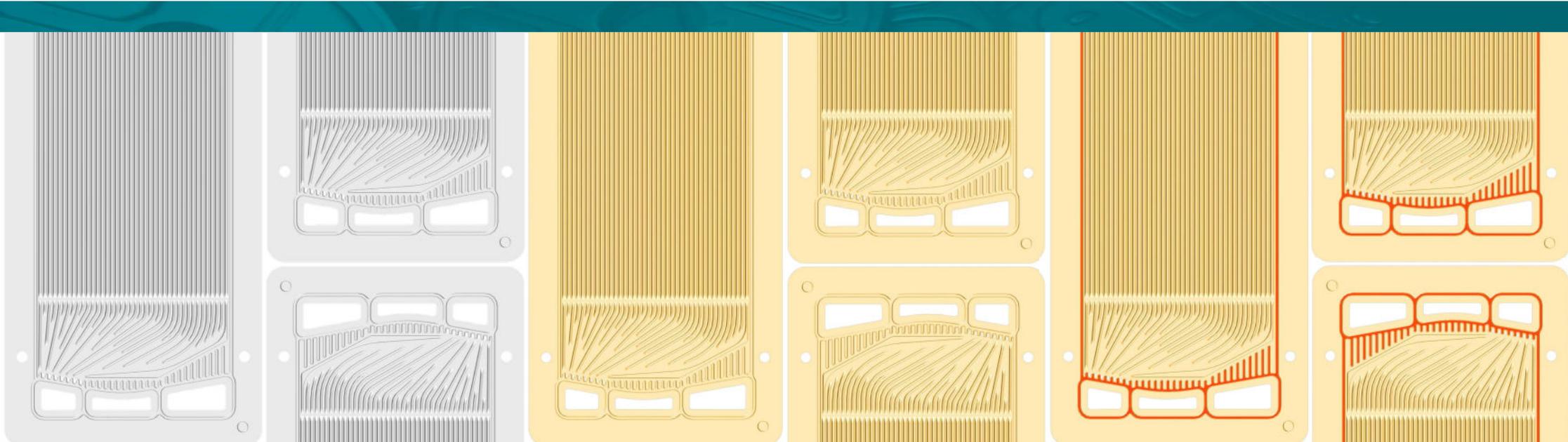
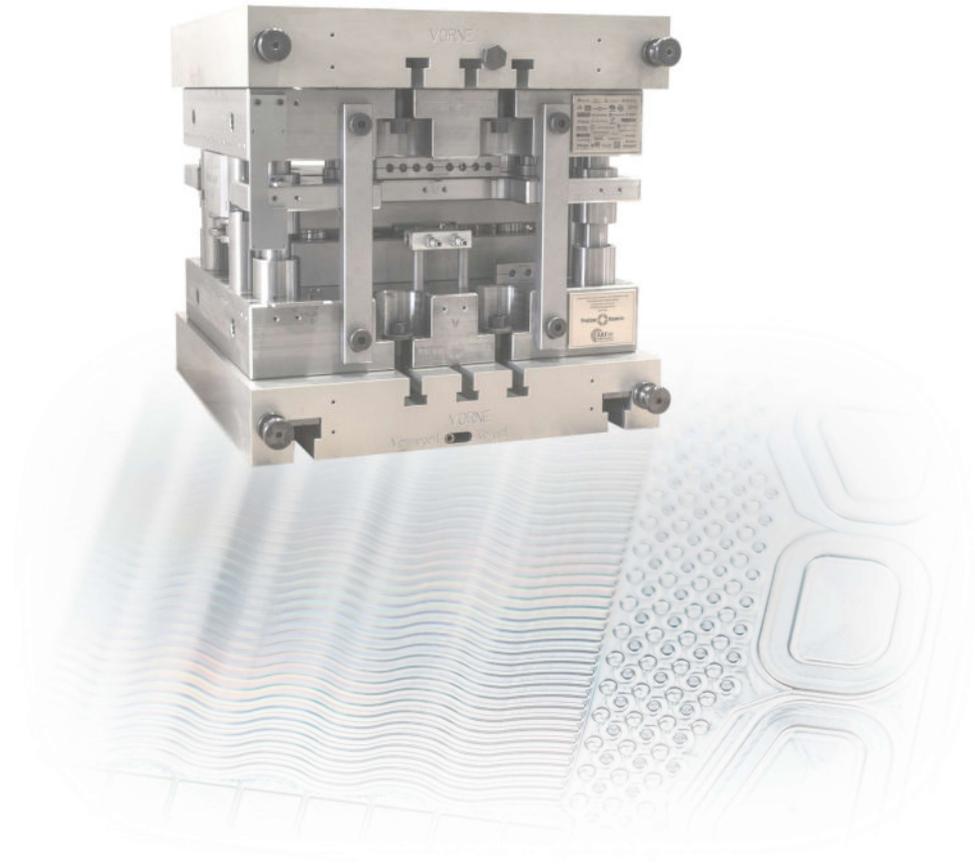


