

XING Mobility™

Immersion Cooled Modular Battery Pack System



www.xingmobility.com

XING
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INTRODUCING XING MOBILITY'S BREAKTHROUGH BATTERY TECHNOLOGY

XING Mobility's **Immersion Cooled Modular Battery Pack System** delivers unprecedented continuous power to any and every electric vehicle. The world's first battery pack to make immersion cooling technology readily available for mobility applications, the system presents an advanced solution to thermal management challenges. The battery solution employs a simple, modular design to meet the diverse requirements of its customers, allowing for exceptional scalability without requiring custom battery development.



Revolutionary Immersion Cooling Technology



By 100% immersing lithium-ion battery cells in self-cooling, non-conductive fluid, XING Mobility's superior cooling technology achieves extremely high power output and charge rates while remaining lightweight.

Modular Building Block Design



Built from a unique micro module, the XING Mobility's battery pack is stacked in a Lego-like fashion to meet diverse size and shape requirements without custom development, making it fast to deploy and easy to install.

Fully Integrated Battery System



Designed as a plug-and-play system for ultimate ease of deployment, the technology includes all-in-one, fully-integrated safety and monitoring components, alongside a range of fully connected accessories.

SIMPLE. POWERFUL. ACCESSIBLE.



Faster Deployment



Plug & Play Installation



5000+ Configuration Possibilities



Very Low Development Cost

SPECIFICATIONS



	Standard Module		Pack Example 1 – 100 Modules		Pack Example 2 – 164 Modules	
	Energy Module	Power Module	Energy Pack	Power Pack	Energy Pack	Power Pack
Dimensions	30 x 7 x 8 cm		300 x 82 x 33 cm		119 x 65 x 50 cm	
Weight	2.8kg	2.8kg	288kg	288kg	468kg	468kg
Peak Capacity	0.53kWh	0.47kWh	52.4kWh	47.1kWh	86.1kWh	77.2kWh
Max/Min Voltage	4.1V/2.8V	4.1V/2.8V	410V/280V	410V/280V	672V/459V	672V/459V
Peak/Cont Discharge	3kW/1kW	9kW/5kW	336kW/84kW	943kW/517kW	551kW/138kW	1547kW/847kW
Fast/Normal Charge	100A/43A	252A/210A	100A/43A	252A/210A	100A/43A	252A/210A
Charge Cycle to 75%	3000	350	3000	350	3000	350

*In addition to allowing for custom shapes and sizes, XING Mobility enables users to choose between increased discharge rates ("Energy Pack") or increased power capacity ("Power Pack"). Note that all specifications may be subject to change.

REVOLUTIONARY IMMERSION COOLING TECHNOLOGY

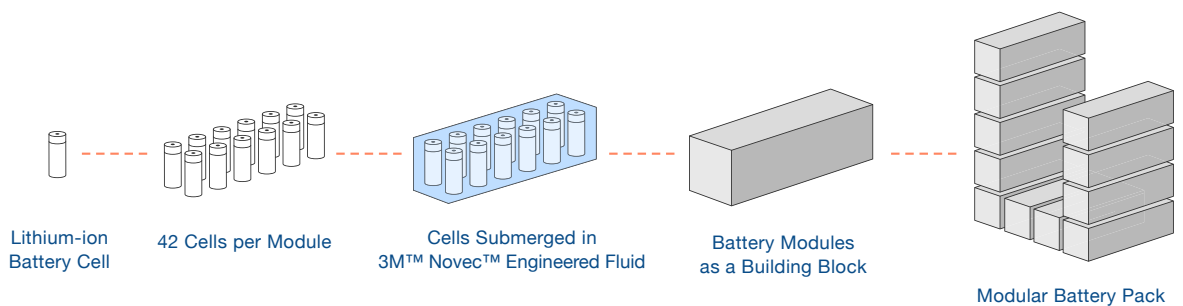
By utilizing the incredibly effective cooling properties of 3M™ Novec™ Engineered Fluid and maintaining 100% direct coolant-to-cell contact at all times, the system drastically improves cell temperature uniformity and achieves radically superior heat transfer from the lithium-ion battery cells to the non-conductive fluid. The Immersion Cooled Battery Pack System features variable speed pumps circulating coolant throughout the battery pack. Producing twice the average performance levels with far fewer cells, the pack is one of the highest power density battery solutions on the market.

Superior Thermal Management

Cell Temperature Uniformity

Industry Leading Power Density

Fire-Suppression Properties



KEY BENEFITS



Ultra High Power Output

By achieving superior heat transfer, XING Mobility's battery pack unlocks the maximum power capabilities of lithium-ion cells. The battery pack achieves ultra-high discharge rates of up to 2000 amps per 10 seconds.



