

BATTRION

accelerating batteries.

Aus der Forschung in die Produktion

AEE Suisse, Roundtable Forum Energiespeicher Schweiz (28.10.2020)

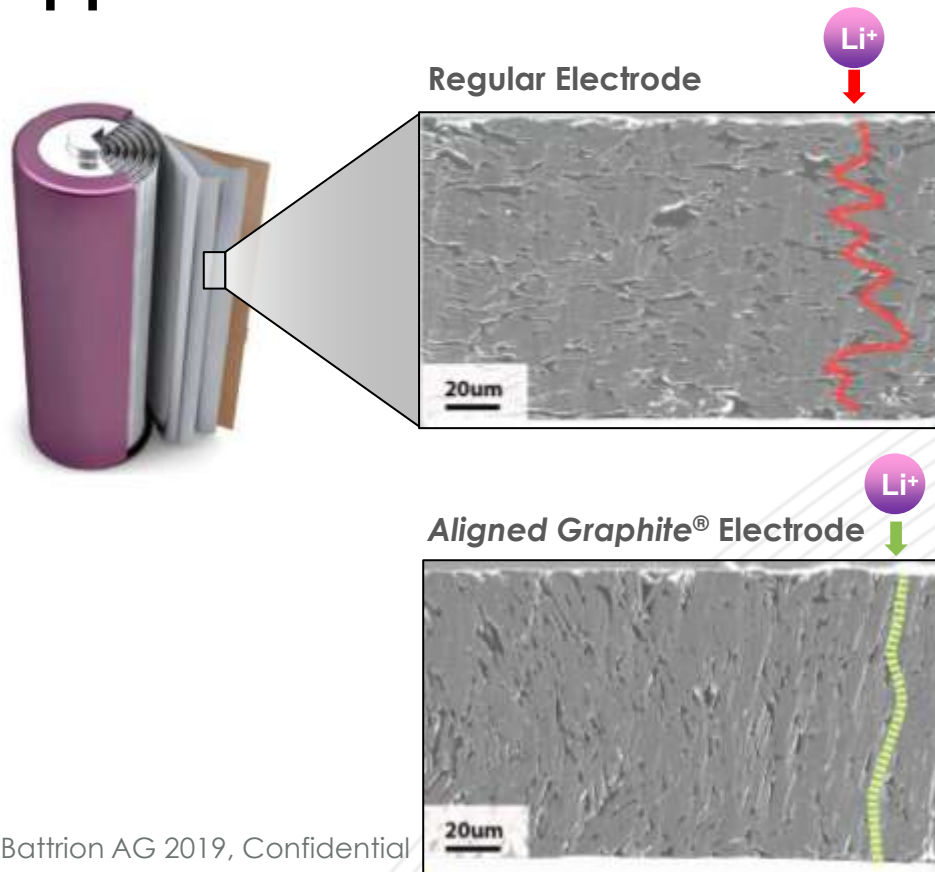
Dr. Deniz Bozyigit, CTO





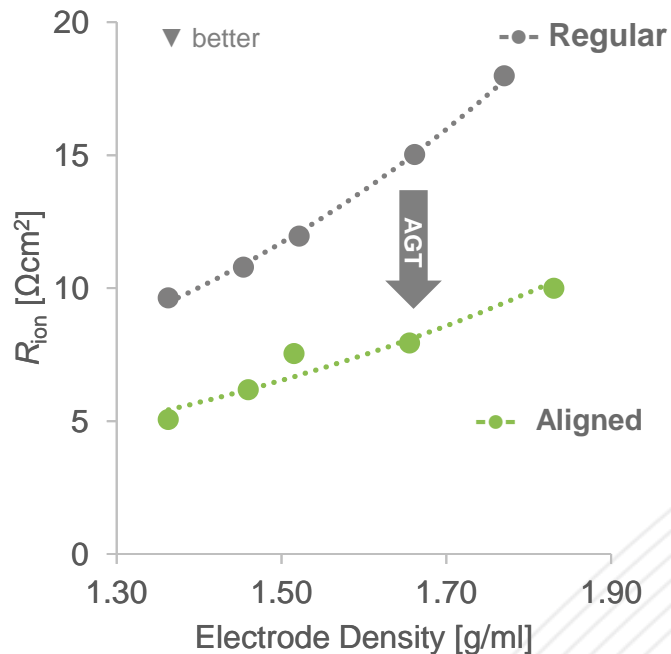
Problem:
Electric vehicles charge too slowly

Approach: Unblock flow of Lithium Ions



- Change Particle Orientation
- Reduce Transport Path
- Reduce Ionic Resistance
- Same Material