METALLIC BIPOLAR PLATE DEVELOPMENT: SCALE-UP TO COMMERCIALIZATION

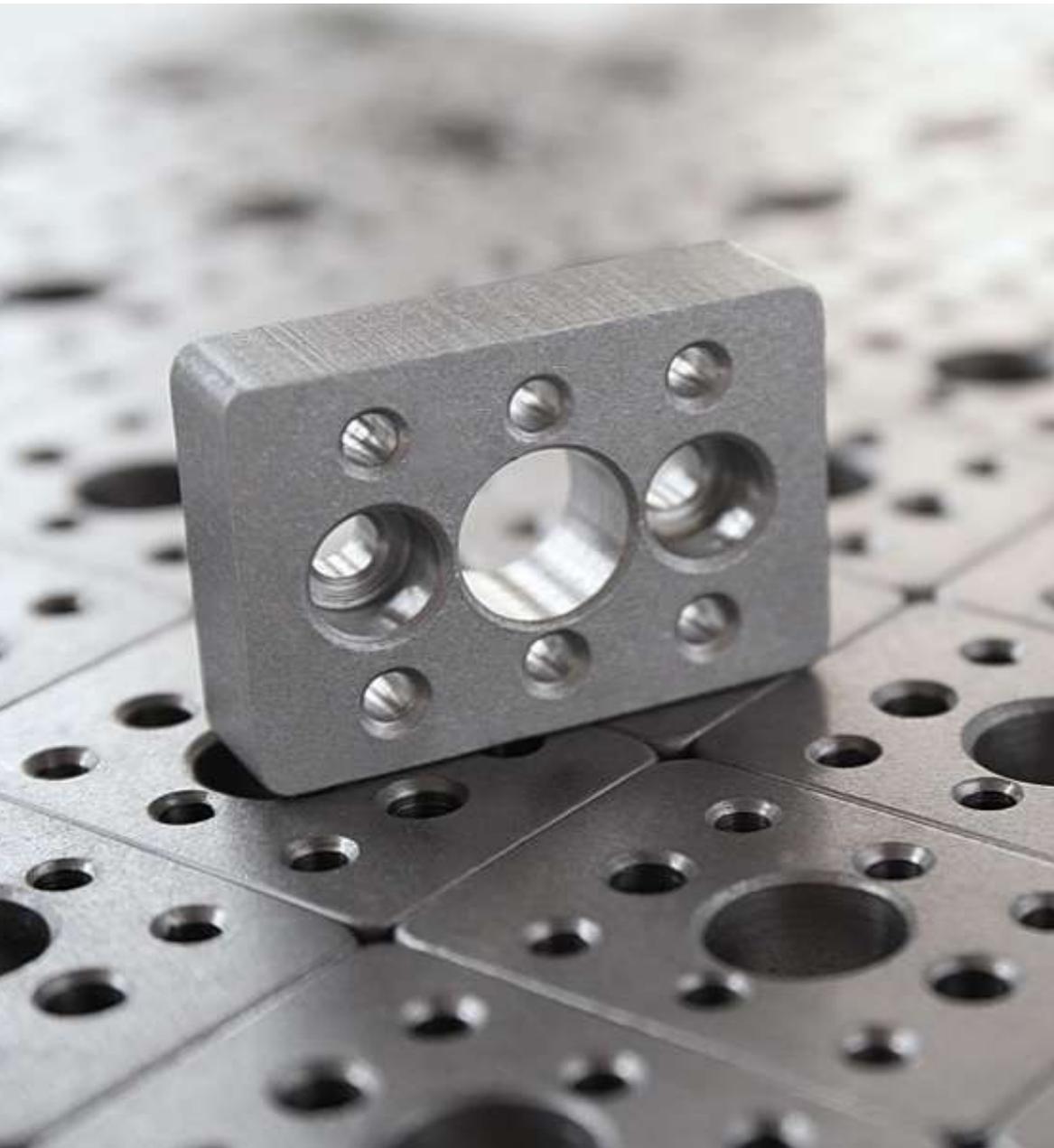


Agenda

1. Precision Resource Profile
2. MBP Manufacturing Process
3. R&D Activities:
 - Government Projects - NGen
 - University/Research Partner Development
4. Future Capabilities



Precision  **Resource**



We are a
precision parts
and components
manufacturer.

