

Changing the Energy GAME

By Ashley Pinder

ORLANDO'S PLANAR ENERGY DEVICES IS DEVELOPING THIN-FILM BATTERIES OF THE FUTURE.



If Scott Faris and his team at Orlando's Planar Energy Devices have their way, the battery is about to follow the path of the film once used in cameras.



Scott Faris, CEO of Planar Energy Devices, and his company are at the forefront of developing thin-film batteries that could revolutionize the way energy is stored.

And, they're talking about all types of batteries, from the ones that power cell phones and laptops to those that, in the not-too-distant future, may make battery-powered cars the standard.

Planar is working to introduce scalable commercial production of thin-film batteries that will change the face of manufacturing by reducing the size and cost to make all sorts of battery-powered products. Imagine a battery that's roughly the size and shape of a postage stamp ... and then, try to imagine the universe of new applications that will spring from that innovation.

"The battery is the Achilles' heel in the development of solutions for renewable power, global warming and the energy crisis," says Scott Faris, CEO of Planar Energy Devices Inc. "We have to break the paradigm because the traditional chemistries of batteries have reached their limit and we've hit a wall in growth of alternative sources."

That paradigm is about to change, and the revolution in power may well have its epicenter in Central Florida.

Believe it or not, the basic design of the battery has remained fundamentally the same since its creation in ancient Baghdad, Iraq, nearly 2,000 years ago, when cylindrical clay pots were filled with an iron rod and used for electroplating gold onto silver.

PHELAN EBENHACK (2)

"The battery industry has moved more in the last five years than it has in the last 100," says Faris. "The battery guys were given 100 years to solve this problem and they haven't. So now it's time to let the semiconductor guys give it a try. We are going from large and cylindrical to small and flat. Picture the SIM card in your cell phone."

Faris sees the thin-film battery of the future as a flat, reprogrammable single-storage platform that can be swapped in and out of personal electronics.

Faris has a 20-year track record of developing emerging technologies, most notably at Ocean Optics, which revolutionized the spectrometry industry. His success drew the attention of Princeton, New Jersey-based Battelle Ventures, which had identified thin-film batteries as the wave of the future, and tapped him to license and build a portfolio of solid-state battery technology from labs, universities and even other companies.

In 2007, Faris and Battelle Ventures co-founded Planar Energy Devices, and for the past year have been finalizing several intellectual property agreements and doing research and development, both at UCF on a Florida High Tech Corridor Council grant and now in their new facility near downtown Orlando.

"What distinguishes Planar from others in this field is our commitment to building a multi-disciplinary team and

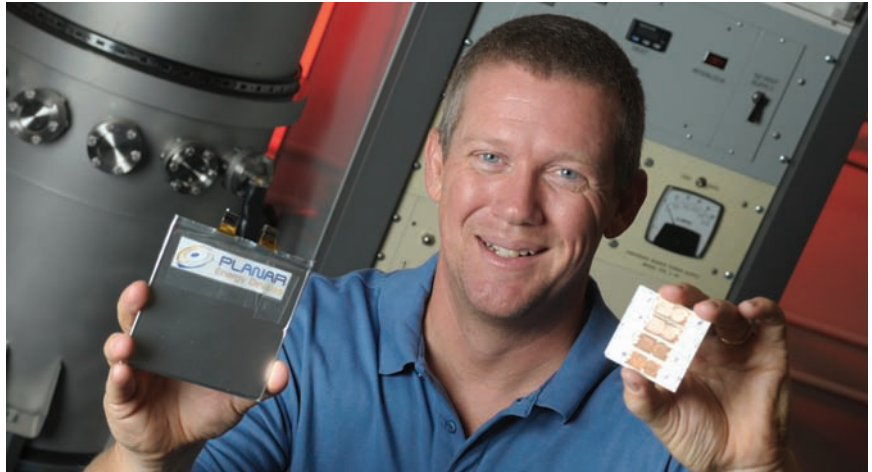
"MANUFACTURING THIS BREAKTHROUGH BATTERY TECHNOLOGY RIGHT HERE IN CENTRAL FLORIDA NOT ONLY MEANS WE CAN CONTRIBUTE TO THE COUNTRY'S ENERGY INDEPENDENCE, BUT WE'D BE HOME TO ONE OF THE PREMIER BATTERY TECHNOLOGY COMPANIES IN THE WORLD." — SCOTT FARIS, PLANAR ENERGY DEVICES

technical approach for energy storage," says Faris. "We took semiconductor guys who knew little about building batteries and asked them to solve the problem — there was a real 'a-ha' moment. Now we're using a proven technology from a semiconductor application and making it the solution for designing and manufacturing tunable capacity thin-film batteries."

For the past 50 years, batteries have improved through single-point innovations. Unlike the semiconductor industry,

which is driven by Moore's Law — where technologies improve by a factor of two every two years — the battery industry has only produced three to five percent improvements each year, Faris explains.

"It's not a lack of good ideas," he says. "In fact, many researchers have



come up with great ideas for increasing battery storage densities, but they often fall short when it comes to manufacturing, because they are too hard or too costly to reproduce."

Enter Planar, a company that is focused on manufacturability.

Planar's approach uses all solid materials, rather than a mixture of gases and solids; a single way of depositing the materials onto the battery; and an innovative manufacturing process that allows the company to implement a proprietary

roll-to-roll production platform for any size or capacity of battery. Imagine a process for creating batteries that is more like *The New York Times* printing press than an Intel production facility involving many functions and multiple machines.

When it is successful, this innovation will mean Planar has solved one of the industry's major challenges — achieving scalable, cost-efficient manufacturing of tunable, high-capacity and thin-film batteries.

Working with a family of proprietary nanomaterials to create three product families, all utilizing a single architectural platform, the company's closest-to-market product is a prototype for the PowerBlade™, a large-format battery which can provide power solu-

tions for automotive, military and robotics challenges. With a long life-cycle and improved safety through a proprietary separator material that reduces the possibility that the battery will catch on fire, the PowerBlade™ is also half the weight of regular batteries its size. This dramatic reduction in weight could also mean commercially-viable, mass-market electric cars, both from a cost and performance standpoint.

With an 11-person team that includes semiconductor talent from the former Agere Systems Inc., Planar is poised to grow its staff and facility in Orlando.

"Manufacturing this breakthrough battery technology right here in Central Florida not only means we can contribute to the country's energy independence, but we'd be home to one of the premier battery technology companies in the world, attracting even more innovative clean tech companies to the area," said Faris. "Walk around your office and count how many devices are plugged into the wall and need a battery. Imagine if you could make them all mobile — this could change your lifestyle. This is the future of energy, and we're leading the game." 