

# Flux Power, Inc

## “Leading the Charge with Lithium-ion Batteries”



# Who is Flux Power?

- Designer, developer, manufacturer, and seller of lithium-ion battery packs that replace inefficient and environmentally undesirable lead-acid packs in industrial equipment
- Leader and first mover in multi-billion dollar North American market, leading industry migration to lithium-ion technology
- Sales and relationships with most global forklift manufacturers: Toyota, Raymond, Kion, Jungheinrich, Hyster, and Crown Equipment
- Eighty employees with headquarters and assembly operations in Southern California
- The Flux Power team brings extensive experience from Ford Motor, PACCAR, DHL, Visa, Pilkington Aerospace, Alstom, and numerous startups



**Flux Power LiFT Pack**



**ISO 9001 Certified Assembly  
Facility in Vista, CA**

# Large Addressable Market

- Forklift & airport Ground Support Equipment industries reflect a multi-billion dollar battery market annually
- The Industrial Truck Association estimates that ~260,000 lift trucks were sold in North America in 2018 with sales relatively evenly distributed between electric rider Class 1 and Class 2, motorized hand (Class 3), and internal combustion engine (Class 4 and Class 5)
- Nearly all products in our economy “touch” a forklift one or numerous times
- Fortune 50 companies with large fleets are always seeking higher productivity, i.e., move more product at a lower cost
- Compelling opportunity for replacing lead-acid batteries (equipment life is typically longer than lead-acid batteries)



Forklift Type	Class	Description
Electric Trucks	Class 1 Class 2 Class 3 Class 3	Sit-on/counterbalanced Narrow Aisle Walkie Pallet End Riders/Center Riders
Internal Combustion Trucks	Class 4 Class 5	IC, Solid Tires IC, Pneumatic Tires
Tractors/Rough Terrain Trucks	Class 6 Class 7	Electric and IC Tractor/Trailers Rough Terrain Forklift Trucks

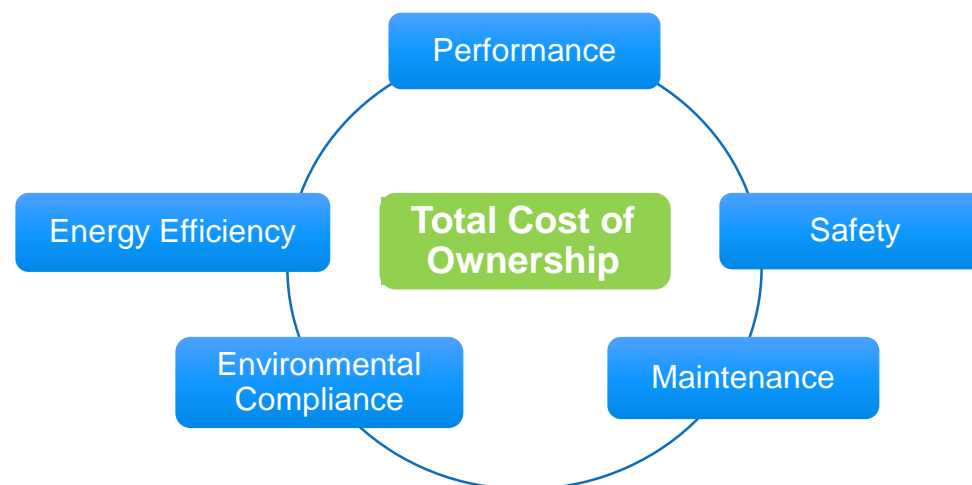
**Note:**

OSHA Classifications

IC includes: propane, gasoline, diesel,

# Why Lithium-Ion Lift Packs?

Flux Power LiFT Packs eliminate forklift operation **Pain Points**, with lower cost of ownership



Attribute	Lead Acid Batteries	Flux Power Lithium-Ion “LiFT Packs”
Performance	Power & Runtime Limitations	Run Longer Shifts, maintain power
Longer lasting	Shorter Lifespans	5 – 10 Year Warranties
Efficiency	Less Efficient Energy Storage	30-50% Electricity Savings
Maintenance	Must water; requires multiple packs/truck	Single pack/trk, opportunity charge
Environmental	Acid; produces off-gasses during charge	Sealed for life; safest lithium chemistry
TCO	Lower Initial Purchase Cost	<b>Lower Cost of Ownership</b>