Critical Component Solutions

Fineblanked Components



Finished Components

Combining fineblanking, machining, grinding, and more



Multi-Component Assemblies



Precision Machining



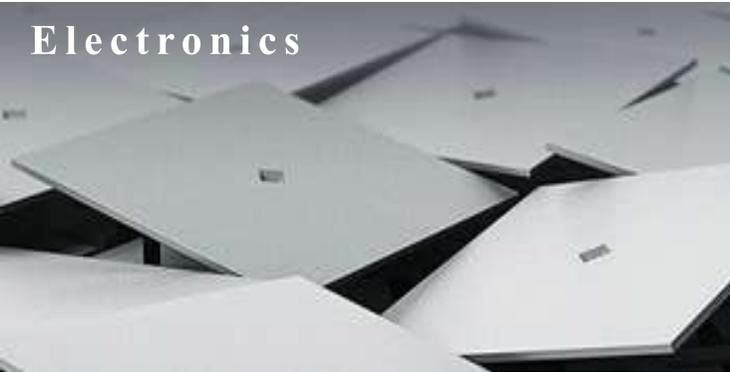
Metal Additive Manufacturing

Powder Bed Fusion for lightweight, high-strength metal components



Markets We Serve

Electronics



Aerospace



Heavy Duty



Automotive



Medical



Military & Defense





*Over 100 finblanking presses
(40-1600t)*



*100% Tooling In-House
