

designed to increase network reliability while reducing lifecycle costs for telecoms networks.

Under the agreement, Tyco Electronics will market, promote and sell the GenCore product through its direct sales force, under both its own and Plug Power brands. The distribution agreement formalizes a working relationship that has been addressing technology, marketing, reliability and certification for more than a year, and complements the recent nationwide service and installation agreement between Plug and Tyco Electronics Installation Services [*FCB*, August].

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ATP awards for SOFCs, nano-electrode projects

Three fuel cell projects are among 32 new awards for research on highly innovative industrial technologies, worth a total of up to \$80m in funding from the US Commerce Department's Advanced Technology Program, and an industry share of up to \$57 million. The ATP – managed by the National Institute of Standards & Technology – supports projects that industry cannot fully fund on its own because of significant technical risks.

Carbon Nanotechnologies Inc (CNI) in Houston, Texas will develop a novel, free-standing single-wall carbon nanotube (SWNT) fuel cell electrode assembly containing an immobilized noble-metal catalyst, to enable compact PEM fuel cells with superior performance and longer lifetimes while simplifying manufacture. ATP is supplying \$3.6m of the \$7.4m total cost of the three-year project, in which Johnson Matthey Fuel Cells (West Chester, Pennsylvania) will develop technology for deposition of precious-metal catalyst on SWNTs, fabrication of SWNT-based MEAs, and assessment of associated performance in direct methanol and hydrogen PEM fuel cells. Motorola Labs (Tempe, Arizona) will test SWNT-based DMFCs and high-temperature reformate micro-fuel cell prototypes with MEAs fabricated by German-based PEMEAS (formerly Celanese Ventures), a major subcontractor to the project.

Corning Inc in upstate New York has been awarded up to \$8m towards a three-year, \$16m project to develop a scalable, thin, large-area planar solid oxide fuel cell based on innovative ceramics, device design and array architecture,

for primary and cogeneration distributed power that can cycle repeatedly and be more easily fabricated into 200 kWe power units. The company will collaborate with Buffalo-based ENrG Inc on a novel approach to planar SOFCs based on innovations in thin solid electrolyte technology, which is inherently thermally and mechanically stable by design, permitting individual planar fuel cell layers of much greater area than in competing approaches.

And in Ohio, **NexTech Materials** in Lewis Center will work on a lightweight SOFC that offers five times the power density of the current state-of-the-art, as well as greater durability and flexibility of operation, for use in APUs for aircraft. The two-year, \$2.55m project will receive up to \$2m from ATP to develop an SOFC architecture and manufacturing process that will offer unparalleled power density, improved manufacturability, better mechanical integrity and the ability to use liquid hydrocarbon fuels. Nasa Glenn Research Center in Cleveland will support the project in materials development, cell/ stack fabrication and single-cell testing, while SOFCo-EFS Holdings in Alliance will test single cells and stacks under application-specific conditions.

For more details of the ATP awards, go to: www.atp.nist.gov

Masterflex, Swizzbee link for fuel cell bikes

German-based Masterflex is cooperating with leading Swiss electric-bike manufacturer Swizzbee, on the future development of fuel cell bikes for personal transport. The agreement was signed at the recent IFMA international bike trade show in Cologne.

The alliance aims to develop electric bikes powered by fuel cells, which will be able to travel substantially further (up to 250 km) than conventional electric bikes, say the partners.

Masterflex will develop a special PEM fuel cell system – based on the prototypes it exhibited at the 2004 Hannover Fair [*FCB*, June] – to power the current Swizzbee 50C bike. The fuel cell bikes will be tested extensively by the partners in the coming year, using a joint test fleet.

Provided the tests are successful, the aim is to distribute the fuel cell bikes via Swizzbee's existing European distributor network.

Masterflex also recently teamed up with fellow German company Veloform to develop fuel cell powered cargo bikes [*FCB*, June].

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Cellex, BOC to supply fuel cells, H₂ for forklifts

Industrial gases giant BOC has signed an agreement with Vancouver-based Cellex Power Products, a leading developer of fuel cell power solutions for industrial vehicles, to develop complete hydrogen supply solutions to power forklift trucks used in large distribution warehouses in North America.

The next round of customer trials of the hydrogen-powered forklifts is expected to last three months, at customer sites in the US and Canada. Cellex will supply power units to go into the trucks, while BOC will provide the indoor hydrogen refueling facilities.

'Cellex's power units have logged hundreds of truck days to date from its field trials program, which began in February 2002,' says Tom Hoying, Cellex's VP for sales & marketing. 'The next step in the field trials will demonstrate the safe and efficient fueling of hydrogen at customer locations.'

'These trials will show customers how hydrogen fuel cells can improve truck productivity significantly by removing the downtime and performance loss seen in battery-powered trucks, and reducing the health and safety risks associated with handling lead-acid batteries,' explains John Carolin, BOC's global director for hydrogen energy. 'Also, hydrogen refueling systems are considerably smaller than a typical battery recharging facility, which frees up additional floor space within the distribution center.'

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PwC finds revenues at last exceed R&D spend

Public companies in the fuel cell sector enjoyed a 20% increase in revenues in 2003, rising to US\$243 million from \$203 million in 2002, according to PricewaterhouseCoopers' 2004 Fuel Cell Industry Survey. For the first time in more than three years, revenues exceeded R&D spending, which dropped by 11% to \$204m. However, the sector continued to experience operating losses, major R&D spending, and technical, marketing and financing challenges.