

# Fuel Cell Production at PowerCell Sweden AB

- PEMFC stack and MEA manufacturing workshop; volume & quality challenges workshop

Thomas Tingelöf, Brussels 2018-10-11



## Our company

- Spin-out from Volvo Group 2008
- Listed at NASDAQ in 2014
- Sales, manufacturing, development and testing facilities in Gothenburg

## Our customer offering

- PEM Fuel cell stacks 1-100kW with world leading power density 4kW/L
- FC systems 5, 30 & 100kW and multiples of those to MW range
- FC system engineering for customer unique solutions (mobile or stationary)

## Our capabilities

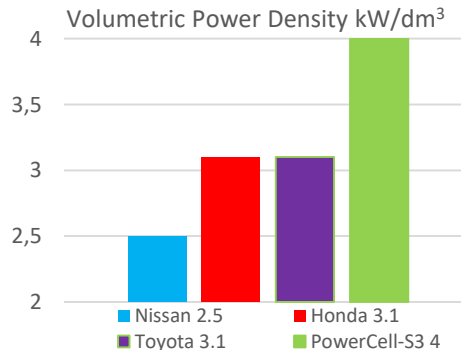
- Fuel cell stack and system manufacturing
- Fuel cell stack and system engineering
- Fuel cell stack and system testing services



*Stacks supplied to customers with extensive competence in fuel cell system development*



*Fuel Cell Modules supplied to customers requiring support with fuel cell specific balance-of-plant components and control strategy*



**World-class Power Density**



*Complete integrated energy conversion systems supplied to customers requiring "turn-key" solutions*





Examples of official customer cases where PowerCell fuel cell technology has been integrated