(75+ years)*



1200 Employees



Global Capabilities

Global Capabilities



CONNECTICUT DIVISION,
CORPORATE OFFICE ●



PR TECH CENTER –
CAMBRIDGE, CANADA ●



PR CANADA –
CAMBRIDGE, CANADA ●



CALIFORNIA DIVISION ●



ILLINOIS DIVISION ●



KENTUCKY DIVISION ●



PR MEXICO, SALTILLO ●



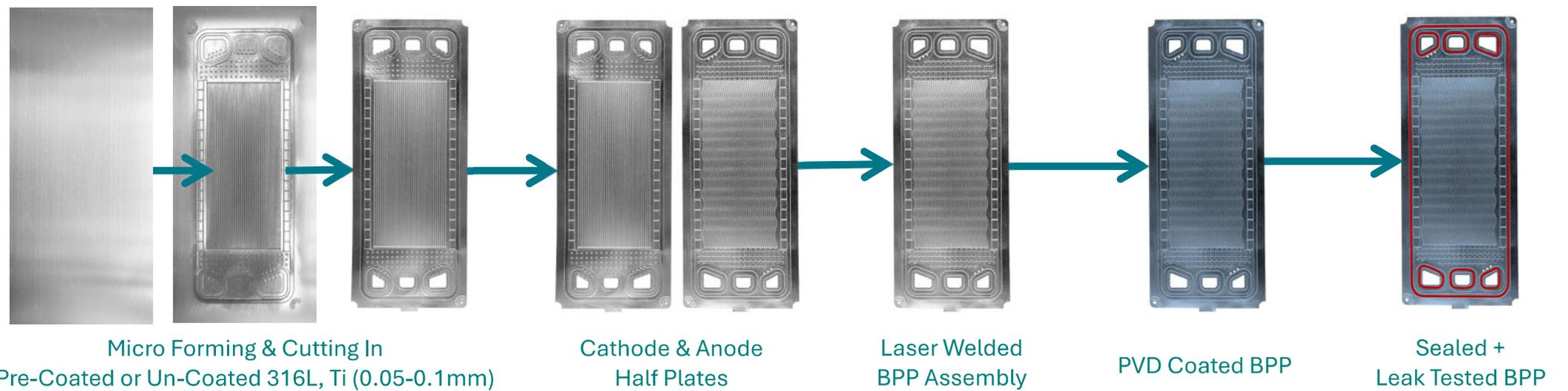
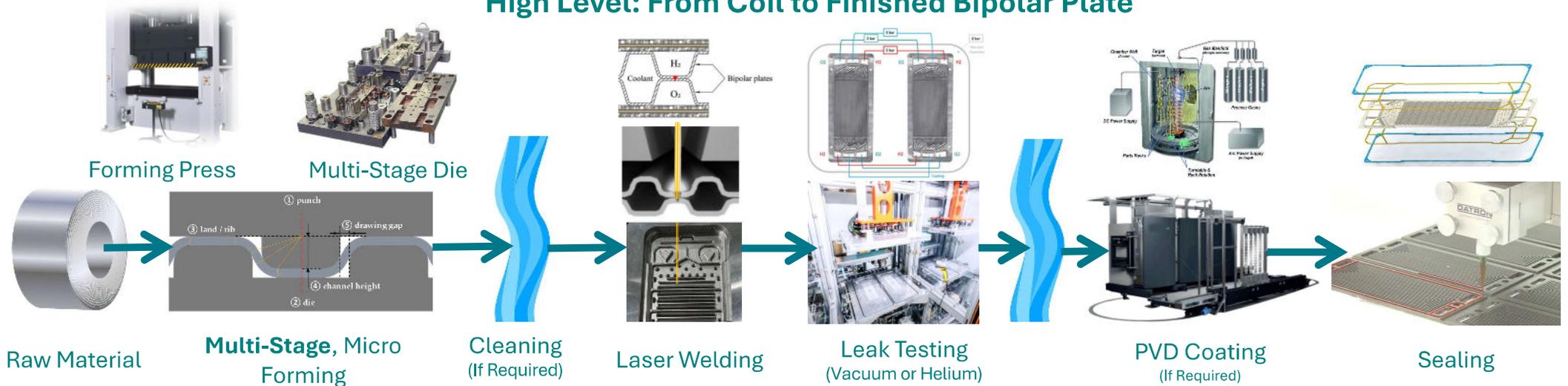
PR CHINA, HANGZHOU ●



PR SLOVENIA, LOGATEC ●

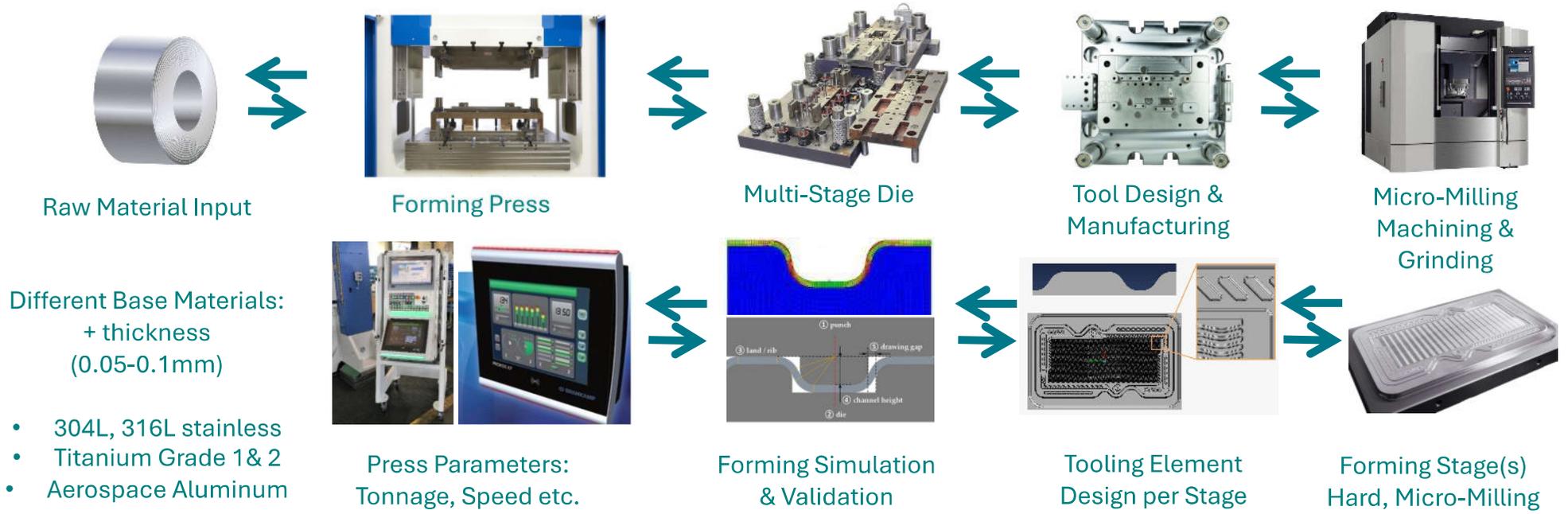
Sub-Process Development of Bipolar Plate Manufacturing