# Why Lithium-Ion?

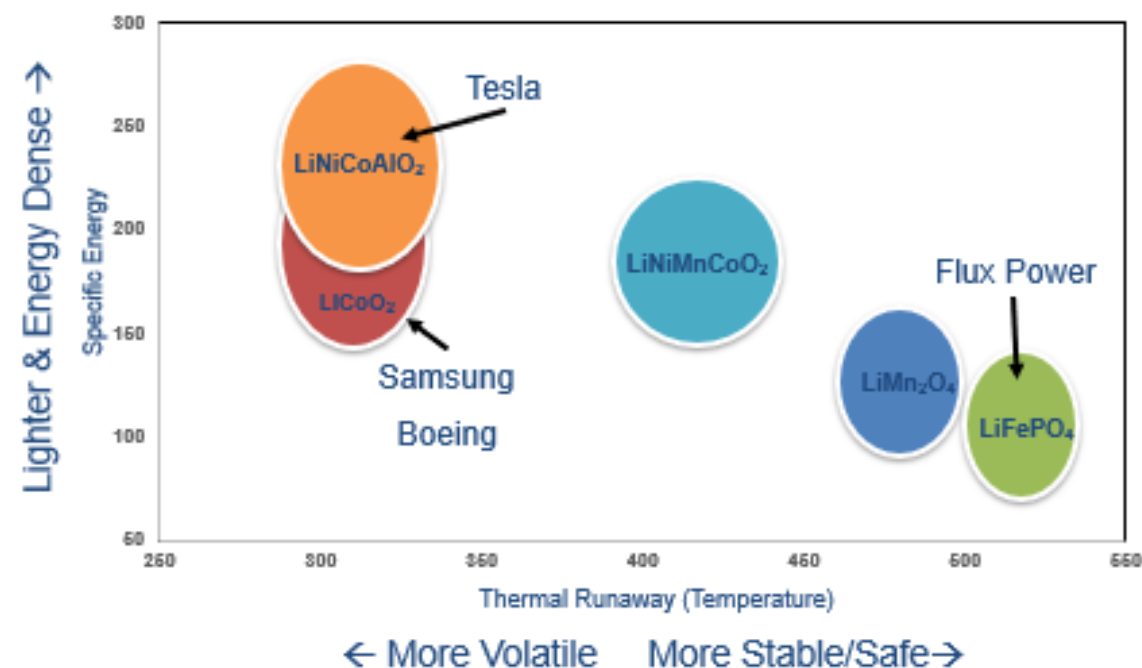
- More efficient
  - Longer lasting per charge
  - Less 'wasted' energy
  - CO2 Savings
- Faster to charge
  - Less downtime
  - Multiple shift capable
- Longer life
- Sustained voltage
  - Full performance throughout operating shift
  - No maintenance
- Net effect: Lower cost

# Safe & Stable

- Flux Power battery chemistry (LiFePO<sub>4</sub> “LFP”) is more stable and gives more operating cycles than most other variants. Well suited for forklifts and GSE equipment (see next slide).
- Fail safe and redundant safety systems
  - Fuse and Breaker give dual protection against fault currents
  - Over temp control in BMS & thermal switches
  - Over discharge warnings and cut outs
- Multiple mechanical lifecycle tests
  - UL testing
  - UN38.3 testing
  - 5 years of deployed product experience and over 4,000 packs sold and in use by customers

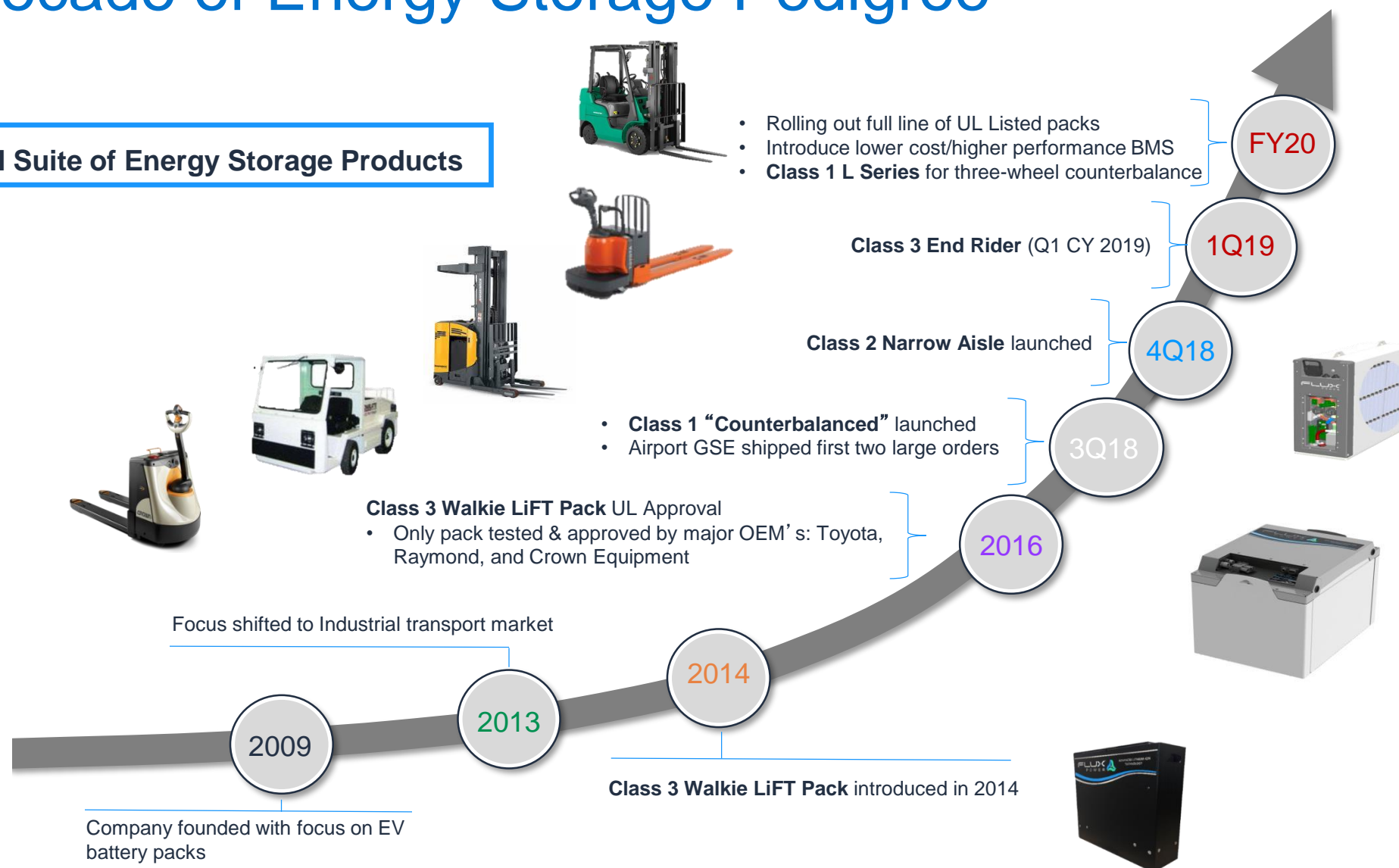
# LiFePO<sub>4</sub> is the Preferred Chemistry

- Safety
  - Higher 'Thermal Runaway' temperature, even higher than Lead-acid batteries
  - Fully tolerant to mechanical intrusion
  - Mandated for high occupancy applications in China
- Performance
  - LESS energy dense = ideal for material handling
  - Multiple cycle capable, gives extremely long life
  - Broad operating temperature range
  - No temperature rise during charge / discharge
  - Higher level of capacity available to operator
- Environmental
  - No acid, No lead, No emissions
  - End of life re-purposing
  - Reduced electricity & CO<sub>2</sub>



# A Decade of Energy Storage Pedigree

## Full Suite of Energy Storage Products

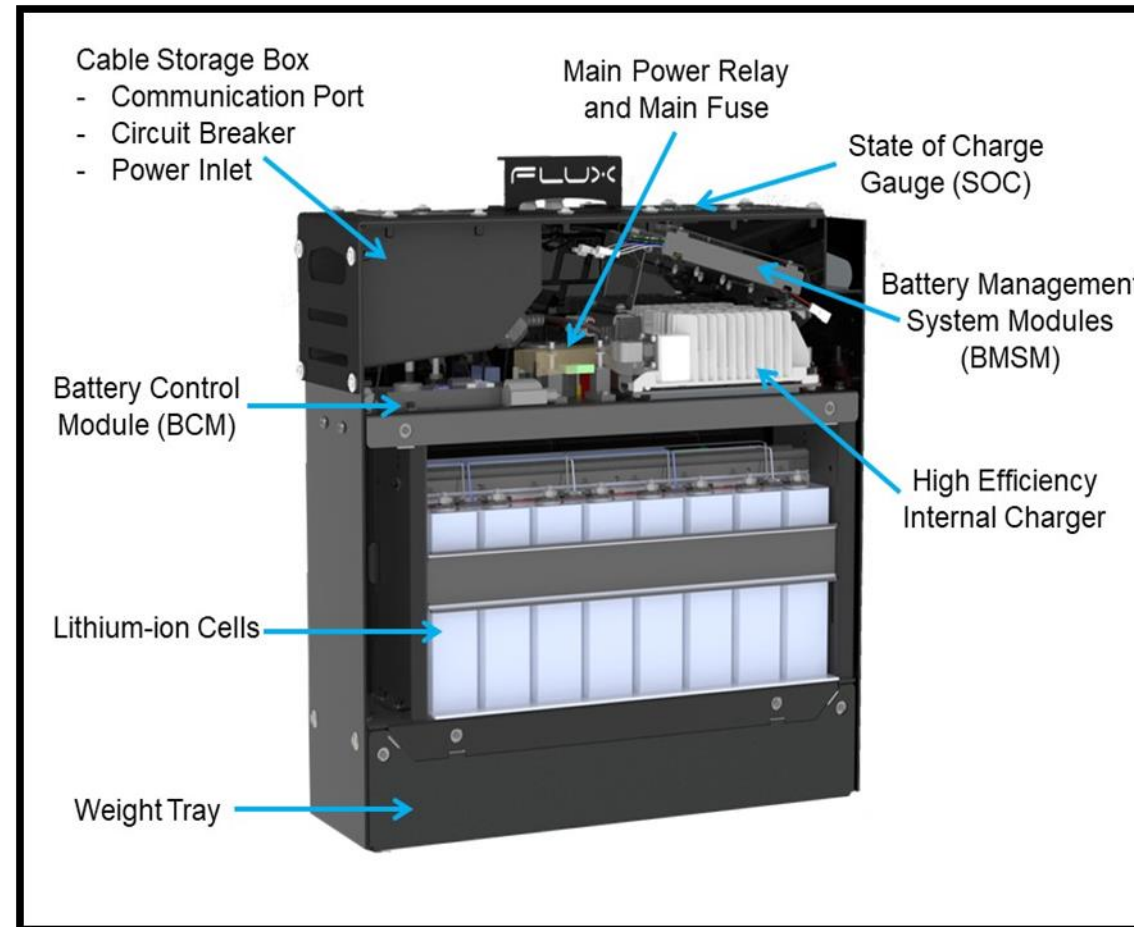




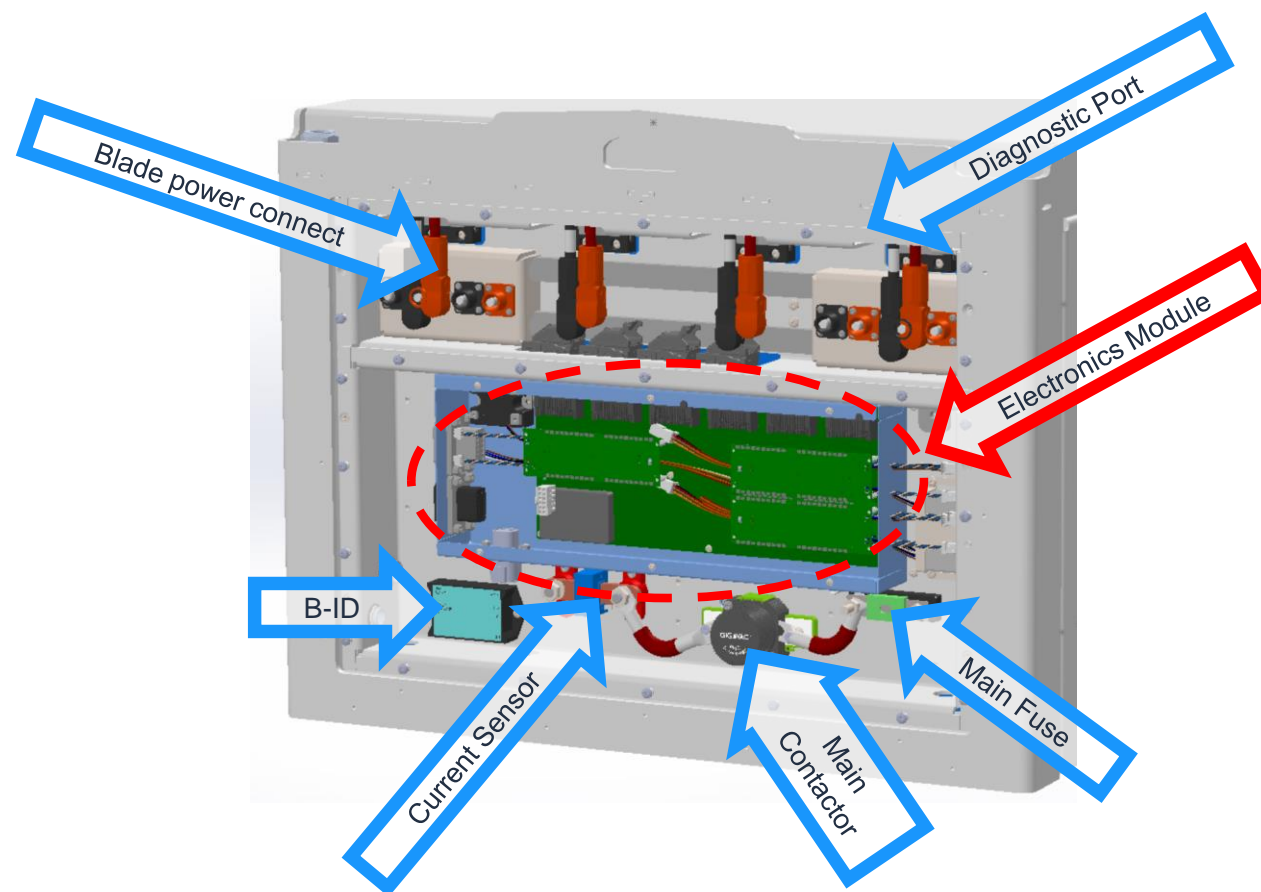
# Flux Power Packs: Cells and Proprietary Electronics

- Our proprietary BMS provides the “brain” to balance, optimize, and report battery status
- Modular design and BMS are the “building blocks” for our forklift battery product line
- Software and firmware located in battery control module (BCM) and battery management system module (BMSM)

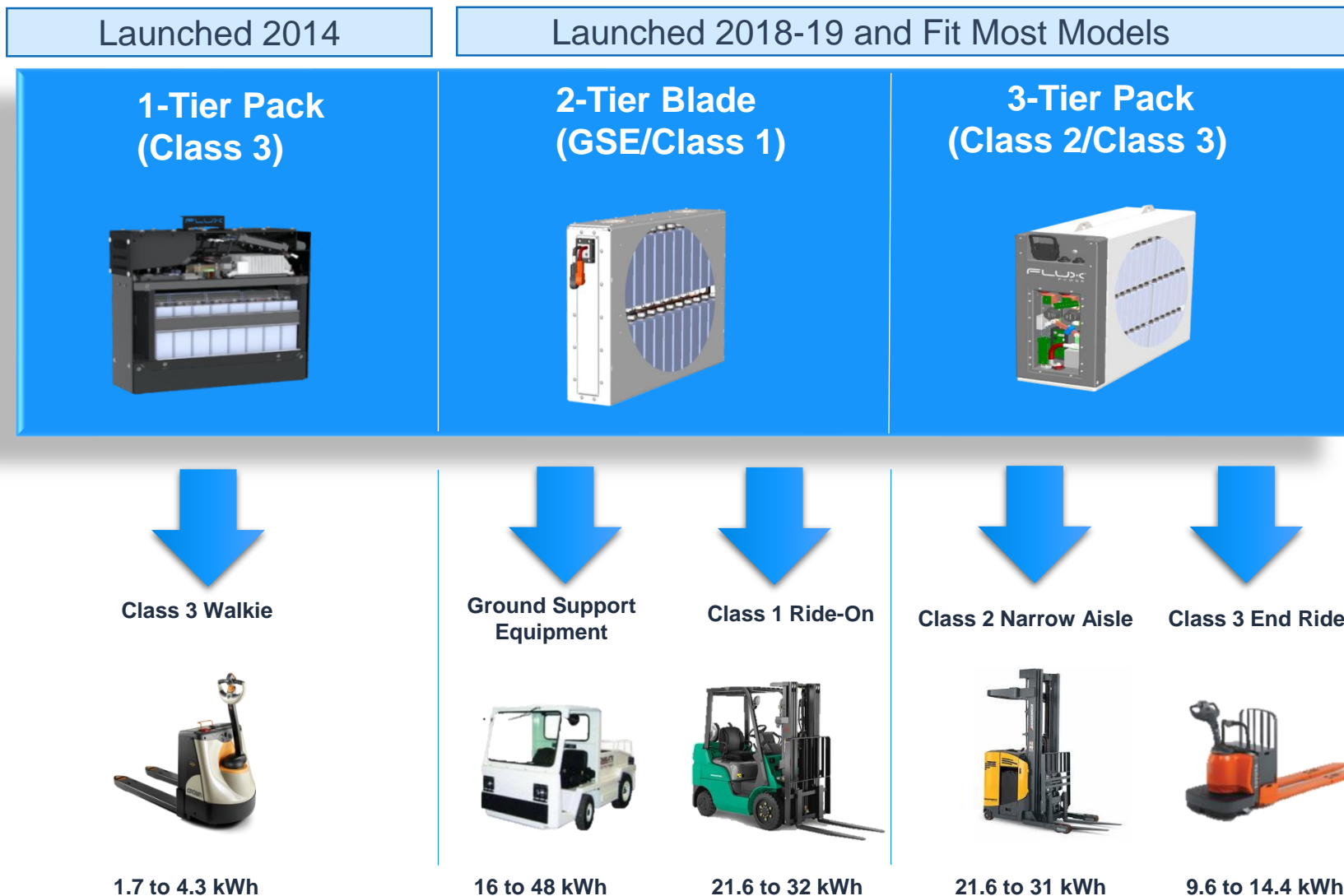
**Class 3 Walkie Jack**



# Key Components – Control Unit and “Brain”



# Modular Designs for Full Product Line



# Benefits of Modular Design

- Fast to market for product variations
- Limited component basket delivers vast product range
- Reliability strengths read across all applications
- Core components can be utilized in custom applications
  - Power and control components can be distributed throughout a vehicle if needed
- Family familiarity:
  - User / Technician / Fleet Manager / Distributor / Designer / Production
- Low spare parts requirement

# Customers and Industries Being Served

*"I think Flux has great customer service. The team really knows what they are doing when it comes to Lithium-ion."*

- Kyle R, Warehouse Manager, Benteler Automotive



# Testimonials: End Customers

*"I think Flux has great customer service. The team really knows what they are doing when it comes to Lithium-ion."*

**Kyle Rowe - Warehouse Manager, Benteler Automotive**

*"I am very impressed with the performance of the Flux Power packs. Their team did a great job on the design. It's aesthetically pleasing and easy to use with a clear display of the battery charge. It's very robust and capable of outperforming our 510 A/hour lead-acid batteries."*

**Andrew Wayts - Equipment Maintenance, SpartanNash**

*"We love the low-maintenance, it's also nice not having to worry about the safety issues of lead-acid. It's good to know Flux Power has done UL testing on the lithium packs, which gives us peace of mind. Overall, we love our LiFT Packs and won't go back to the old lead-acid days."*

**Mike C - Foreman, Mondelez International**

# Testimonials: Dealers/Distributors

*“There is always a learning curve and hurdles to overcome when converting a forklift fleet from LP Gas to Electric. Our partnership with Flux Power has exceeded our expectations as they continue to monitor and educate the end-user and provide valuable feedback so management can fine-tune their operation to achieve the lowest cost per operating hour for the new fleet.”*

**Jeff Timmer - Manager, Cisco Inc.**

*“Flux Power has brought solutions to our customers. They have been amazing to work with from the knowledge of their sales staff, and their prompt customer service. We have built a great partnership with Flux Power, and look forward to working with them much more! ”*

**Aaron Jarrett - General Manager, Mountain Power Denver, Co.**

*“Flux Power’s product performance, appearance, and overall customer support are what makes them an innovative top-tier supplier of lithium batteries to the marketplace.”*

**John L. Gelsimino - President, Arcon Equipment Inc.**

*“Our business depends on being flexible to serve a wide variety of transportation and logistics needs for businesses nationwide. The company was experiencing frequent issues with battery failures and loss of power in their equipment. Flux’s LiFT pack provided us with a great opportunity to offer our customer a solution and enabled us to stand out from the competition.”*

**Sue Herron - Sales Manager of Southwest ToyotaLift**



# Strong Market Position

- Proprietary engineering, design, & battery management system
- Strong OEM, Distributor & Customer relationships
  - Private label product launch Q1 2019
  - Large orders with Fortune 100 Customers
- Industry leading unit shipments in our “walkie” product line
  - 3,500 units over 5+ years: Proven track record
- Only UL Listed walkie pack for sale across all OEM forklifts
- ISO9001 Approved, PPAP approved for OEM supply

## Approvals:





# Flux Power Key Advantages

- Rollout of full product line of **UL Listed** Products to be completed this year
- **ISO 9001-2015** certified for quality management
- **Proprietary electronics**, firmware, software and telematics
- Leading **telematics** features permit comprehensive and timely monitoring of packs
- Established core technology competencies enable **continual** new feature **innovation**
- Reputation as “best in class” **customer service and training** for lithium packs
- Industrialized **harsh environment design**, surpassing automotive standards
- **Approved by** Equipment **OEMs** in Forklifts and Airport Ground Support Equipment
- Full range of products enabled by **three design platforms**
- **Simple, robust** operator interface
- State of the art facility & supply chain, able to **ramp up quickly** to higher volumes

# Private Label OEM Relationship

## Leading Global Forklift OEM (\$3B revenue)

- Flux Power Walkie Pack is provided as a “private label” under OEM brand; launched April 2019
- Audit on site by OEM, validating quality
- Future plans include marketing to Europe, S. America
- Currently developing a follow-on proprietary model for OEM new Class 3 forklift
- OEM has given validation and support of Flux Power products and service
- Relationship built over several years of in-depth dialogue and collaboration

## Relationship Benefits

- Catalogue listing and marketing exposure dramatically increases industry credibility
- Leverage sales of full product line at over 200 OEM dealer locations
- Substantially enhances Flux Power’s competitive position in market
- Private label demand expected to drive volume/production and sales/marketing economies
- Flux Power will continue to serve all major lift equipment makes

## Other OEMs

- Modular designs fit most OEM forklifts
- Sold Class 1 packs for forklift trucks from Toyota, Raymond, Crown, Hyster, Yale, Linde (Kion Group), Jungheinrich, and CAT/Mitsubishi
- In discussions with other “proprietary” OEM proposals
- Authorized distributor for high capacity chargers for Ametek (\$4B manufacturer)



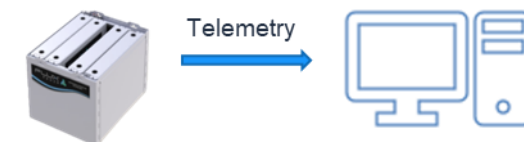
# Airport Ground Support Equipment (GSE)

- Airport Ground Support Equipment utilizes the same modular design as our large products and represents a close, natural product extension to forklift applications
- Recent increase of “Green Initiatives” at airports favors a lithium solution
- Major US airline: Buying regular tranches of packs beginning in 2018; has reputation for leader in adopting new technology, with other airlines watching and following
- GSE Service Provider: With 50,000 pieces of equipment, serviced more passenger miles last year than the global leading airline, American Airlines - bought first tranche of 17 packs last summer, with follow-on support orders; great opportunity
- Have completed initial successful trials with other major US airlines (at LAX, Charlotte, Atlanta, Houston, and Seattle)
- Working with OEMs for install on cargo loaders, baggage loaders, and belt loaders



# R&D and Manufacturing

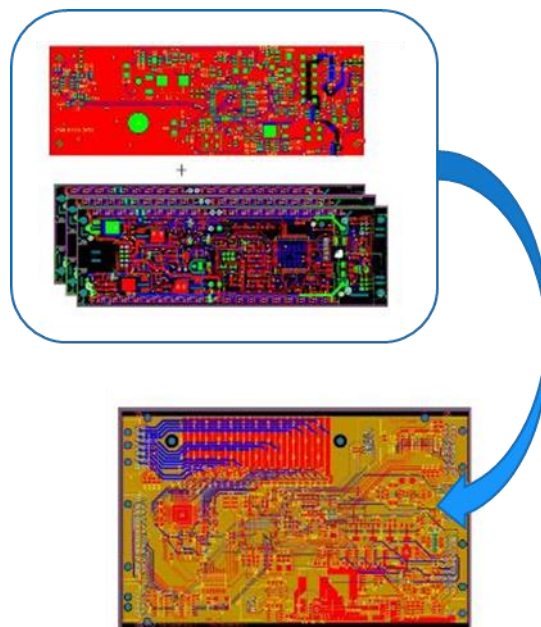
- Proprietary designs and battery management system, including telemetry
  - Advanced features and capabilities have evolved from 6 years of material handling customer experience
  - Next generation BMS to include 5 innovations currently in process filing patents
    - State of the art data collection, analysis and custom reporting
    - Adaptable to many product lines and industry applications
- UL Listed products
  - Provide third party validation of highest safety and durability standards; result of significant time and expense
  - Flux Power is expected to have complete forklift product lineup with UL certification by Dec 2019
  - UL testing and certification is expected to ensure ALL operational modes are addressed for safety and durability
- ISO 9001 Certified
  - Established process infrastructure to achieve consistent high levels of reliability and quality for manufacturing companies, including sustainable processes subject to annual certification
  - 3 assembly lines capable of \$100mn, launched June 2019



# Flux Power Proprietary Designed BMS and Firmware

This makes us highly agile if custom features are required

- Optimized for
  - Material Handling / GSE market
  - LiFePO4 chemistry
  - Mechanical designs (Series & Parallel cell configurations etc)
- Custom feature set
  - Lifetime data logging
  - 'Quantum' balancing
  - Vehicle safety interface
  - Discrete charge / discharge logic
  - Remote operator interface



