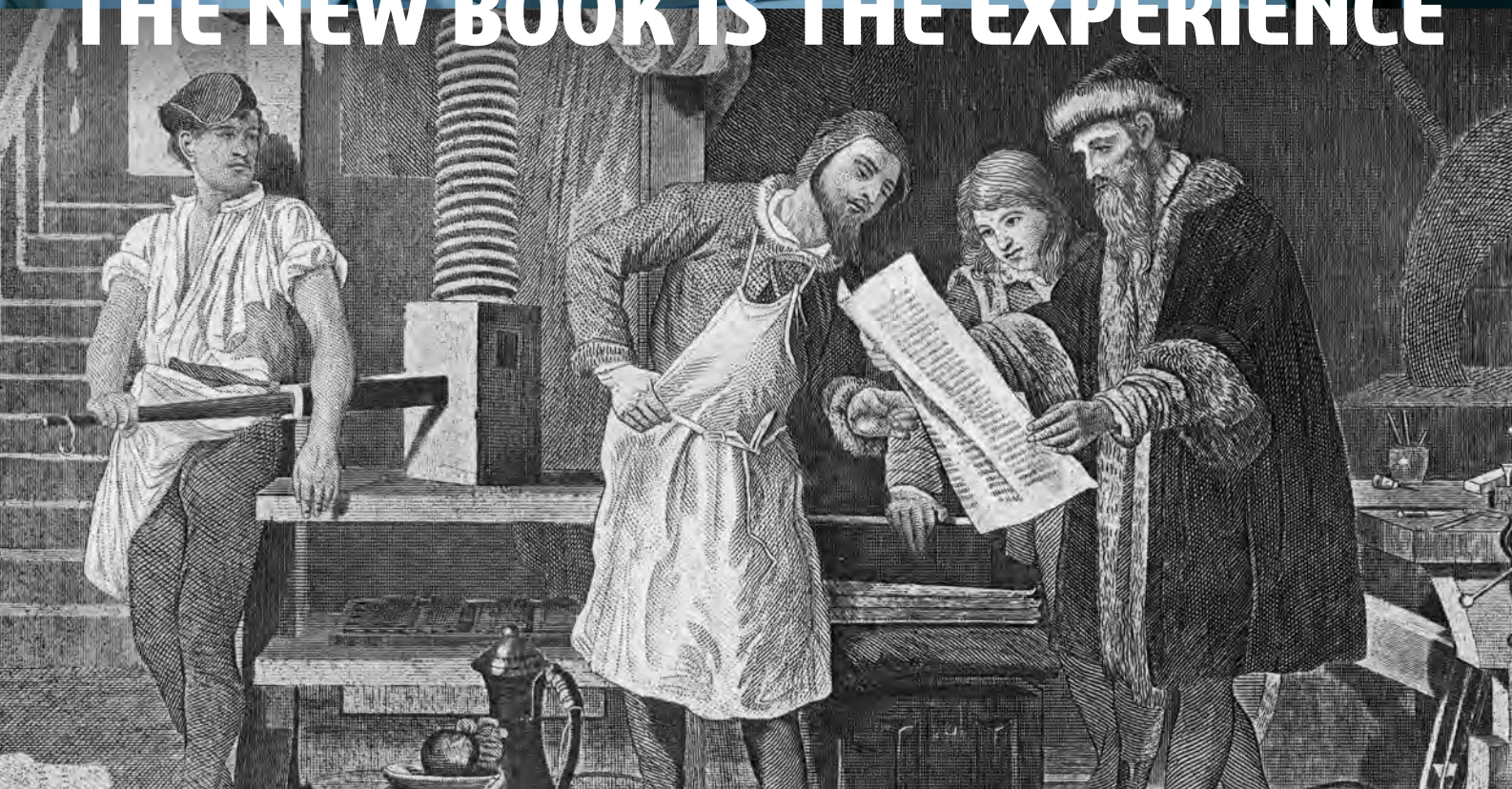
"A talented engineer with exceptional skills, he's a great ambassador for engineering."

SPONSORED BY





THE NEW BOOK IS THE EXPERIENCE



Discover more at : www.3ds.com

BEST OF THE BEST

An outstanding contribution to the development of medical technology meant that the Design Engineer of the Decade Award had a truly worthy winner.

2013 was the first time the Judges agreed unanimously on the winner of the Grand Prix. They said: "It is absolutely no insult to the other competitors to say he was head and shoulders above them – he was that good."

It's fair to say that, while the judges were different in 2019, the verdict was the same.

Sebastien Cuvelier Mussalian, who was also the winner of Design Engineer of the Year in 2013, has built an international reputation for the design, development and industrialisation of innovative, robust medical devices.

As well as many major roles on other projects, he was lead engineer on the OrganOx perfusion system, which keeps donor human livers 'alive' before being transplanted, which won Team Consulting Consultancy of the Year in 2012.