High Level: From Coil to Finished Bipolar Plate

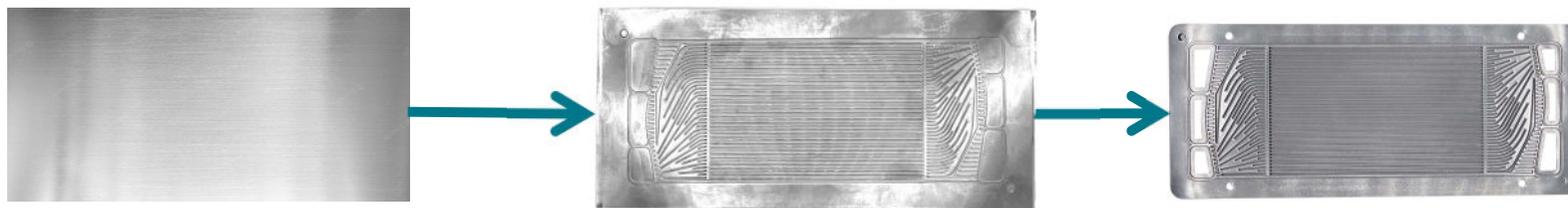


Sub-Process Development of Bipolar Plate Manufacturing

Metal Forming/Embossing Strategy and Validation



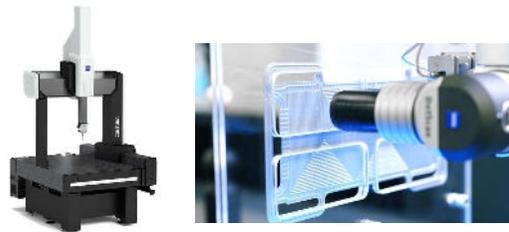
Customer & Internal Plate Design: **Improving Quality & Manufacturability**



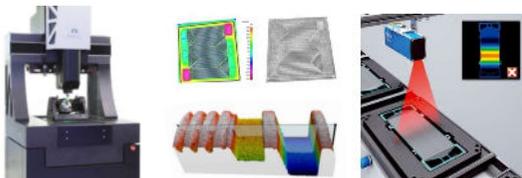
NGen Project Overview & Partners



High-Precision Machining & Automaton



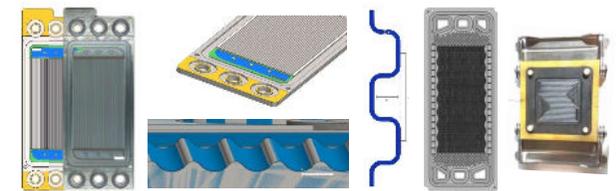
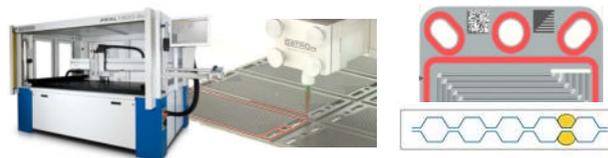
Sub-Micron Measuring