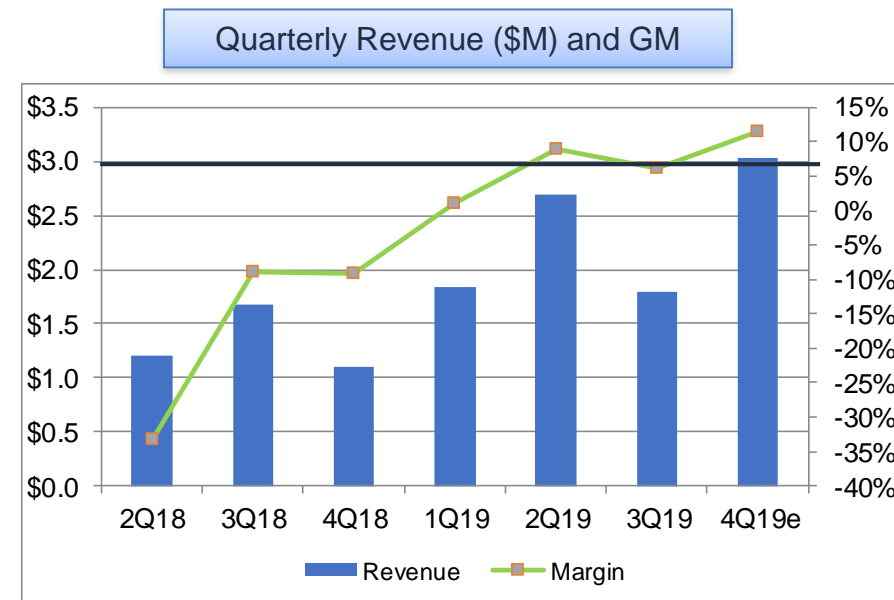
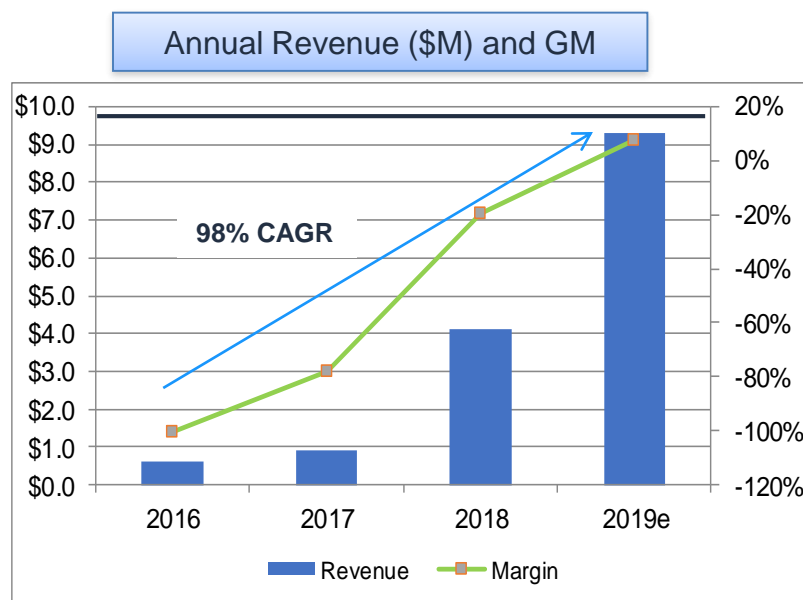
- Interface with evolving telematics systems
  - Remote diagnostics
  - Hot upgrades
  - Preventive event triggers, e.g., over discharge
- \*NEW\* Revised BMS design
  - Utilizing latest automotive chip technologies
  - Faster, lower cost, more data logging
  - Dynamic structure, allowing easier re-configuration for new battery configurations
  - Dual isolated CAN networks



# Flux Power “CAN-DO” Telematics



# Sales Ramp and Margin Expansion is Underway



Initiatives for gross margin improvement	Explanation
Next-Gen Battery Management System (BMS)	Consolidates PCBs; modular design to accommodate large packs
Cell sourcing & purchasing improvements	New cell supplier has automated factory for better quality & cost
Volume & sourcing efficiencies	Cost has reflected initial low volumes
Assembly efficiencies & utilization	Post launch of recent product lines will incorporate efficiencies
Unit pricing from new features	Adds: heater options, telemetry options, weight, dimensions
Achieve most of goal within 12 months	Most initiatives now underway



# Flux Power Financial Snapshot (OTCQB: FLUX)

Closing Price (10/22/19): Post 10-for-1 split	\$9.75
52 Week Range	\$9.00 – \$32.00
Shares Out	5.1M
Market Cap	\$50M
Borrowing on Inventory Lines of Credit *	\$8.4 M
FY 2019 Revenue (6/30/19 FY)	\$9.3M

*\*\$8.4M short-term notes. No long-term debt.*

# Leadership Team



## **Ron Dutt: CEO, Director**

*Leadership at DHL, Ford Motor Company, Visa, Directed Electronics and SOLA Int'l. Led companies from early stage to >\$1B rev.*



## **Jon Berry: COO**

*Senior roles at Alstom Transport, PACCAR UK, Clean Air Power and Pilkington Aerospace.*

- Certified first tilting train for passenger operation in UK
- Supplied Alt fuel components direct to Volvo trucks Sweden assembly line.



## **Paulus Geantil: CTO**

*Expert in embedded systems, electrical design, robotics, & system integration and has patents across various technologies.*



## **Tod Kilgore: Director of Sales**

*Led sales organization at Samina Corporation, Accurate Solutions, Amistar Manufacturing and Marshall Industries.*



## **Chuck Scheiwe: CFO**

*Led accounting and financial planning operations of diverse companies, Senstay Repton & Teletrac and GreatCall, from startup stage to high growth*



## **Steve Fambro: Director of Mfg**

*Executive success with high growth startups in Biotech, Automotive and VLSi Agriculture*



## **Tim Vaughan: Director of Engineering**

*Experienced automation and process improvement Engineer, including medical and aerospace industries with John Deere & Veridiam.*



## **Justin Forbes: Director of BD**

*Led marketing and lead generation at industrial & technology companies such as GE, EDF Renewable Energy and Vektrex.*

# Why Flux Power Now?

- Leader in the paradigm shift to lithium-ion, that solves major productivity, cost, safety, and environmental problems
- Product & management team vetted by global OEMs and Customers
- Strategy based on sustainable foundation building of product, production, and customer satisfaction
- Flux Power is executing a strategy to build, sell, and service Fortune 500 large fleets

# Thank you!



65,000 Sq.Ft. Vista, CA Facility

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