

The judges



SIR JAMES DYSON

If one name is synonymous with innovation, it's his. He practically reinvented the vacuum cleaner and his more recent creations include the Airblade hand dryer and the world's fastest motor.



LESLEY GAVIN

As a futurologist for BT, Lesley spends her day analysing industry trends and predicting what will be the next big thing. Before joining BT she was an accomplished architect and ran her own tech business.



RICHARD NOBLE

Richard held the land speed record from 1983-1997. He was project director of ThrustSSC, the car that holds the current world record, and is leader of the Bloodhound SSC bid to break 1000mph.



JEM STANSFIELD

Familiar to anyone who watches BBC's *Bang Goes The Theory*, Jem is the creator of the shockwave cannon and vacuum gloves that allow the wearer to scale buildings just like Spider-man.



ON THE PODCAST



Britain really has got talent. And here, according to our team of expert judges, are the British innovations that you should be looking out for over the next few years...

As a nation we've always been pretty handy at coming up with an idea and making it work. Everything from cat's eyes to the modern incarnation of the flush toilet and the steam engine were dreamed up on these shores. And it's a tradition that

continues today – you only have to watch a Formula One race to see that British creativity is alive and kicking. No other country has more teams on the start grid.

So, here at *Focus*, we decided it was high time to recognise Britain's talent for innovation and creativity.

We drew up a shortlist of amazing new inventions and recruited a panel of expert judges to pick the best of the best. And here they are – the British innovations that are most likely to have the biggest impact on the world in the next few years. Remember, you saw them here first...

MINI MARVELS

The robot with greater reach

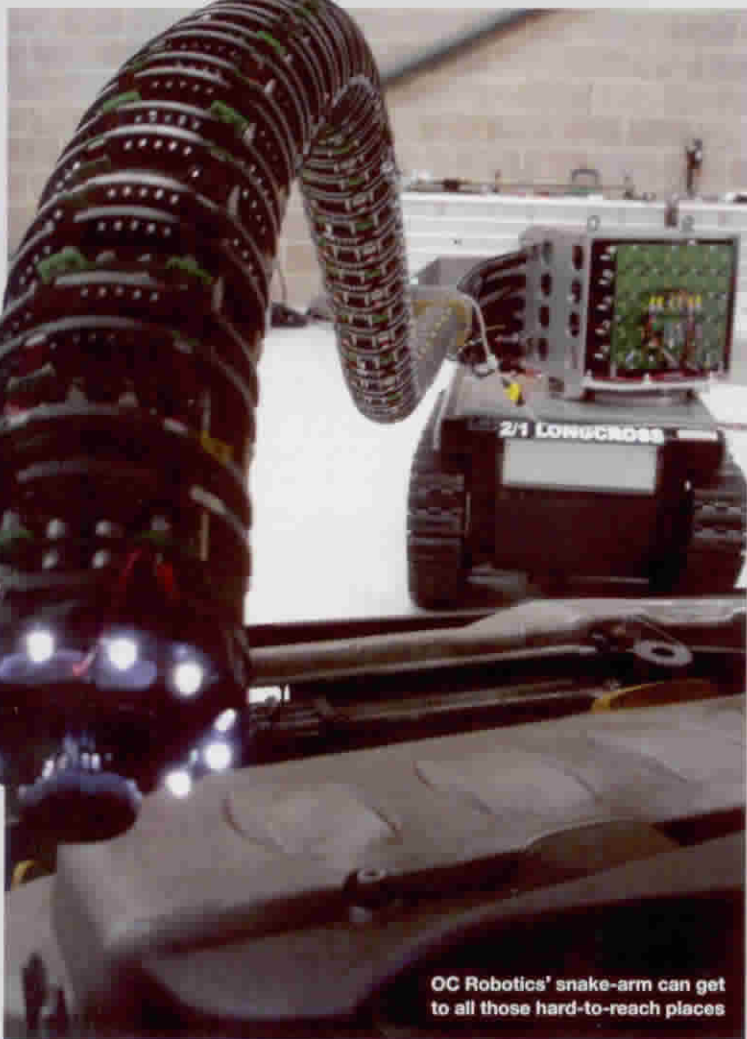
OC Robotics, Bristol, founded by Dr Rob Buckingham and Andrew Graham

Industrial robots have always tended to do their stuff in wide-open spaces – think car-plant sized dimensions. But this robotic arm is designed to get into the nooks and crannies that the others cannot reach. Whether it's inside a nuclear reactor, aircraft or even inside the human body, this robot helps you build things or carry out repairs.

How it works is pretty simple. The robot's arm is built with a large number of supportive vertebrae, a bit like a human spine. 'Tendon' wires terminate at

various points along the arm and a motor is used to control the length of each wire independently, shaping the arm exactly as you'd like it to be. The operator uses a joystick to drive the arm's tip and a computer calculates how to make the movements. A hollow bore runs through the arm's centre, allowing devices to be passed through. The arm could be used as anything from a hosepipe to a vacuum.

Contracts have already been rolling in, including one to fit an arm to a vehicle so it can be used to inspect nuclear reactors in Canada. The MoD and the US Department of Defense are also showing interest. The company has also been working with Airbus UK to develop robots that can be used on the assembly line.



OC Robotics' snake-arm can get to all those hard-to-reach places

BIO BURNERS

Matthias Grundmann, Bioflame, Yorkshire

Burning wood to generate electricity is an unsustainable practice that Bioflame is helping to end. Its burners are proving to many firms in Central America that they can get better results from rice and coffee husk waste. These waste products are burned at very high temperatures to minimise gas emissions, making for an efficient and environmentally friendly power generator.



AIR BATTERY

University of St Andrews, Scotland

Batteries currently use lithium cobalt oxide, which is heavy and costly. The new STAIR (St Andrews Air) cell uses oxygen instead. This means you get a cheaper, lighter battery with about 10 times more life. The batteries are likely to become commercially available in about five years, a development that could have a big impact in many fields, not least the electric car industry.



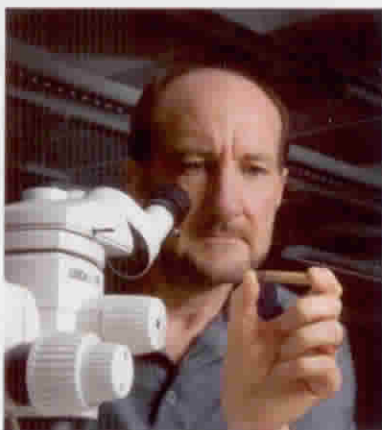
Indelible prints

Dr John Bond, University of Leicester

Criminals who touch a metallic surface will no longer be able to wipe that surface clean, thanks to Dr John Bond, a Fellow of the University of Leicester and scientific support manager for Northamptonshire police. Dr Bond has come up with a way to detect the corrosion on metal surfaces caused by tiny traces of salty sweat on human fingers. What's more, he built his device at home using wire and gaffer tape.

Dr Bond first applies 2500 Volts to the metal being tested. Then ceramic beads, coated with a fine powder similar to that used in photocopiers, are similarly charged and poured onto the metal. The powder shows where corrosion has taken place, and is baked to hold its pattern. It's then photographed for fingerprint comparison. The marks it reveals cannot be wiped off, and do not deteriorate.

The invention has attracted interest from US detectives looking to re-open cold cases, as well as military commanders in Afghanistan who believe it could help them track down those who manufacture roadside bombs.



Dr Bond's technique makes prints indelible



A fingerprint on a piece of brass