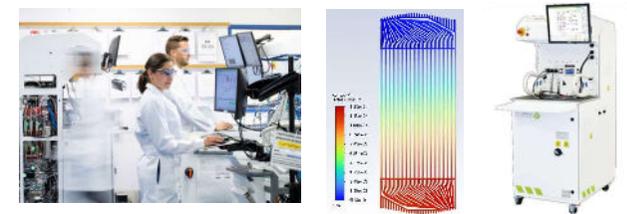
Tooling and Metal forming



Material, Laser, Coating and Sealing



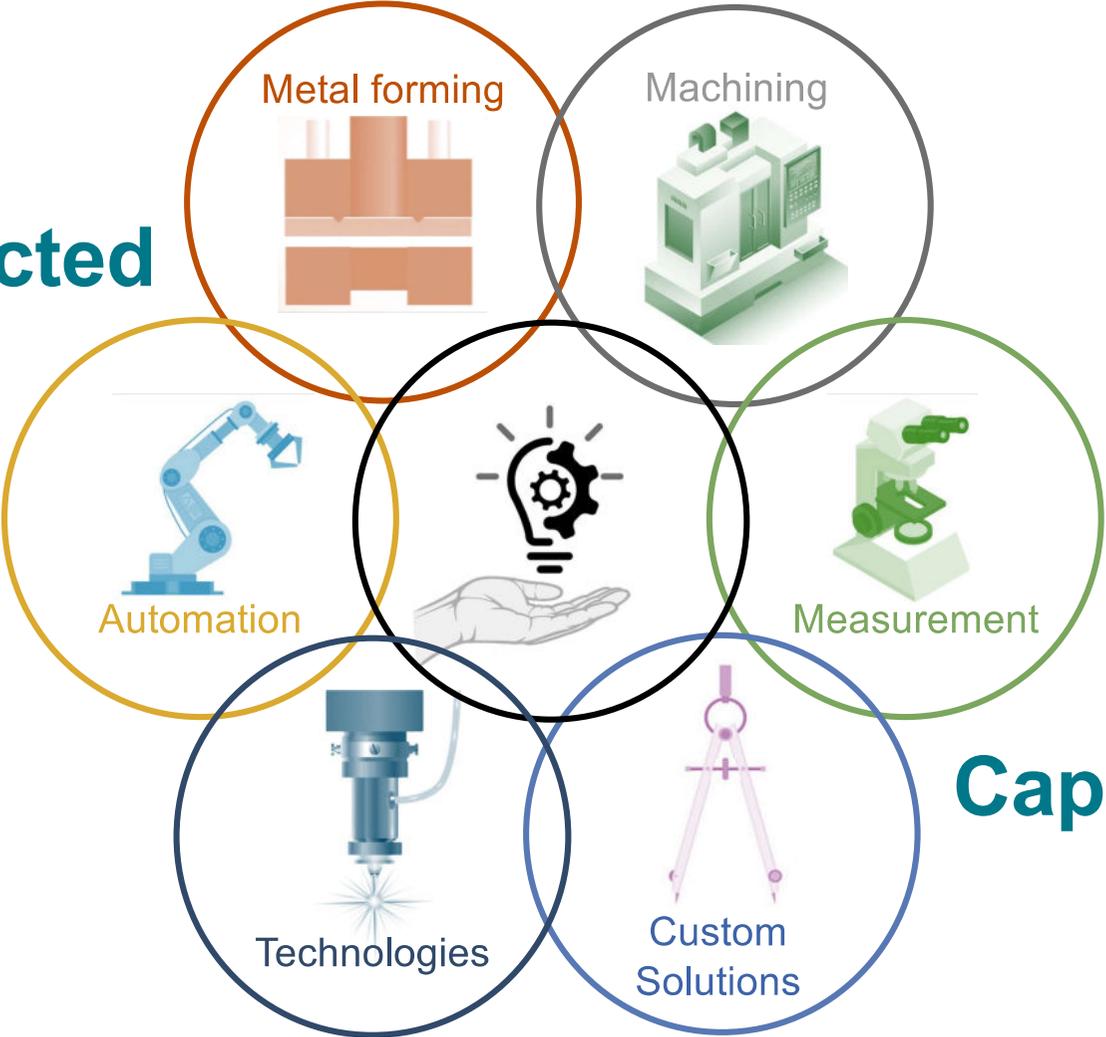
Design & Development



Testing: Assembly, Leak & Durability



Interconnected



Capabilities