Solaris - European leader of sustainable
electro mobility development
Adam Zieliński, Prague 24.11.2016
Solaris today

- **Independent manufacturer** of public transport vehicles for road and urban rail
- 100% owned by **Olszewski founding** family
- **€400 million** annual turnover (2015)
- **2,500 employees**
- **1,400 vehicles** annual production
- **14,000 vehicles** sold since start of production
- International presence – **30 countries**

www.solarisbus.com
Solaris today

Solaris vehicles have been sold to **30 countries**

- Austria
- Belgium
- Bulgaria
- Croatia
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Israel
- Italy
- Latvia
- Lithuania
- Malta
- Morocco
- Norway
- Poland
- Portugal
- Romania
- Russia
- Serbia
- Slovakia
- Spain
- Switzerland
- Sweden
- Turkey
- United Arab Emirates
Locations and facilities

- **Bolechowo** (Headquarters & bus assembly)
- **Środa Wielkopolska** (Bus welding plant)
- **Środa Wielkopolska** (Tram welding plant)
- **Poznan – Junikowo** (Tram assembly)
Electric buses
Electric buses

1440+ vehicles with electric drivetrain including production in progress

www.solarisbus.com
Selected contracts

**Hannover, Germany**
- 3 Urbino 12 electric
- pantograph opportunity charging

**Berlin, Germany**
- 4 Urbino 12 electric
- inductive opportunity charging

**Hamburg, Germany**
- 2 Urbino 18.75 electric
- fuel cell range extender

**Warsaw, Poland**
- 10 Urbino 12 electric
- plug-in charging system
Selected contracts

Tampere, Finland
Opportunity charger, 300 kW

Barcelona, Spain
Opportunity charger, 400 kW

Kraków, Poland
Opportunity charger, 80 kW

Source: Ekoenergetyka-Polska Sp. z o.o.
Selected contracts

Hannover, Germany
Opportunity charger, 450 kW

Oberhausen, Germany
Opportunity charger, 220 kW

Dresden, Germany
Opportunity charger, 200 kW

Source: Ekoenergetyka-Polska Sp. z o.o.
Full range charging solutions

DEPOT CHARGERS
OVERNIGHT CHARGING

CITY CHARGERS
OPPORTUNITY CHARGING

DC-S DC-M DC-F UF.1 UF.2 UF.3 UF.4 UF.5

quickPoint™ DEPOT CHARGERS
quickPoint™ CITY CHARGERS

Source: Ekoenergetyka-Polska Sp. z o.o.
Catenary charging solutions

- Different catenary systems: 600 VDC / 750 VDC
- Supply voltage fluctuations: according to EN50163 / 420 VDC ÷ 900 VDC (1200 VDC peak)
- Easy deployment in the cities with catenary infrastructure
- Economic savings
- No need to build internal power supply line 3x400 VAC
- Outdoor / indoor / on pole solutions

Source: Ekoenergetyka-Polska Sp. z o.o.
Flexibility to the **specific requirements**

Installation inside the substations

Multioutput charging solutions

revolutionary non-invasive, on-pole solution !!!

easy urban solutions for cities

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Source: Ekoenergetyka-Polska Sp. z o.o.

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## Charging Solutions

### Plug-In
- 16 ÷ 80 kW CCS
- Simple
- Low cost
- