

Expertise in Electric Vehicle Battery Manufacturing Solutions



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Breakthrough Engineering for a Better World

Norgren is part of global engineering organisation IMI plc. IMI is at the forefront of delivering the solutions we need in a changing world and is focused on **creating tremendous value by solving key industry problems in attractive markets and employing the best.**

Norgren has a proud history of creating innovative engineering solutions in precise motion control and fluid technology, and we collaborate with our customers across more than 50 countries in critical areas such as Factory Automation, Material Handling, Rail, Food & Beverage, Process Control, Life Science and Commercial Vehicles.

From improving speed, productivity, reliability and efficiency of equipment, to generating significant energy and cost savings, or lowering total cost of ownership across many industries, Norgren's high-quality solutions are designed to help customers pursue progress, achieve new goals and overcome problems.

With market-leading industry expertise, we offer the capability, resources, engineering intelligence and global support infrastructure to tackle the largest project demands.

Our world-class portfolio of fluid and motion control products include Norgren, Bimba, Buschjost, FAS, Herion, Kloehn and Maxseal. Supplied either individually or combined into powerful customised solutions to meet customer needs.

Breakthrough engineering you can count on.

Delivering expertise, solutions and value for the Electric Battery Production

For over 90 years experience working directly with manufacturers, Norgren has a long-standing engineering heritage and solving industry problems with bespoke technology. We provide high-quality standard and customized solutions for your needs. From cell production to module assembly and testing – we'll be with you every step of the way.

With a true understanding of the daily issues faced by the lithium-ion batteries manufacturers, we deliver a comprehensive range of reliable, safe and accurate pneumatic and electric products. We design for the precise needs of the batteries manufacturing, at:

- » Cleanroom Class 7 & 8 according to ISO 14644-1
- » ISO Cleanroom Classes 1-6. Independently certified by Fraunhofer/IPA.
- » Minimal copper & nickel content based on customer specification < 4.6 % in alloy
- » Many of Norgren's standard products already meet the restrictions defined by our customers regarding copper, zinc and nickel
- » Environments:
 - Corrosion-resistant products
 - ATEX approvals
 - Operating temperature -40°C to +80°C
 - Applicable in dry room temperature environment up to -60°C dewpoint



A local service in 50 countries with local stock, technical and product support

Delivering products and service reliably, on time and anywhere



We know that precision, speed and engineering reliability are essential - we not only deliver exceptional solutions which improve the productivity and efficiency of our customers' equipment, but the speed of our Express service ensures that we deliver quality products and aftersales service precisely, reliably, in full and on time, anywhere.

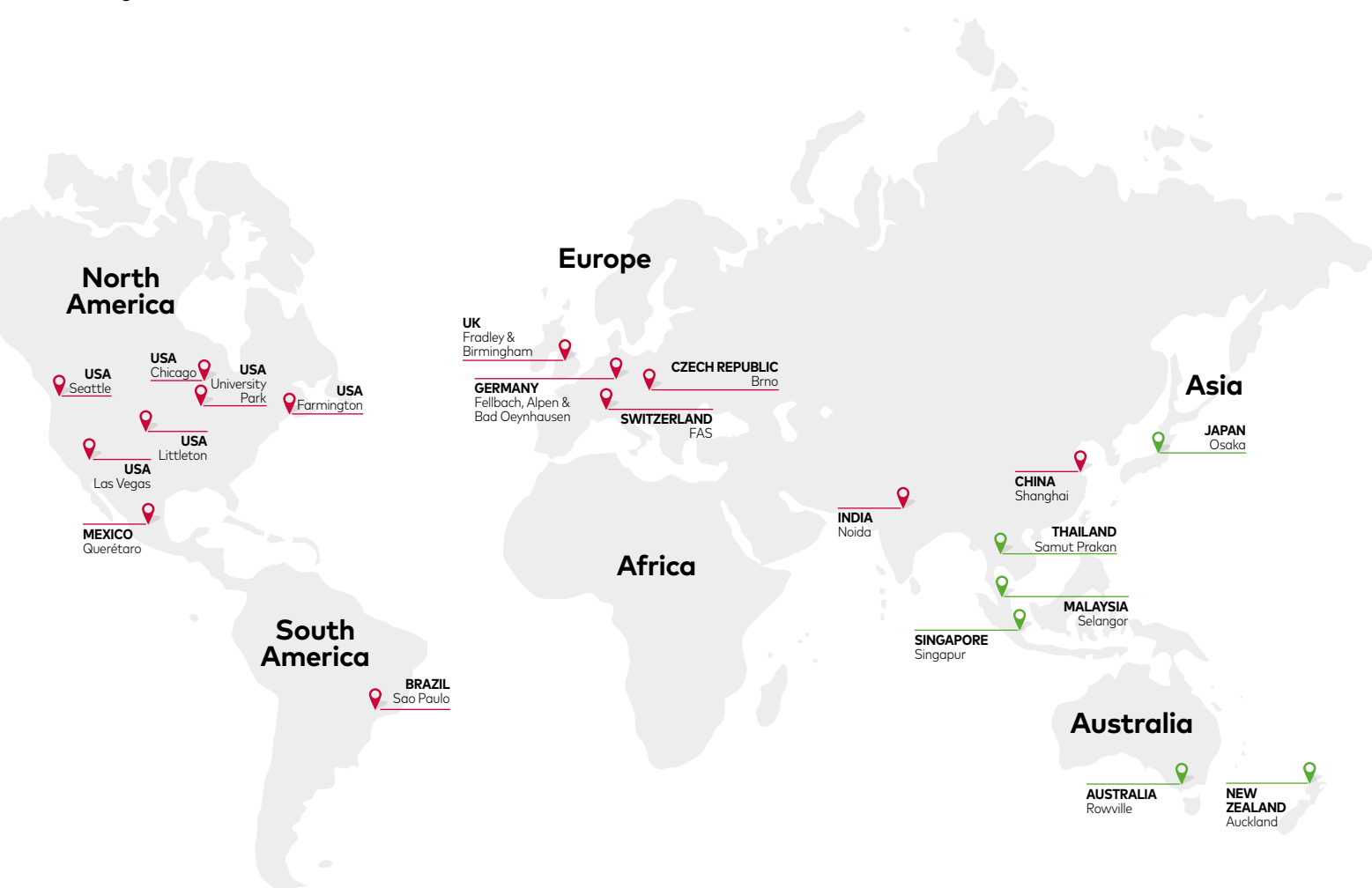
All Express products are manufactured to exacting quality standards, are ex-stock and are backed by an industry-leading 2-year warranty.