He says: "It was totally unexpected. Engineers tend to work in the shadows even if projects are successful, that's especially true in the medical sector. For other people to relate to the role of an engineer can be quite difficult, but I think that's changing and engineers are becoming cool with the rise of the maker movement and YouTube making engineering more accessible.

"It felt great because we as a team worked so hard, so many weekends, because we knew we were doing something that would make a difference."

It was also Sebastien's contributions to the design profession, in particular working on a variety of community projects with schoolchildren and young engineers, looking to give them the skills needed to think through future challenges, that

impressed the Judges.

Winning the 2013 Award proved a catalyst for Sebastien's career. Indeed, he credits it with inspiring him to set up on his own. "When you get an award like that and you feel recognised you feel like you can do anything. Winning gave me the confidence to start my own business," he says.

Sebastien founded his own consultancy, Pix Medical, in 2014 that produces connected app and device technologies for the medical industry.

WHAT THE JUDGES SAID

"Whether it's his contribution to the industry or his ability to handle complex, multidisciplinary projects, he has demonstrated creativity, originality and ingenuity together with commercial acumen – his work has had a significant global impact"



SPONSORED BY

SOLIDWORKS

MANUFACTURING AND DESIGN ENGINEERING

MADE IN IRELAND

Promoting
the success of
manufacturing
and engineering
in Ireland

10,000
Key decision
makers

6,000
Manufacturing &
design sites

**NEXT
ISSUE**
November
2019

*If you are doing business in Ireland
- or would like to be...*

CONTACT

Jez Walters, Sales Director
jez.walters@markallengroup.com • Tel: 00 44 (0) 1322 221144

www.madein.ie

MADE in Ireland is brought to you by:

Eureka!

newelectronics

MACHINERY

**MANUFACTURING
MANAGEMENT**

FAST
FASTENING & ASSEMBLY SOLUTIONS AND TECHNOLOGY

**MA
BUSINESS**
A MARK ALLEN GROUP COMPANY



HEADLINE SPONSOR



Distrupol is a European leader in the sales and application development of thermoplastic polymers and elastomers. Their highly experienced sales and technical team will support you with mould design, polymer selection, testing, process optimisation and project development.
www.distrupol.com

GALLERY SPONSOR



RS Components is the global distributor for engineers. With operations in 32 countries, we offer more than 500,000 products through the internet, catalogues and at trade counters to over one million customers, shipping around 44,000 parcels a day. Our products, sourced from 2,500 leading suppliers, include electronic components, electrical, automation and control, and test and measurement equipment, and engineering tools and consumables
www.uk.rs-online.com

ORGANISED BY



MA Business is an award-winning B2B information and events business, managing a wide portfolio of brands, including Eureka! and New Electronics. It works across a range of sectors, including engineering, print, recycling, HR and telecoms.
www.markallengroup.com

CATEGORY SPONSORS



Analog Devices (Nasdaq: ADI) is a leading global high-performance analog technology company dedicated to solving the toughest engineering challenges. We enable our customers to interpret the world around us by intelligently bridging the physical and digital with unmatched technologies that sense, measure, power, connect and interpret. We create innovative solutions to solve design challenges in instrumentation, automation, communications, healthcare, automotive and numerous other industries. The company is a global leader in the design and manufacturing of analogue, mixed signal, and DSP integrated circuits to help solve the toughest engineering challenges.

Analog Devices is sponsoring of the 'Small Company of the Year' category.
www.analog.com



Currently celebrating 70 years of facilitating scientific innovation, Goodfellow is a leading global supplier of metals, alloys, ceramics, glasses, polymers, compounds, composites and other materials to meet the research, development and specialist production requirements of science and industry. The company has an extensive range of 70,000 catalogue products in multiple forms available off the shelf, most subject to free delivery within 48 hours and with no minimum order quantities. With over 6000 customers supported by a worldwide network of offices, agents and distributors Goodfellow also offers a comprehensive range of bespoke processing services, effectively operating as an extension of the production team in order to develop custom fabricated components in any quantity required. Our in-house team is comprised of fellow scientists and engineers with extensive knowledge of materials and processing - through their technical expertise and a supporting range of specification tools the company has built an unrivalled reputation for helping to find solutions to even the most challenging of research problems.
www.goodfellow.com



LG Motion Ltd based in Basingstoke design, develop and manufacture motion control technology components and systems to meet the exacting requirements of research and academic institutions and the wider industry. The product range encompasses a wide range of standard and bespoke motion control systems and will highlight Arcus Technology units, SMAC Units, LG series of Positioning Slides. From small and simple stepper motor systems to the sophisticated platforms for controlling and synchronising servo motors, LG Motion also integrates components and systems from a number of renowned global partners such asAirex, Precision Motion Dynamics, Velmex, Heidenhain, Schneeberger and Empire Magnetics.
www.lg-motion.co.uk



