

Stadler Tram-Train: *Citylink*

Citylink of Sheffield - Rotherham



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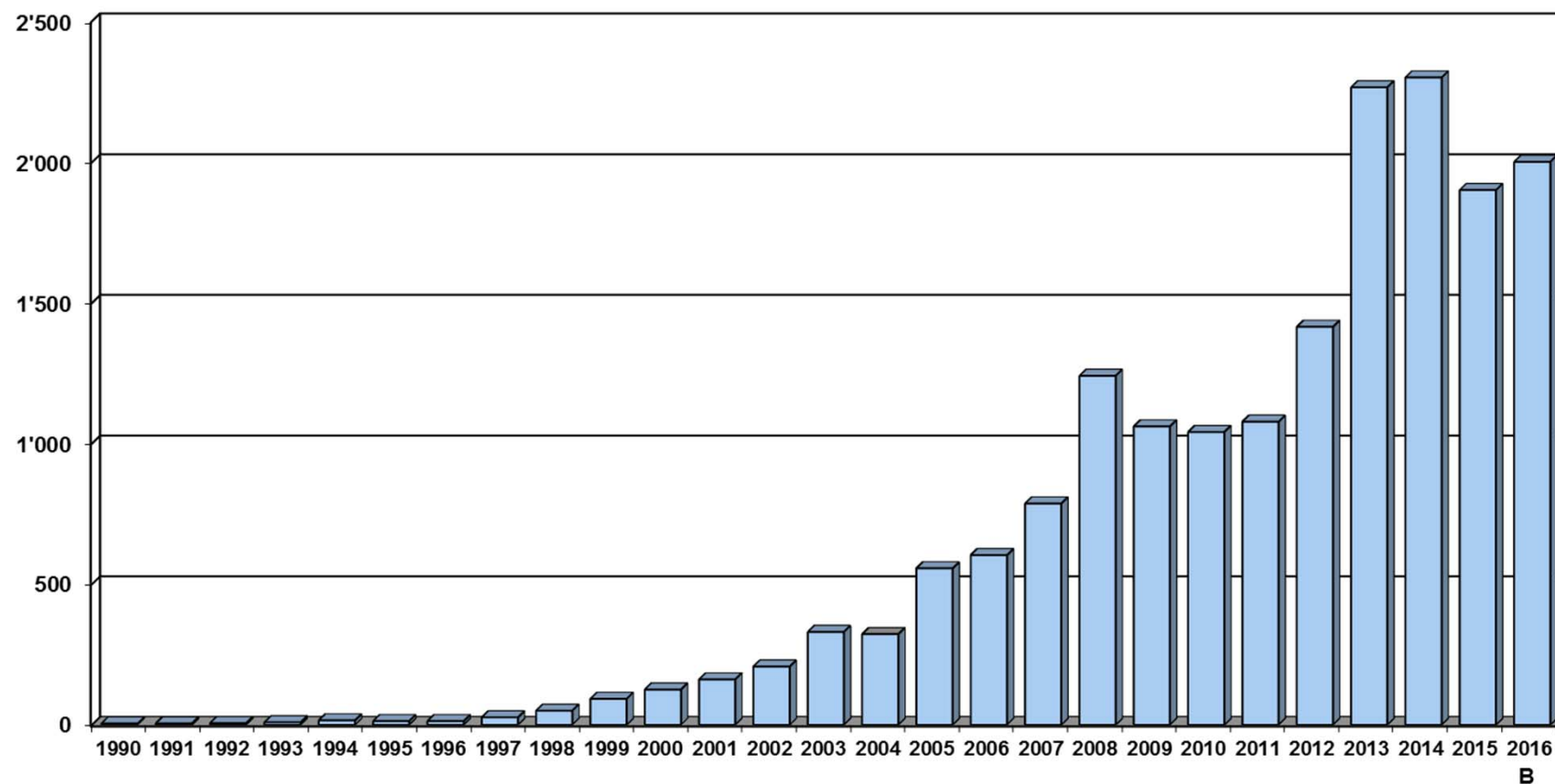
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The Stadler Rail Group

Consolidated turnover 2016 (Budget): ca. CHF 2,2 billion
Number of employees (Budget, FTE): ~ 7000



Stadler Rail Group Turnover Development (consolidated in Mio CHF)



Stadler Rail Valencia S.A.U.- Business snapshot

Converging engineering and production capabilities in ONE site.

This makes the dialogue both, internally and with customers, more rapid and effective.

- Integral engineering and production facilities for car bodies and bogies on site.
- Engineering Center with more than 150 engineers
- Flexible and full integrated plant which configuration allows to design, develop and test all vehicles in house.
- Multi-skilled staff
- Facility completed in 1997 with almost 200,000m² distributed in several product- oriented workshops and installations
- Easy access to national rail network, highway and Port of Sagunto

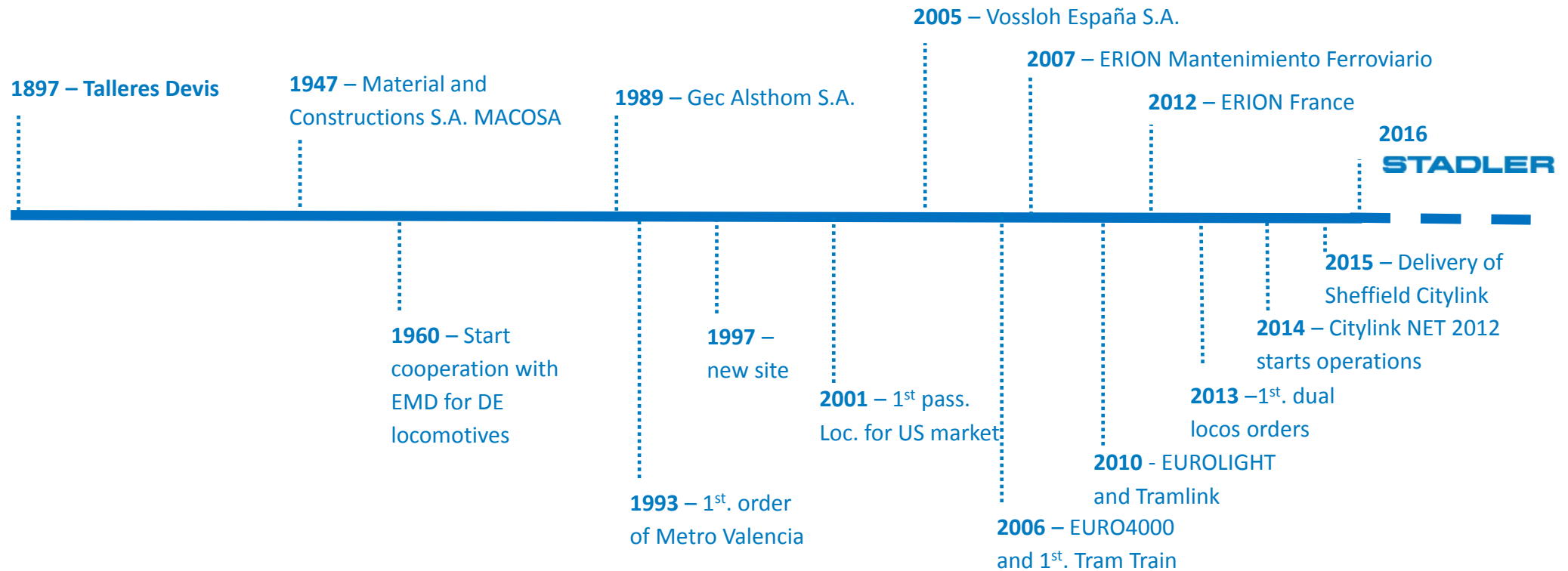
Facts & Figures

- Employees (31.12.2015): 942
- Sales (2015): €240.5 mill.
- Order intake (2015): €124.1 mill.
- Order backlog (31.12.2015): €508.7 mill.

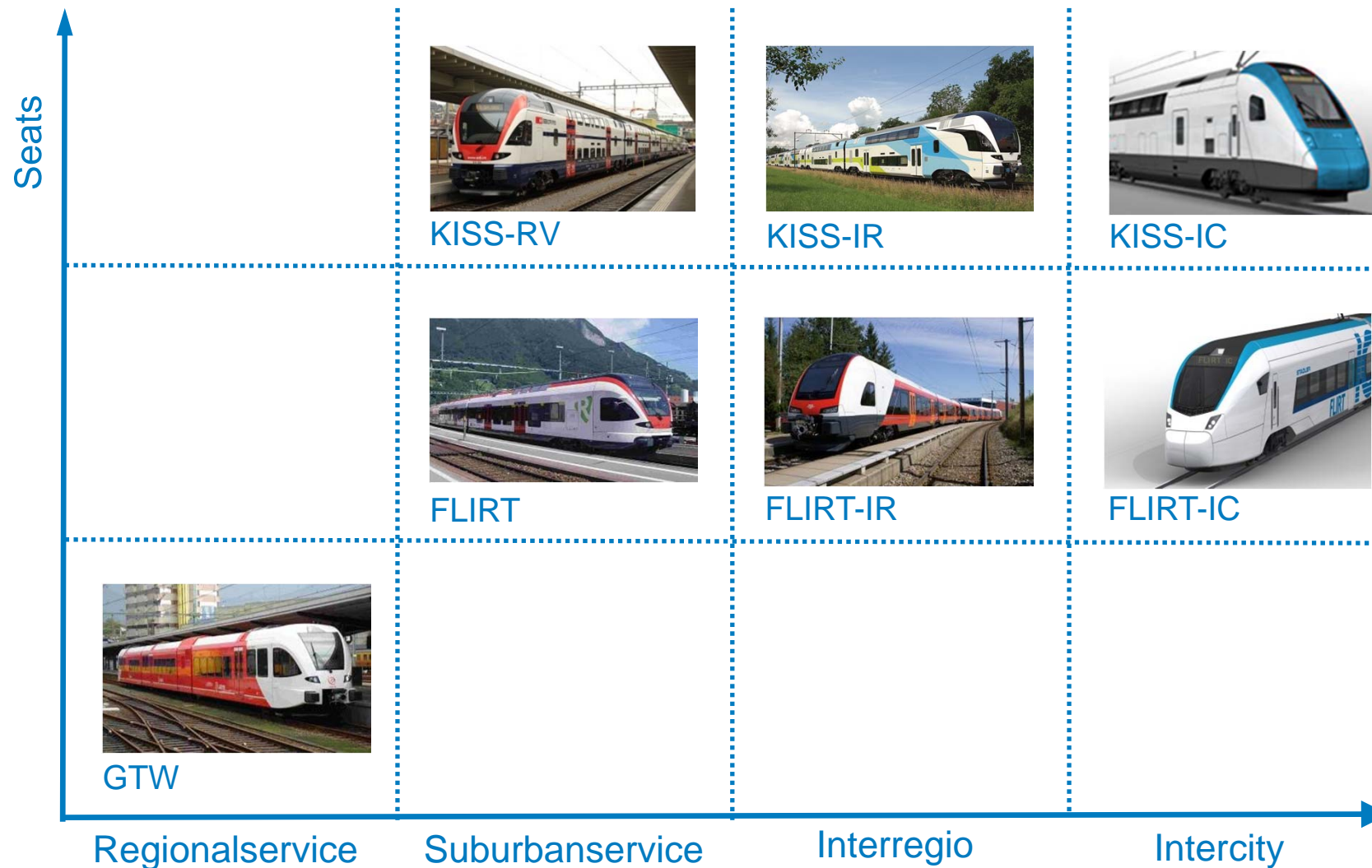


Stadler Rail Valencia - Site History

More than a century of experience putting visionary solutions on track.



