



Celebrating engineering excellence in the UK

Automata, leading the development of affordable robotics, proved a worthy winner at this year's BEEAs winning the Grand Prix. By **Neil Tyler**

Celebrating all that is best, most innovative and deserving of praise this year's British Engineering Excellence Awards, now in its tenth year, lived up to its reputation of applying rigour and a laser-like focus on identifying excellence when it comes to selecting category winners and then deciding on which of those should go on to be declared the winner of the Grand Prix, in essence, the 'Best of the Best'.

In the plush surroundings of the Landmark Hotel in Marylebone, London, the robotics start-up Automata was named this year's Grand Prix winner.

Automata, which was founded in 2014 by architects Mostafa ElSayed

and Suryansh Chandra, is on a mission to democratise robotics.

Born out of the need to find a cost-effective approach to industrial automation, when the only options available tend to be prohibitively expensive industrial robots, or basic robot arms sold on Amazon, Automata has been working to change the nature of the market and extend this technology's availability.

The company's Eva robot is both affordable and easy-to-use, while fit-for-purpose in the industrial space.

Eva was launched commercially in March 2019 and the company has now surpassed over 150 orders, and with a growing number of successful deployments it is now seeing repeat

Above: 'Celebration!' BEEA's winners 2019

multi-unit orders. Eva has been deployed in a wide range of use cases, from materials handling to machine tending and lifecycle testing.

The judges said:

"Automata is a company that is determined to democratise the use of robotics among small businesses, and with a growing order book is well on course to achieving this ambition."

New Product of the Year (Electronic) Sponsor: New Electronics magazine
Quanta Dialysis Technologies – SC+

The Judges looked for an electronic product or component that addresses a market need and which brings a significant performance improvement.

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.

Successfully piloted by the NHS, it has demonstrated clinical efficacy and performance compatibility with traditional treatments.

SC+ is seen as disrupting the existing model for delivering dialysis and empowering patients.

The judges said:

“The application will have a transformative impact on the personalisation of healthcare, improving not only the quality of care but enabling treatments to be carried out safely in the patient’s home.”

Small Company of the Year

Sponsor: Analog Devices

Innovative Physics

To succeed in this category, the Judges were looking for an entrant with a sound business plan, a product or service that meets a market need and that has received a positive reception for that product/service.

Operating in the nuclear, medical, and homeland security industries, Innovative Physics takes current technologies and looks to provide novel solutions to radiological obstacles. The team is focussed on the development of new approaches to radiological detection.

The judges were particularly impressed with the company’s range of gamma ray imaging systems – Hot Spot Locators – which allow users to locate gamma radiation visually in real-time.

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.”

Highly Commended Small Company of the Year

Precision Acoustics

The Judges found it exceptionally

difficult to decide the winner of this category and decided to award a Highly Commended certificate to Precision Acoustics, a manufacturer of high-quality measurement products that despite its size, has a truly global reach.

Start-Up of the Year

Sponsor: SolidWorks

Automata

With this category the Judges were looking for a company developing mechanical and/or electronic products or offering engineering-based services to customers in the UK and elsewhere. With its mission to democratise robotics, Automata impressed the judges with its development and launch of the Eva robot, which combines ease-of-use and affordability with fitness for purpose in an industrial context.

The judges said:

“A company that is delivering a cost effective product that’s providing SMEs with the opportunity to engage with automation and making Industry 4.0 a reality.”

Design Team of the Year

Sponsor: LG Motion

EarthSense & Bluefrog Design

Entrants needed to demonstrate the successful use of teamwork in the creation of an engineering or electronic product or system. In assessing the entries, the Judges wanted to see how the team was composed and evidence of how its members interacted to meet

Grand Prix winner: Automata took home the award for their Eva robot

its budget and project milestones.

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 engineered to perform accurately across global climates and designed to measure pollution, temperature and humidity in the urban environment.

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.”

Materials Application of the Year

Sponsor: Goodfellow (Cambridge)

AlXal Brake Rod – Alvant

The choice of material can make or break an engineering product, so the Judges were looking for evidence of how the properties of a material (or material combination) were exploited to solve a design challenge.

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 in a project that could reduce landing gear weight by as much as 30%, assisting with the aerospace industry’s drive to reduce fuel consumption and carbon emissions.

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.”



**New Product of the Year
(Mechanical)****Sponsor: MiniTec****Bowman Power – ETC 1000**

In this category the Judges were looking for an engineering product for which an innovative approach has been used to meet a market need. In addition to the low cost of power creation it offers, the ETC 1000 genset from Bowman Power 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.

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.”

Highly Commended New Product of the Year (Mechanical)**Russell Finex – AMPro Sieve Station**

The Judges decided to award a Highly Commended certificate to the second-generation AMPro Sieve Station, which has been specifically designed to overcome the challenges associated with the recovery, requalification and re-use of 3D printing powder.

**Engineering Ambassador of the Year
Sponsor: Eureka! Magazine****Laura Giddings, RS Components**

Here the Judges were looking for entrants who are engaging on a regular basis with a local school or educational establishment to promote engineering.

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 passion 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.

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.”

**Young Design Engineer of the Year
Sponsor: RS Components****James Veale, GB Innomech**

When it came to awarding this, the Judges assessed a range of factors such as: the knowledge which has been applied by the young engineer; the contribution made to projects; and the degree of innovation required. They also considered the nominee’s

Above: Engineering Ambassador 2019 - Laura Giddings of RS Components

**Design Engineer of the Decade****Sponsor: SolidWorks****Sebastien Cuvelier Mussalian**

Celebrating 10 years of the BEEAs a unique category, the Design Engineer of the Decade, was included. Chosen from previous winners of the Design Engineer Of The Year Awards the Judges declared Sebastien Cuvelier Mussalian the winner, having won in 2013 for his work as lead engineer on the OrganOx perfusion system, which keeps donor human livers ‘alive’ before being transplanted.

Since then, Sebastien has gone on to build an international reputation for the design, development and industrialisation of innovative, robust medical devices.

The judges said:

“Whether it’s his contribution to the industry or his ability to handle complex, multidisciplinary projects, Sebastien has demonstrated creativity, originality and ingenuity.”

personal qualities that promote the engineering profession. 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.

The judges said:

“A talented engineer with exceptional skills, he’s a great ambassador for engineering.”

Consultancy of the Year**Sponsor: MA Business****Drive System Design**

The shortlisted companies needed to be developing innovative and timely solutions to engineering problems posed to them by their customers. Other factors taken into account included the ratio of consultancy staff to the number of projects delivered, number of staff applied to those projects and their success.

Drive System Design’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, where it is developing a presence.

The judges said:

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

Highly Commended Consultancy of the Year: ByteSnap Design

Under the leadership of founders Dunstan Power and Graham Wintle, ByteSnap Design has doubled in headcount and achieved revenue growth of 147% over the last five years.