MiniTec UK Ltd is one of the leading manufacturers of modular aluminium profile building systems used throughout Industry. The heart of the MiniTec system is the unique Powerlock ® fastening method which requires no special tools. The use of standard fasteners reduces the cost of the product package considerably, makes assembly very easy and ensures re-usability.
www.minitec.co.uk



SOLIDWORKS® leads the global 3D computer-aided design (CAD) industry with easy-to-use 3D software that trains and supports the world's engineering and design teams. SOLIDWORKS® solutions focus on the way engineers work every day, with an intuitive, integrated 3D design environment that covers all aspects of product development and helps maximise their design and engineering productivity. Over 2 million designers and engineers worldwide use SOLIDWORKS to bring designs to life—from the coolest gadgets to innovations for a better tomorrow.
www.3ds.com



**PHILIPPA OLDHAM, CHAIR,
Head of National Network Programmes,
Advanced Propulsion Centre**

Philippa is a Chartered Engineer who thrives on working with a wide range of stakeholders from government, industry and academia to create visionary solutions, challenging existing silos between the sectors. Previously Head of Transport and Manufacturing at the Institution of Mechanical Engineers for six years, Philippa

has a great understanding of the challenges facing transport and manufacturing both domestically and internationally. With experience from the automotive, aerospace and defence sectors Philippa believes the APC can drive investment that we need to equip the UK with the right capability and technology to be at the forefront of pulling innovative low carbon propulsion solutions through to fruition, accelerating economic return. Through the National Network Programmes Philippa is looking forward to the opportunity to use her experience and knowledge of the UK's transport modes and infrastructure to build on the strategy already in place, driving through and accelerating deliverables. This opportunity to incubate collaborations, honing solutions to drive UK leadership in terms of exportable products and services. Programmes Philippa is looking forward to the opportunity to use her experience and knowledge of the UK's transport modes and infrastructure to build on the strategy already in place, driving through and accelerating deliverables. This opportunity to incubate collaborations, honing solutions to drive UK leadership in terms of exportable products and services.



**PETE LOMAS,
Trustee/director of engineering, Raspberry
Pi Foundation/Norcott Technologies**

Pete, director of engineering at Norcott Technologies, has designed products for a diverse range of industries. His passion is encouraging the next generations to engage in STEM subjects and is a co-creator of the Raspberry Pi, serving as a trustee of the charitable foundation.

Pete, director of engineering at Norcott Technologies, has designed products for a diverse range of industries. His passion is encouraging the next generations to engage in STEM subjects and is a co-creator of the Raspberry Pi, serving as a trustee of the charitable foundation.



**TOM KING-SMITH
CEO, ElecTech Council UK**

Tony King-Smith is a well-known electronics and semiconductor technology executive, with 40 years' experience managing engineering, marketing and business development teams world-wide. His career has included extensive experience in both global marketing and R&D, and is widely recognised as an industry expert in technology

marketing and strategy, intellectual property, semiconductor supply chains and brand management. He spent 10 years as CMO for Imagination Technologies, and previously held senior R&D management positions at British Aerospace, Immos, LSI Logic, Hitachi (Renesas) and Panasonic. His consultancy, TKS Partnerships, works with a wide range of startups and larger companies in semiconductors, automotive and industrial IOT.



**CHRIS EDWARDS
Freelance technology journalist**

Chris Edwards is a freelance technology journalist who has been reporting on the electronics industry for three decades. He is a frequent contributor to New Electronics.



**PAUL FANNING
Editorial director, MA Business**

A technical magazine editor for more than 20 years, Paul has spent much of his career in the engineering press, with spells covering most aspects of the sector. He first became editor of Eureka! in 2010 and was part of the team that launched the Engineering Design Show. In 2018, Paul added to his role on Eureka! when he was appointed editorial director of MA Business.



**NEIL TYLER
Editor, New Electronics**

A highly-experienced journalist, Neil has been covering developments in the electronics industry for more than a decade. Editor of New Electronics since 2014, he has also worked across a variety of industries including: telecommunications, automotive, business systems, banking technology and finance.

WWW.ENGINEERINGSOLUTIONSLIVE.CO.UK

NEW FOR
2020

ENGINEERING SOLUTIONS LIVE



ONE DAY
ONE VENUE
ONE GREAT
SHOW

TWO GREAT
BRANDS
TOGETHER

**FAST
LIVE**

12 MARCH 2020

BRITISH
MOTOR
MUSEUM

FIND YOUR FASTENING
AND MATERIALS
SOLUTIONS IN ONE
SIX-HOUR SHOW

LIVE
Engineering
Materials





british engineering excellence awards

HEADLINE SPONSOR



GALLERY SPONSOR



CATEGORY SPONSORS



ORGANISED BY

Eureka!
newelectronics



MA BUSINESS
Hawley Mill, Hawley Road,
Dartford, Kent DA2 7TJ
T: 01322 221144
F: 01322 221188
www.markallengroup.co.uk