Aligned Graphite[®] Electrodes reduce Ionic Resistance



- Ionic Resistance depends on:

- Mass Loading
- Pressing Density
- Temperature

→ **50% Improvement for all densities!**

Aligned Graphite® Technology

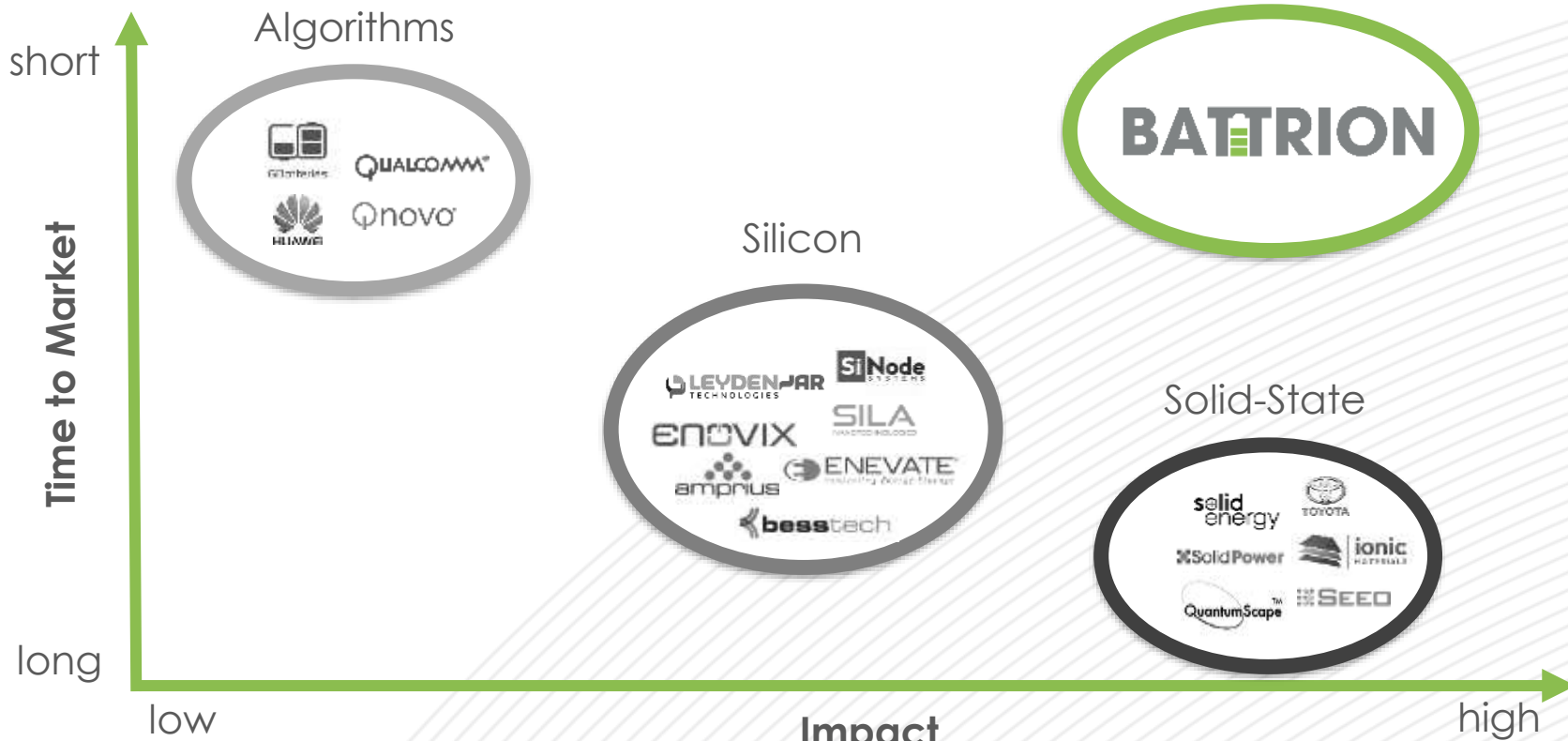
Up to 50% Shorter
Charging Time

Up to 40%
More Power

At same
Energy Density
& Lifetime

- At same or **lower costs** at GWh scale
- Using **industry standard** manufacturing machines and processes
- Using **available** graphite materials from a variety of suppliers
- **Compatible** with silicon/graphite composite technology
- Depending on cell design and operating conditions

Competition



1MWh/month Electrode Manufacturing Capacity

Mixing



Coating



Compressing

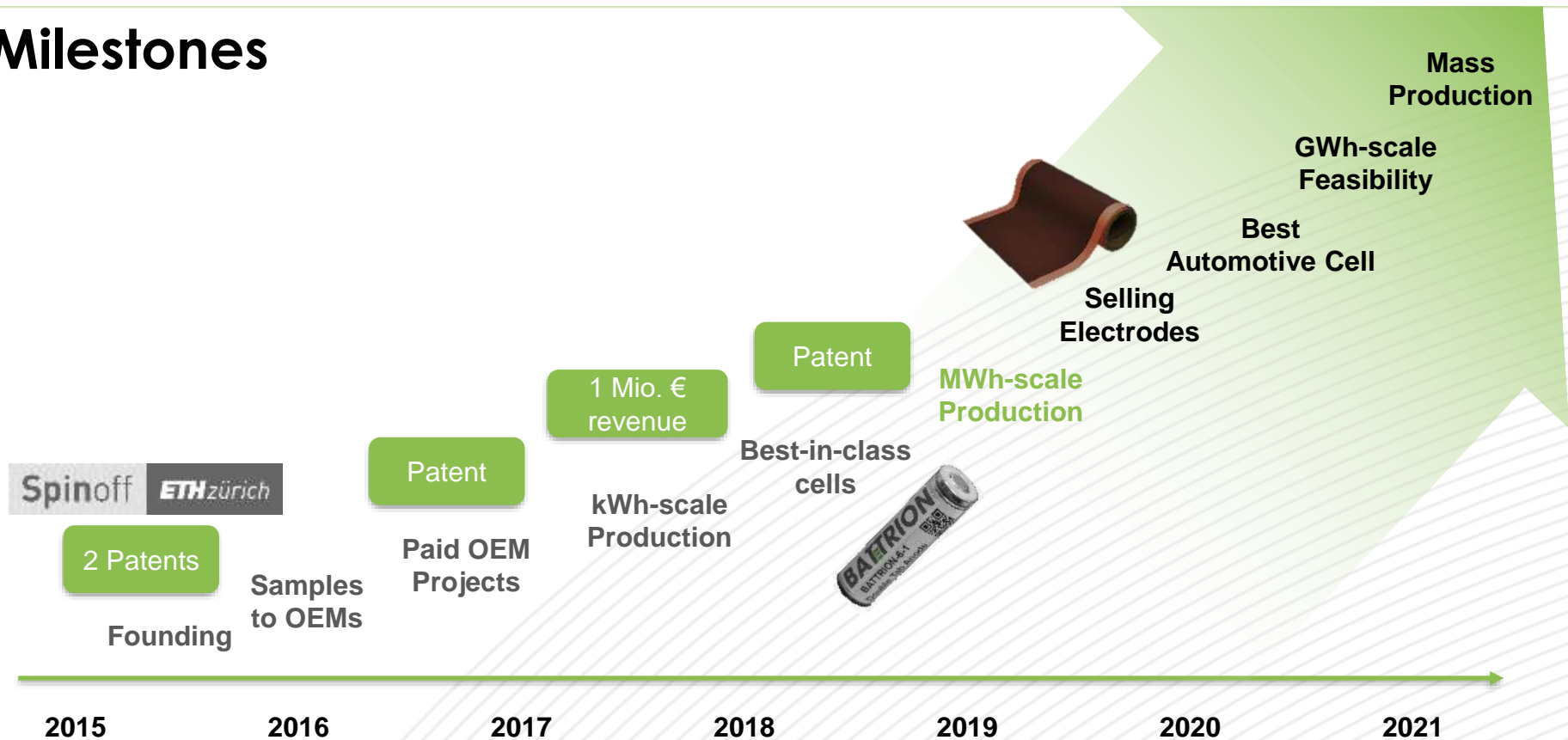


- 30l & 60l planetary mixer
- Aqueous process
- Ambient/inert/vacuum

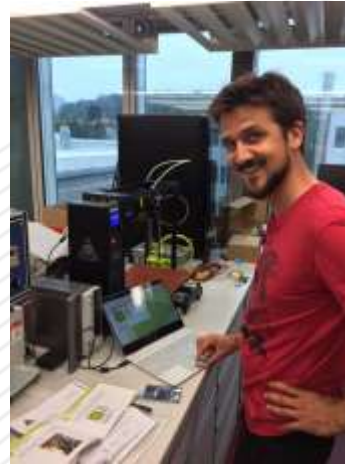
- 1.5-5.5mAh/cm²
- ≤520mm foil width
- ≥6μm foil thickness
- Single & double-side
- Continuous & intermittent

- ≤ 1.8g/ml coating density
- ≤520mm foil width
- 500mm roll diameter
- Multi-stage tension control

Milestones



BRNC in Rüschlikon (ETH 2015)



Cattanooga, TN (2016)