Our unrivalled stockholding and delivery service are backed by a dedicated support team, fully trained to help you find the product, data or application support you need – fast.

Our skilled teams are available 8.30 am to 5.00 pm Monday to Friday, with access to the web store 24/7, 365 days a year.

Sales & Service

- Norgren sales, manufacturing and technical centres
- Norgren sales locations



The right products for harsh environments including Dry Room & Cleanroom

Norgren offers certified products for Cleanroom Class 1 - 9 according to ISO 14644-1

For example:
FRL unit B84G-4GK-QP3-RMG



*Cleanroom of Cleanliness Class ISO5

	Production process	Clean room class	Dry room (dew point)	Temperature
Electrode manufacturing	Mixing	ISO 8	—	22 ± 2°C
	Coating	ISO 7	Semi-dry (5°C to -5°C)	
	Drying			
	Calendering	ISO 7 ISO 8	Dry (0°C to -30°C)	
	Slitting			
	Vacuum drying			
Cell assembly	Separation	min. ISO 7	Dry (-25°C to -35°C)	22 ± 2°C
	Stacking/Winding		Dry (-40°C to -50°C)	
	Packaging		Extra dry (-50°C to -70°C)	
	Electrolyte filling			
Cell finishing	Formation	—	—	22 ± 3°C
	Degassing			30°C to 50°C
	High Temp. aging			22 ± 3°C
	Normal Temp. aging			
	EOL testing			

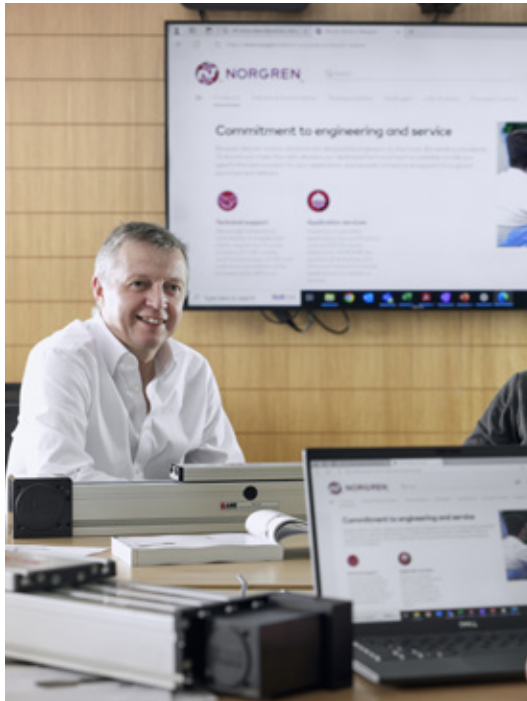
Technical Support

Our highly experienced engineering and production teams design and manufacture custom solutions, incorporating the latest techniques and technologies to ensure the best design for your application.

