

FORMING THE FUTURE



TURNKEY SOLUTIONS FOR EFFICIENT BATTERY CELL FINISHING

Equipment for Gigafactory Battery Production

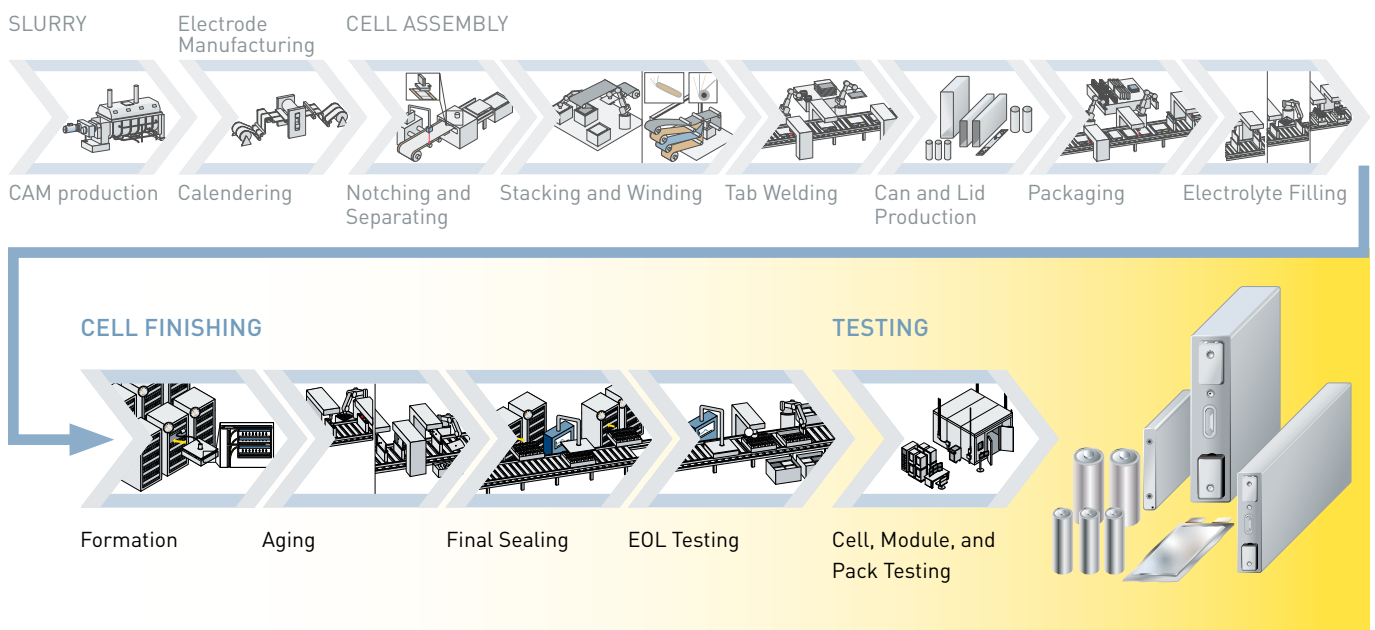
SCHULER 

Member of the ANDRITZ GROUP

BATTERY TECHNOLOGY.

SOLUTIONS FOR EFFICIENT BATTERY PRODUCTION.

For decades now, Schuler has been supplying car manufacturers all over the world with fully automated press lines for the production of body and structural parts for vehicles. Its experience in handling major projects in the industry is correspondingly extensive. Thanks to more than 40 service and manufacturing locations worldwide, proximity to the customer is always guaranteed.



Process chain for the central process steps for cell assembly and cell finishing.

Schuler can also act as a general contractor for battery cell production plants. As part of the international technology group ANDRITZ AG, Schuler also draws on its extensive expertise in equipping large-scale plants for the production of pulp or electricity from hydropower. With almost 30,000 employees, ANDRITZ's incoming orders topped the 8.5 billion Euro mark.

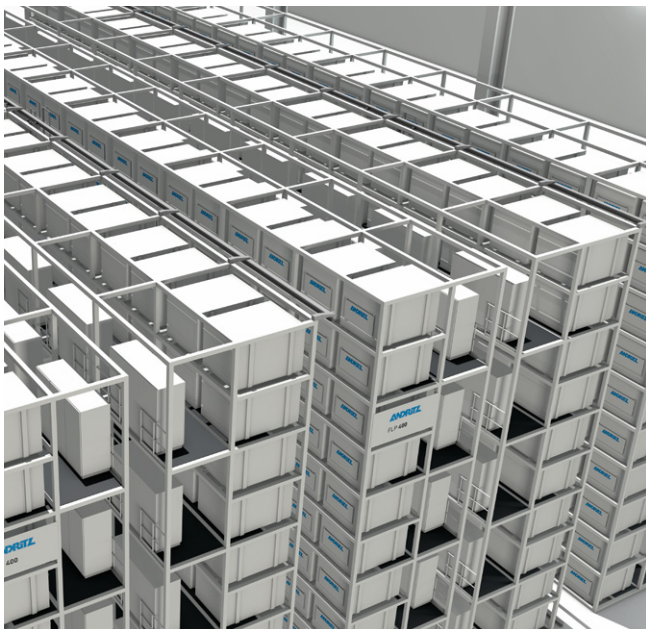
Schuler extended its existing product portfolio in the area of battery cell manufacturing.