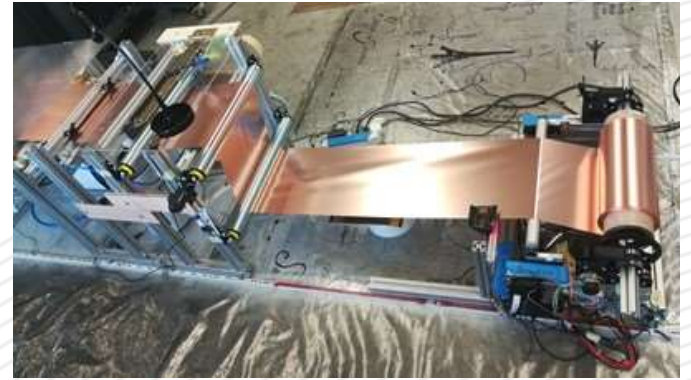
Office and Lab in Dübendorf (2017)



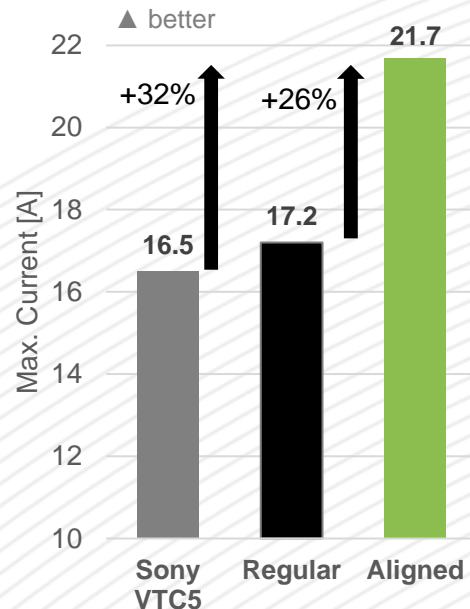
First coating line prototype (Jan 2018)



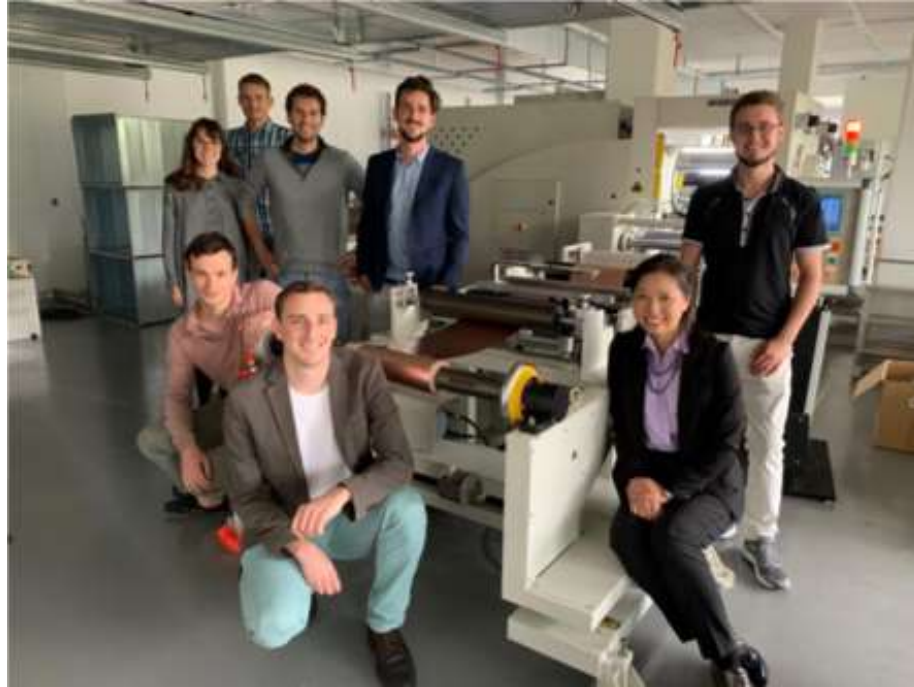
First coating line prototype (Mai 2018)









Press Release: Battrion and Hilti present jointly built high-power lithium-ion battery cell prototypes that outperform the industry standard (June 2020)



Small scale production (2019)



Strength of *Aligned Graphite*[®] Electrodes

-  Lower cell resistance
-  Faster charging & higher power
Higher cell voltage under load
Higher energy efficiency
-  Lower cell heating
Increased safety
-  Works with all cathode chemistries
Use existing graphite supply chain
-  No reduction in process speed
-  Easy to implement & scale



BATTRION

accelerating batteries.

Dr. Deniz Bozyigit, CTO
db@battrion.com
+41 79 831 96 40