Product Portfolio: Railway Vehicles



Product Portfolio: Locomotives (STAV)



Product Portfolio: Tailor Made

„Nothing is impossible“



Product Portfolio: Urban Transport

STAV



Metro

Light railways

Trams

~70%

100% Low floor portion

Stadler Rail Valencia – Tram-Train

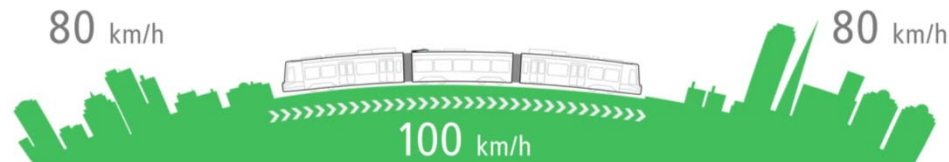
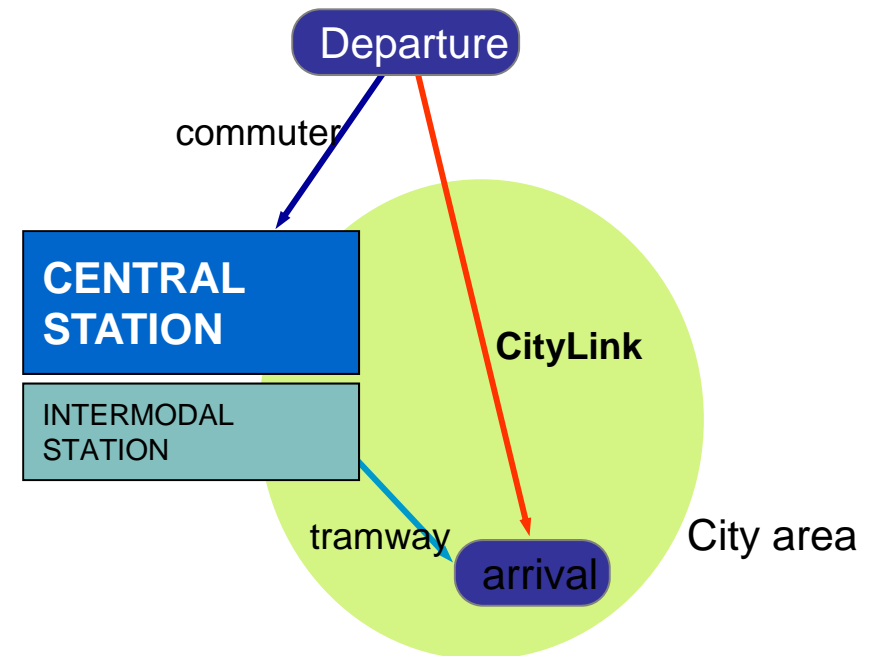
citylink



Stadler Rail Valencia - - CityLink family ONE TRAIN - TWO SYSTEMS

Tram-Train concept

- High flexibility and no dependence of intermodal stations.
- Direct journey, no interchanges, no foot displacements and no waiting times for connections.
- **Use of existing infrastructure**
- Improvement of competitiveness and service quality.
- Urban and inter-urban service.
- Design, functionality and performances totally adapted and integrated to the urban area.
- High comfort and respect to the environment.
- Increase of global efficiency.
- Increase of reliability and security.
- Comfort Index between 25% and 50% depending on customer.



Stadler Rail Valencia - - CityLink family ONE TRAIN - TWO SYSTEMS



Stadler Rail Valencia - Citylink

- CityLink is modular and scalable platform

	28m	170 (90/75+5)
	29m	185 (120/60+5)
	31m	195 (125/65+5)
 Standard CityLink 37m x 2'65m	37m	250 (160/85+5)
	37m	255 (175/75+5)
	42m	210 (105/100+5)
	48m	270 (145/120+5)

Stadler Rail Valencia - CityLink family

ONE TRAIN - TWO SYSTEMS

Different power supply configurations

- **750Vdc**
 - Alicante (metric)
 - Mallorca (metric)
 - Karlsruhe

- **Diesel**
 - FEVE Spain (metric)

- **Diesel + 750Vdc (Hybrid)**
 - Chemnitz

- **750Vdc + 25KV_a (Dual)**
 - Sheffield



Stadler Rail Valencia - CityLink family

ONE TRAIN - TWO SYSTEMS

Different entrance height

- **Low floor entrance**

- Sheffield
- Karlsruhe
- Alicante
- Mallorca



- **Low floor & mid floor entrance**

- Chemnitz



- **Low floor & high floor entrance**

- FEVE (Spain)



- **High floor entrance**



Stadler Rail Valencia - CityLink family

ONE TRAIN - TWO SYSTEMS

Bogies

- **CityLink** bogie is the lowest “conventional” truck of its class
- Designed to provide good comfort values even up to 110km/h
- EBO & BOStrab full compliance.
- **UK certified**
- Low car body interface



CityLink family

TWO SYSTEMS IN ONE TRAIN

- **CityLink** vehicle has been designed meeting the needs of both the regulations for tramway and railway operation
- CityLink system design and principles are under main European homologation frames:
 - BOStrab (and VDV)
 - EBO (LNT)
 - DIN
 - EN
 - UIC
 - GM/RT
 - ORE



CityLink Sheffield – Rotherham

Dual Voltage 750 Vdc / 25 kVac



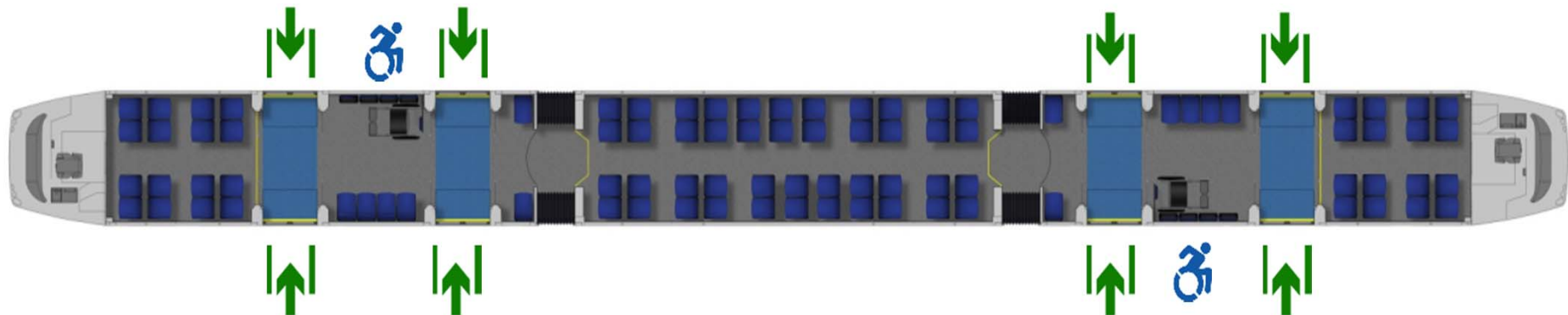
General data	
Contract date	2013
Model	Bi-directional
Owner	SYPTÉ
Quantity	7 units
Trainset	3 articulated cars

Dimensions and weight	
Length of vehicle	37,2 m
Bodyshell width	2,65 m
Max height	3,6 m
Low floor entrance height	425 mm
Percentage of low-floor area	>70%
Double doors	4 per side
Gauge	1435 mm
Minimum horizontal curve radius	22 m
Minimum vertical curve radius	165 m
Accessibility	RVAR
Tare weight approx.	66 T

Performance and capacity	
Service max. speed	100 km/h
Design max. speed	110 km/h
Max. acceleration	1,15 m/s ²
Service brake	1,2 m/s ²
Emergency brake	2,67 m/s ²
Maximum gradient	10%
Seats/folding seats	96/8
Standing passengers (4 pass/m ²)	140
PMR areas	2
Multipurpose areas	2

CityLink Sheffield – Rotherham

Lay out



CityLink Sheffield – Rotherham Main Milestones

- Delivery 1st vehicle : **December 2015**
- Delivery 2nd vehicle: **23rd of May 2016**
- Delivery of the rest of the vehicles: From June up to the end of 2016
- Commercial service: **January 2017**



Thank you very much for your attention

