

## Flux's Gamble Got the Market to Bet on Its Product

ENERGY: Battery Co. Got Key Customers, Credibility

By **JOHN COX**

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CEO Ron Dutt sees the company's development efforts paying off this year with a sales and marketing push. Photo by Jaime Scott Lytle

San Diego — Ron Dutt had only just started as CEO at Flux Power Holdings Inc., but it looked to him like product development was taking a precariously long time.

He figured if the Vista lithium-ion battery company didn't stake out a market position soon, larger competitors would. So, in early 2013, he took a big chance.



Karl Gramespacher (above) works on a lithium-ion battery pack at Flux Power Holdings Inc.'s Vista location  
Photo by Jaime Scott Lytle

Despite what was then Flux's relatively low product reliability and limited assembly line, Dutt started showing its batteries to forklift manufacturers. It worked: In February 2014, Toyota Motor Corp. approved the company's batteries for use in its low-power forklifts, bestowing a new level of credibility.

It remains a work in progress, and the company has continued to lose millions of dollars per year. But with that one bit of risk-taking, Flux may well have secured a strong position within the lucrative national market for rechargeable industrial batteries.

Looking back on his decision, Dutt, a former Ford Motor Co. finance man, said it was a matter of survival.

"We didn't want the big guys to get there before we did," he said, "or else we wouldn't be recognized."

This happens frequently with cutting-edge technologies, said Bernhard Schroeder, director of San Diego State University's Lavin Entrepreneurship Center. Executives lose patience during product development and rush to market.

The results can be disastrous: If the product is not far enough along, customers may feel they've been burned and spread word of mouth that can kill the company, Schroeder said. But if the product is at least 80 percent ready, and poses no safety threat, he said, there's usually an opportunity to tinker with a product after initial sales begin.

"You try to put something sound in the market, continue to run, adjust, fix, innovate and keep running," he said. "And that's what, unbelievably, produces leaders sometimes."

### **Lithium-ion Vs. Lead-Acid**

Flux has focused on batteries for what are known as Class III forklifts, the "walkies" warehouse workers wheel around on foot to move heavy pallets. The company recently diversified into battery packs for airport ground-service equipment.

A primary challenge Flux is up against is convincing forklift owners of the advantages lithium-ion packs offer over the conventional alternative, lead-acid batteries.

There are many types of lithium batteries, just as there are with lead-acid technology. Lithium packs generally cost more than lead-acid batteries, but they also tend to last longer and require less maintenance, not to mention the fact they never spill sulfuric acid, which can be a benefit in industrial settings.

For its part, Flux designs its packs to be less energy-dense than certain batteries deployed by smartphone-maker Samsung, which because of their high power density and faulty design were associated with fires and explosions.

Probably the biggest hurdles facing makers of lithium-ion batteries are cost and safety concerns, said Dan Grigsby, western regional sales manager for Corona-based U.S. Battery, which makes lead-acid batteries for uses not including forklifts.

Although he sees lithium-ion technology as an "up-and-coming" technology that will eventually see wider adoption, customers are usually drawn to lead-acid's lower prices, he said. They also hesitate to pay more when they see news accounts of lithium-ion batteries on fire, Grigsby added.

"The lithium technology, at some point, when it becomes economically feasible for a customer to purchase, when it becomes as attractive as lead-acid batteries are," he said, "then it will begin to take over."

### **'Choppy Water'**

Although its roots can be traced back to boat manufacturing and a three-wheeled electric vehicle (one of which is still parked in the company's design and assembly plant), Flux was founded as such in 2009. It went public in 2012 and remains majority-owned by Texas oilman Michael Johnson.

The batteries it designs are based on lithium-ion cells it buys out of Ontario from a state-owned manufacturer in China. Flux's research-and-development team has engineered circuit boards that carefully control the charge and discharge process, as well as variables like temperature.

In the same headquarters building along Poinsettia Avenue, the company has set up an assembly line with a series of stations where employees — there are 30 companywide — connect a list of components. Extensive testing is done on every battery pack before it can be shipped.

The process wasn't always so deliberate, and at a certain point, that posed a real problem.

Even through 2013, the year Dutt rushed the product to market, Flux was struggling to deliver product on time. On top of that, the batteries' failure rate was in the double digits, which meant some unsatisfied customers were sending product back. Among other problems, forklift movement was literally shaking off the battery packs' circuit boards.

"It was choppy water," Dutt said.

Things came to a head in early 2015. Pepsi, which had been referred by Toyota, gave Flux an ultimatum: It would buy no more packs until the batteries were UL-listed, meaning their quality had to be certified by the organization formerly known as Underwriters Laboratories, the standard-bearer in U.S. product safety.

We said, 'OK,' " Dutt recalls saying.

### **UL Certification**

It took Flux nine months, until December 2015, to receive UL's blessing, and even now the organization makes four surprise inspections per year at the company's headquarters. But Dutt says it was worth the trouble: Flux remains the only U.S. forklift battery-maker with a UL certification, which he considers a valuable distinction.

In December, the company reached another milestone. It brought its failure rate to within half a percentage point, even as it has expanded its production capability to 300 battery packs per month.

Meanwhile, the company has been leveraging product use by Toyota and forklift manufacturer, Bremen, Ohio-based Crown Equipment Corp. Flux now counts about 85 customers, including the supermarket chain Aldi, automotive retailer AutoZone and tobacco company Swisher Sweets.

Flux shared glowing customer testimonials, including this one from Atlanta-based Averest Inc., a seller of batteries for electric ground service equipment in airports:

"We've witnessed the performance benefits of lithium batteries in airport ground support for three years," Averest wrote. "Our customers rave about the reliability and absence of maintenance."

### **New Market**

If all goes well, 2017 could be a very big year for the company, which would be helpful considering it lost more than \$4.5 million in the fiscal year ended June 30. Not only is Flux planning a major national sales and marketing push, but it is also hoping to launch new lines of batteries for higher-power forklifts.

The forklift batteries it makes now for Class III walkies sell for about \$3,400 each, and its airport luggage-hauler batteries cost \$25,000 each. The Class II and III forklift batteries it wants to start producing go for about \$20,000.

The difference is significant. Flux estimates the combined, addressable market for Class I forklift and luggage hauler batteries at \$2.135 billion per year. By comparison, it says the addressable market for Class I and II forklift batteries is \$6 billion.

Changes may be in store as the company tries to tackle those markets. For one thing, the company wants to start leasing batteries, such that forklift owners would pay a monthly fee to use the batteries, then return them after five years, at which point Flux might refurbish them.

By the time that comes together, Dutt hopes to have established working relationships with forklift sellers and distributors across the country that can perform maintenance and service lease customers.

“We’re going to be selling energy,” he said. “That’s what’s going to be fun.”

**FLUX POWER HOLDINGS INC.**

**CEO:** Ron Dutt

**Revenue:** \$558,000 in fiscal 2016, ended June 30

**Number of local employees:** 30

**Headquarters:** Vista

**Year founded:** 2009

**Company description:** Designs and assembles lithium-ion battery packs for forklifts and airport ground support equipment

**Key factors for success:** UL certification and product use by key manufacturers such as Toyota