## Broad base of industrial & project partners

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VOLKSWAGEN  
GROUP



**BOSCH**

**3M**



**KALMAR**

**ABB**



HEXAGON  
COMPOSITES

**nel**•



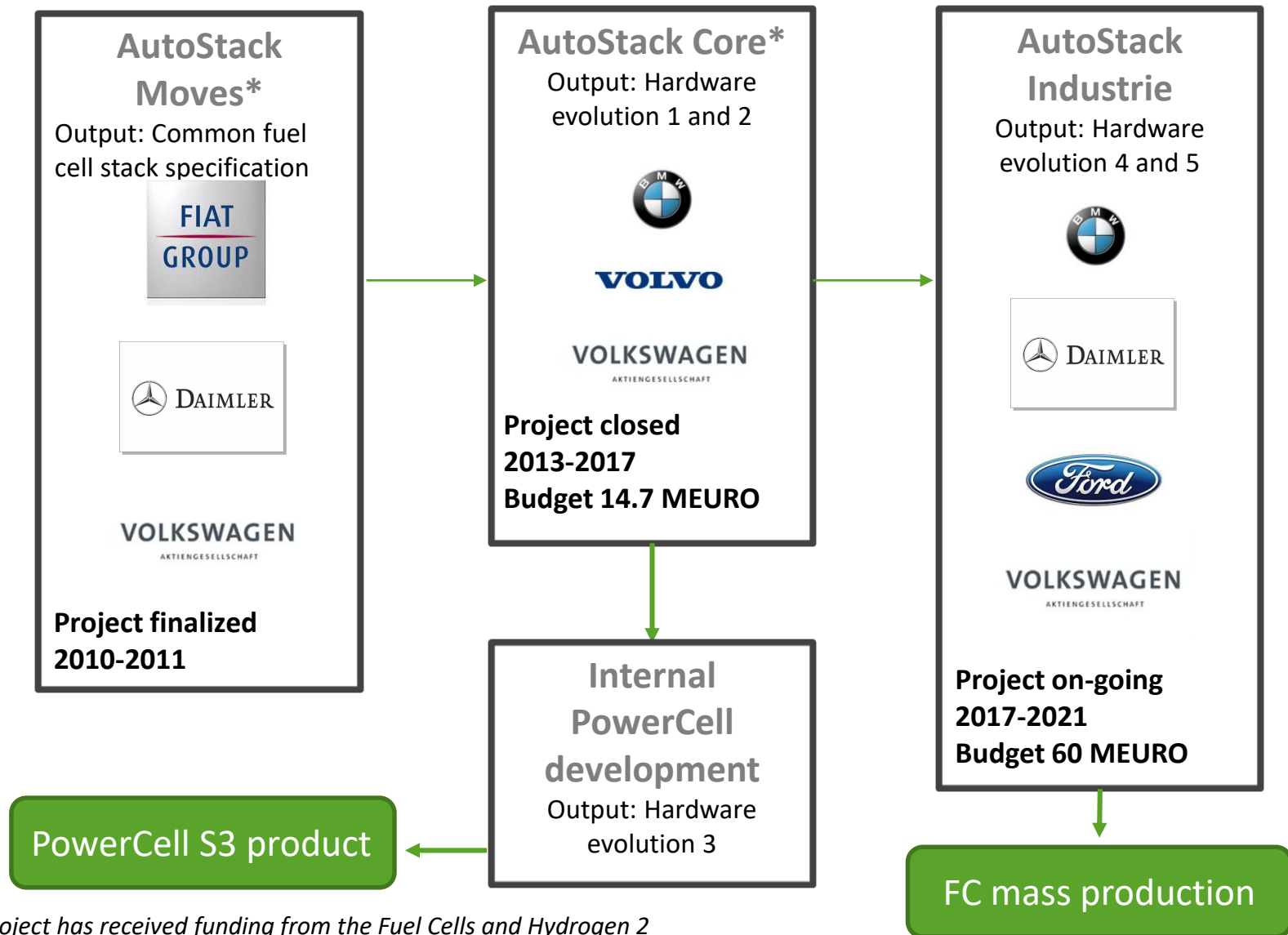
**Fraunhofer**



**SIEMENS**



# PowerCell automotive fuel cell stack development path



\* This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking

# AutoStack Industrie summary

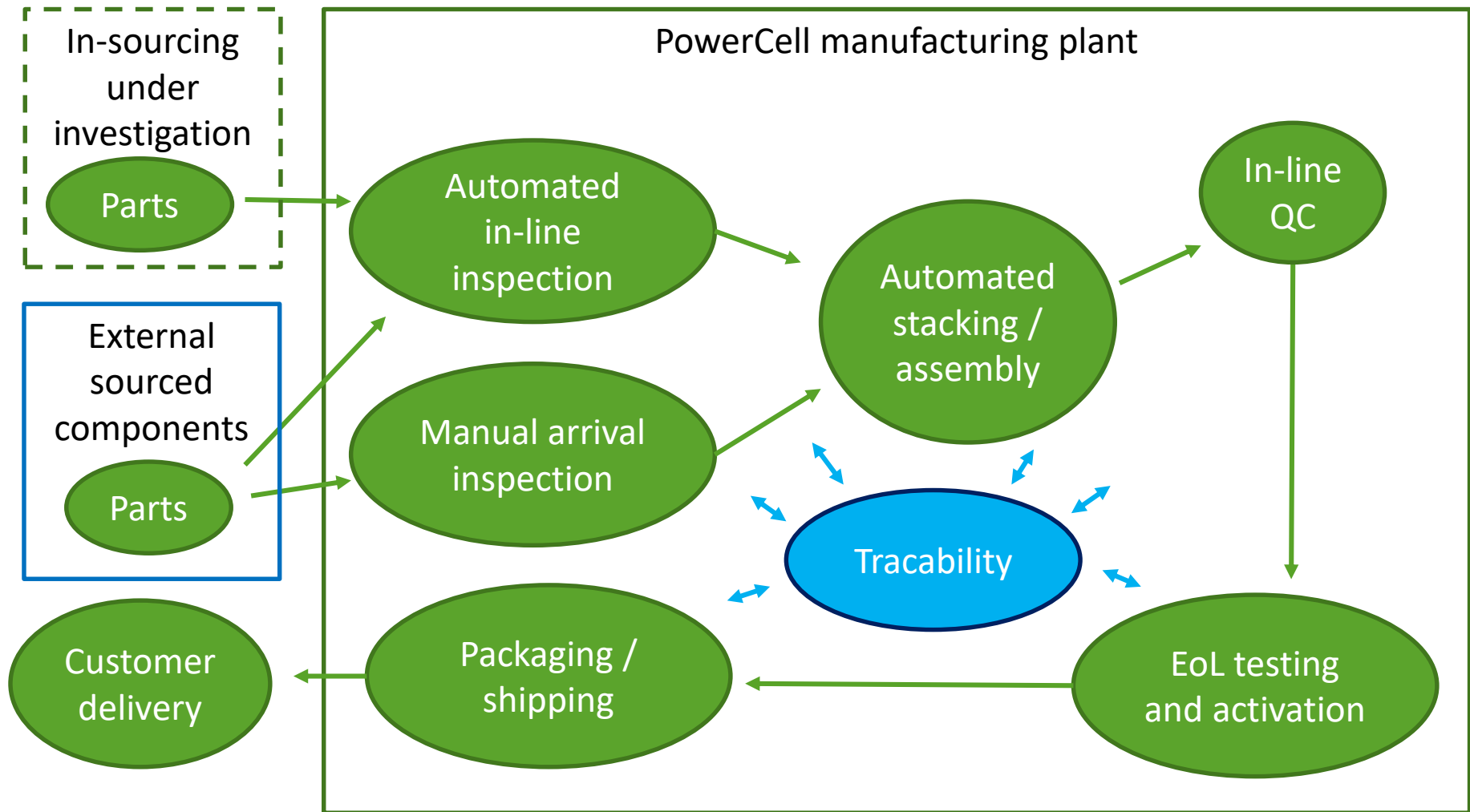
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- Large scale industrial stack development project with 60 million € budget, 11 partners and 48 months duration for project phases 1 & 2
- Designing and maturing automotive stack technology with highest power density while meeting target cost
- Enabling and utilizing industrial scale effects inside and outside the automotive industry
- Selecting and validating innovative mass production technology and processes that meet automotive quality standards



# Production fuel cell stack overview



*PowerCell cooperates with partner on production automation and ramp-up*

## Volume production focus areas

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Main focus: continuous quality improvements and zero faults in and out

- Planning for 50.000 units/a (100 kW base), volume and scale based on platform approach for different customer segments i.e. automotive, marine and stationary
- Zero faults in and out. (First step yield 99.999 % (at least) at inline inspection of BPPs and MEAs)
- Supply base raw materials for sub-components during volume scale-up
- Reducing activation time of MEAs
- Tolerance span of repeating units
- Identification of special characteristics of CCMs and GDLs





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