High-Speed Charging

Improved heat transfer also enables much faster charging, significantly improving the operability of vehicles. The system is compatible with fast charging systems, achieving charging rates of up to 250 amps.



Extended Battery Life

Improvements in temperature uniformity prevents the battery from deteriorating, allowing up to 3000 charge cycles. The pack ensures greater battery lifecycle predictability, which provides increased budgeting control.



Overall Weight Saving

The simple design eliminates heavy and complex packaging while producing up to 220Wh/Kg, nearly twice the industry norm. The overall weight reduction enables longer drive ranges, or for the weight saving to be utilized elsewhere.



Highly Durable

One of the most durable battery packs on the market, the pack is shock-rated for 40G impact, submersible in up to 1 meter of water, and has an ultra-wide operating temperature range of -40°C to 50°C. The coolant also has long-lasting properties.



Safest User Conditions

With fire-suppression and self-extinguishing properties, 3M™ Novec™ Engineered Fluid immediately dissipates any heat arising from thermal runaway or damage whether through defective cells or crush/penetration.

MODULAR BUILDING BLOCK DESIGN

XING Mobility's Immersion Cooled Battery System is built from unique micro modules. Measuring just 300 x 80 x 70 mm, the modules can be stacked and packaged in a "Lego-like" fashion to meet the size and shape requirements of the user. The battery modules interlock using state-of-the-art electrical connectors and sealing technology to provide a rigid mechanical structure that can survive up to 40G of shock. The battery system can be designed in any orientation and is IP67 rated. The modular design significantly reduces financial costs associated with customized battery pack development and enables an accelerated deployment time up to 60% faster than the industry average. XING Mobility can develop custom battery packs in 2 to 3 weeks.



LIMITLESS DESIGN FLEXIBILITY

MODULAR BATTERY PACK CONFIGURATIONS:

With limitless reconfiguration capability, the battery system is optimized for low-mid volume vehicle manufacturing and perfect for high-mix vehicle applications.

"Diamond" Pack



"T Shape" Pack



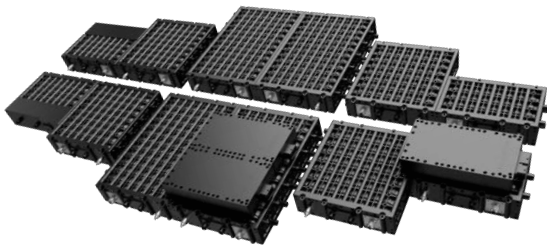
"U Shape" Pack



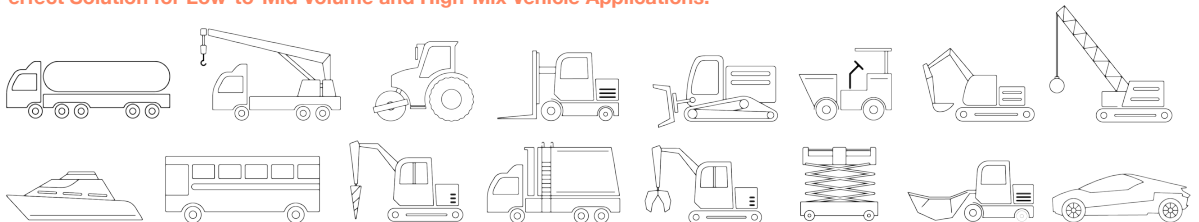
"Rectangular" Pack



"Flat" Pack XING Mobility's in-house developed 1 Megawatt electric supercar—"Miss R"



Perfect Solution for Low-to-Mid Volume and High-Mix Vehicle Applications:

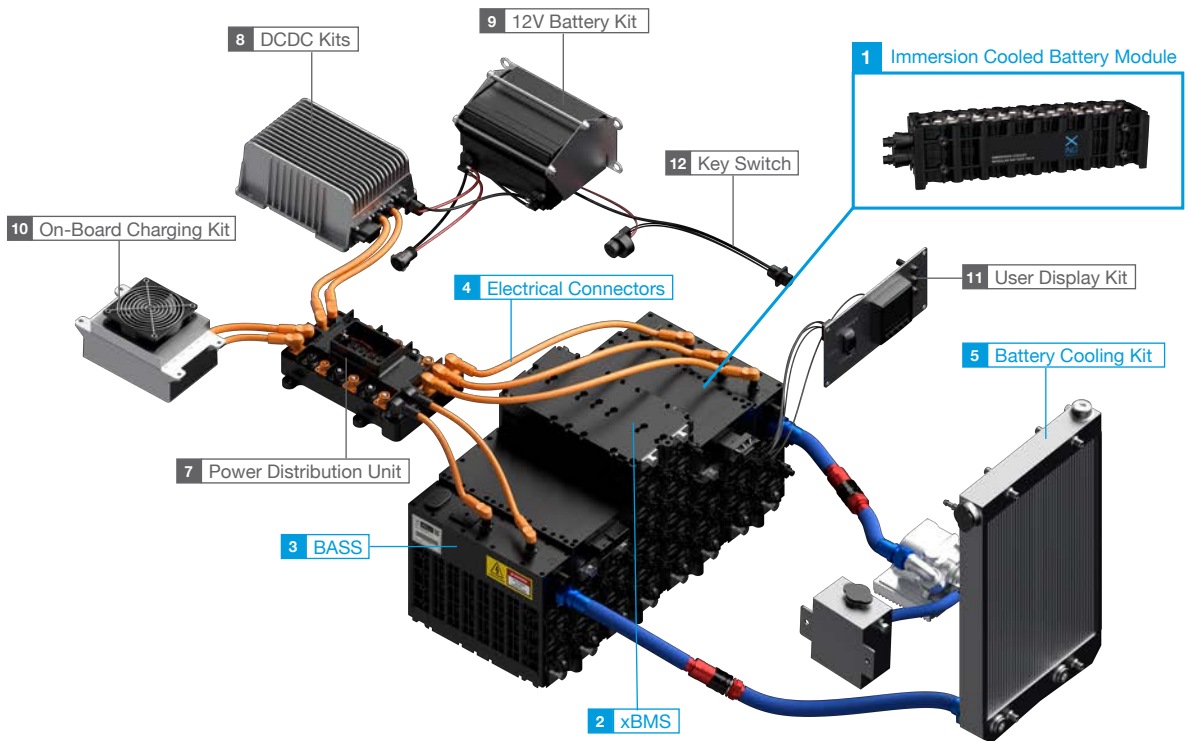


FULLY INTEGRATED BATTERY SYSTEMS

Uniquely designed to act as a plug-and-play, drop-in replacement for existing engines or powertrains, XING Mobility's Battery System has a setup time of as little as five minutes. With both modules and components fully modularized, the full system

features all-in-one monitoring technology and sensor packages. All system components and accessories are integrated standard parts with a 10-year service parts availability guarantee, reducing the need for further component sourcing or custom tooling.

PLUG & PLAY INSTALLATION



KEY TECHNICAL FEATURES

- 1 Immersion-Cooled Battery Module** Pre-filled with cooling fluid, the robust, compact and lightweight modules uniquely stack to any size or shape.
- 2 xBMS (Battery Management System)** Uses real-time IoT/3G-connected safety and performance monitors to track cell performance and coolant quality.
- 3 BASS (Battery Active Safety System)** Uniquely includes built-in pre-charged circuits. Isolates and disconnects single battery cells allowing the system to continue operation in the case of a fault.
- 4 Electrical Connectors** Features double layer braided steel and are pre-aligned to the battery pack and system components.
- 5 Battery Cooling Kit** Featuring cooling control pumps, pipes and radiators, the kit maintains the battery at optimum temperature and maintains safety by circulating coolant.
- 6 Brackets and Mounting Kits** Allows battery packs to be mounted to almost any vehicle.

AVAILABLE TECHNOLOGIES

- 7 Power Distribution Unit** Safe and reliable way to distribute high voltage power output.
- 8 DCDC Kits** Allows existing 12V vehicle systems (such as pumps, lighting, fans) to be converted to power from the high voltage battery pack.
- 9 12V Battery Kit** Provides 12V power when battery pack is in an off or standby state with unique low voltage disconnection feature.
- 10 On-Board Charging Kit** Integrated charging technology with pre-configured, fully tested charge rates, charge voltage and cell balancing thresholds and international-standard charging connections.
- 11 User Display Kit** Color LCD displays allowing instant user display implementation with no programming or development needed.
- 12 Key Switch** Provides a high quality and durable solution for battery pack start up and shut down.

ABOUT XING MOBILITY™

Founded in 2015, XING Mobility™ is a provider of advanced electric vehicle powertrain and battery technology. Aiming to empower every and any vehicle maker to go electric with simple, affordable and powerful EV powertrains. Our mobility technologies are already making their way into commercial, industrial and recreational vehicles across the globe.



“Miss R” – XING Mobility’s 1 Megawatt Supercar

XING Mobility’s 4-motor, 1341hp electric supercar acts as a crucial development platform and the ultimate proof of concept for our immersion-cooling battery technology.



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