Beside lab and pilot equipment for lithium-ion batteries as well as future battery generations such as all solid-state batteries, Schuler offers turnkey equipment for gigafactories for battery cell assembly and cell finishing.



« We proudly stand as a major player and primary partner in Europe and North America when it comes to local, sustainable equipment for the production of battery cells. »

Mathias Bühler, Head of Sales I Division Battery



Cell formation warehouse.

- Fully automated formation high-bay warehouse for all battery cell formats
- Stacker crane is used for automatic loading and unloading of the trays
- Efficient footprint



Tray loading into the formation chamber.

- Closed chamber design for optimum temperature management and fire extinguishing system
- Chambers equipment with automated lifting gate for opening/closing the chambers

TECHNICAL DATA

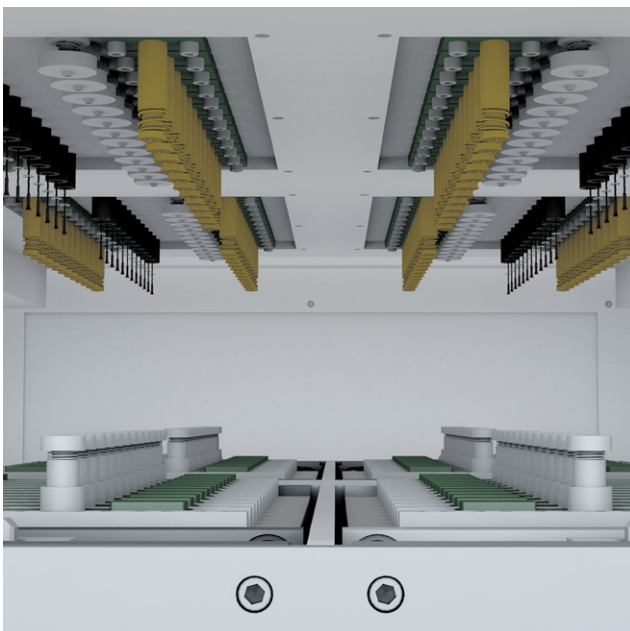
Model	SMF-256-5A-5V	SMF-96-50A-5V	SMF-48-80A-5V	SMF-60-80A-5V	SMF-72-100A-5V
Current [A]	0-5	0-50	0-80	0-80	0-100
Voltage [V]	0.6 V Charge, 1.8-6 V Discharge				
Circuits/cabinet	256	96	48	60	72

Schuler reserves the right to make technical modifications and content.



« We develop the solutions for gigafactories for the mass production of lithium-ion batteries in the central process steps of cell assembly and cell formation. »

*Dr. Hermann Uchtmann, Head of Business Unit
Battery Giga Projects I Division Battery*



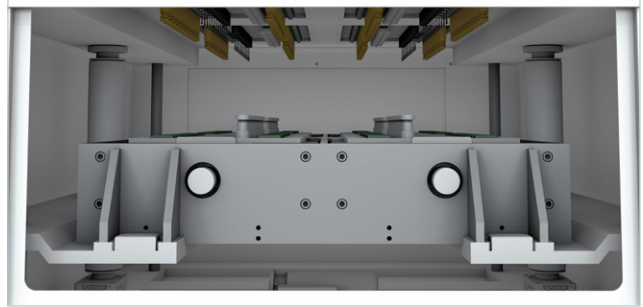
Close-up of the contacting unit.

- Process-safe tray centering
- Tray lifting unit for contacting the cells from the top side and/or optionally from the bottom side for all cell formats
- Individually adjustable ventilation unit for even distribution of warm or cold air

BENEFITS

- Modular chamber design for all cell formats (prismatic, cylindrical, pouch)
- Highly sensitive temperature sensors for early heat detection and prevention of a „thermal runaway“ event
- Highly efficient power electronics

ANDRITZ



Close-up of the formation chamber.

- Decentralized vacuum extraction for degassing the cells during formation
- In addition, the formation chambers contain:
- Connections for media supply: electricity, cooling water, extraction system
 - Water heat exchanger for optimum temperature management

- Common DC bus with a discharge efficiency of up to 87%
- Very good accessibility for efficient maintenance

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Schuler offers customized cutting-edge technology in all areas of forming – from the networked press to press shop planning. In addition to presses, our products include automation, dies, process know-how and service for the entire metalworking industry. Within the Metris platform by ANDRITZ, Schuler brings together digital solutions for networking forming technology and develops them continuously to further improve line productivity and availability. For battery production in gigafactories, Schuler provides equipment and services in the process steps of cell assembly and formation. Our customers include automotive manufacturers and suppliers, as well as companies in the forging, household appliance and electrical industries. Presses from the Schuler Group mint coins for more than 180 countries. Founded in 1839 at our headquarters in Göppingen, Germany, Schuler has approx. 5,000 employees at production sites in Europe, China and the Americas, as well as service companies in more than 40 countries. The company is part of the international technology group ANDRITZ.



Dr. Hermann Uchtmann

Head of Business Unit
Battery Giga Projects | Division Battery

Schuler Pressen GmbH

Schuler-Platz 1
73033 Göppingen
Tel. +49 7161 66-7949
Mobile +49 151 40247083
hermann.uchtmann@schulergroup.com



Mathias Bühler

Head of Sales | Division Battery

Schuler Pressen GmbH

Schuler-Platz 1
73033 Göppingen
Tel. +49 7161 66-331
Mobile +49 160 7424386
mathias.buehler@schulergroup.com