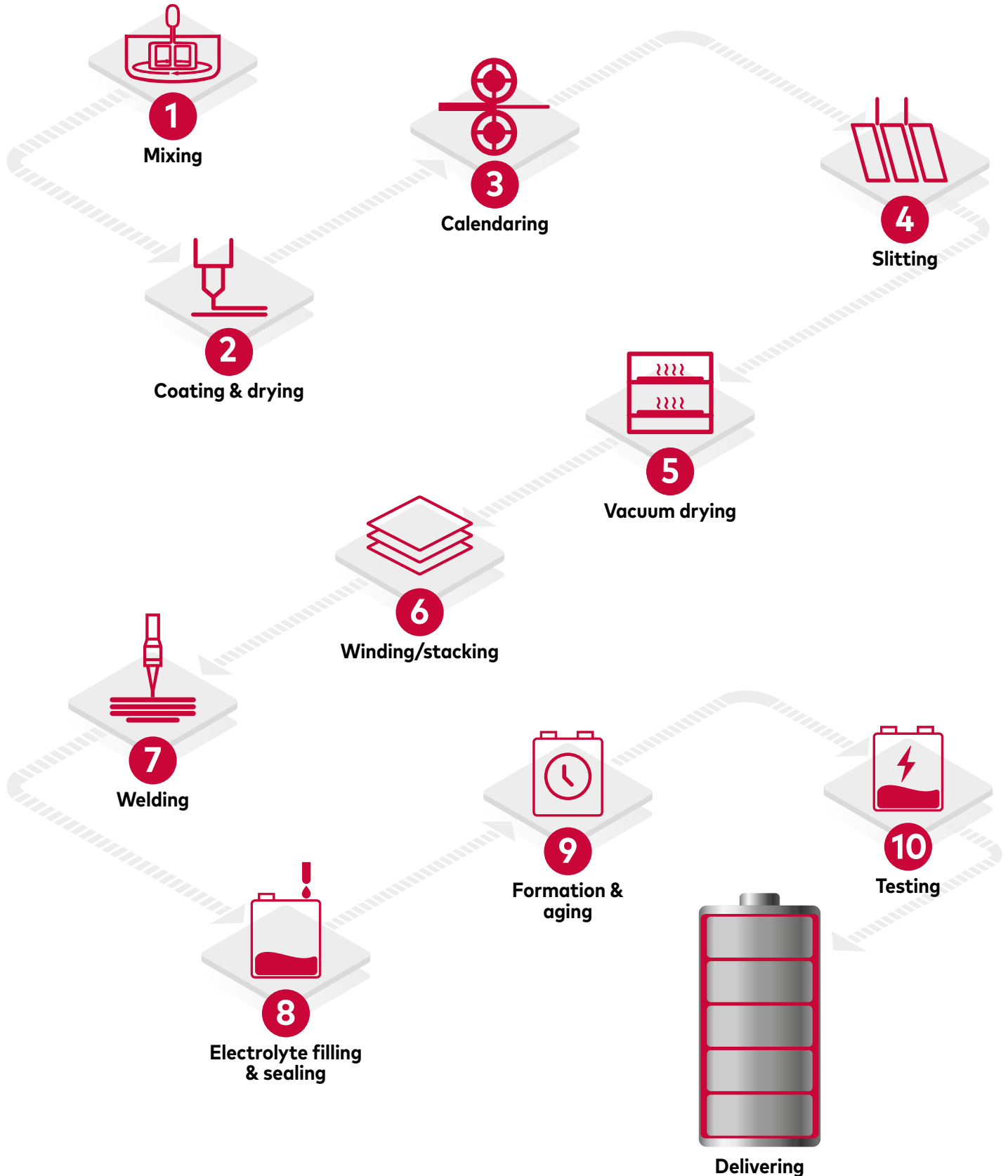
Whether you need a new circuit design or tailor-made products, improve productivity or efficiency of equipment, we'll help you get from a standard or customized product to a plug-and-play solution - we have the technical competence and products available to meet your needs.

Engineering excellence with direct access to our application engineering, for creating your solution as your tier one or tier two supplier.

- » Excellent technical support
- » Proven quality products
- » Plug-and-play installation on site
- » **Application support from an engineering team with a broad experience in the F&B market.** Capable of delivering standard and customised solutions as a tier one or two supplier.



Norgren Products for Battery Production



Fluid Control

1 2 5



Air Preparation

2 4 6 8 9



Sensors, Switches & Fittings

2 4 6 8 9



Proportional Control

3 5 6 7



High-speed Linear Motion

4 6 7 8 9 10



Motion Control

4 6 7 8 9 10



Industrial Comms

4 6 7 9 10



Vacuum Pumps and Cups

6 8



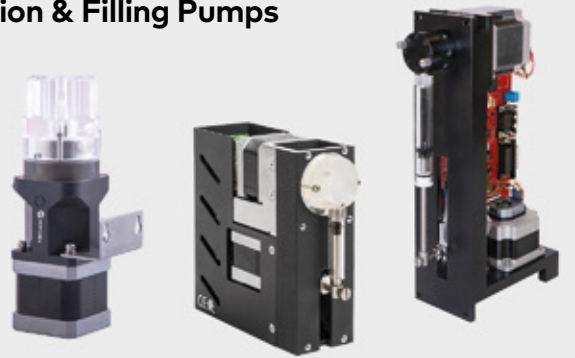
Functional Safety

1 8 9



Injection & Filling Pumps

8



Norgren operates four global centres of technical excellence and a sales and service network in 50 countries, as well as manufacturing capability in Brazil, China, Czech Republic, Germany, India, Mexico, UK and the USA.

For information on all Norgren companies visit

www.norgren.com

Supported by distributors worldwide.

For further information, scan this QR code or visit www.norgren.com



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Due to our policy of continuous development, Norgren reserve the right to change specifications without prior notice.

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Incorporating



IMI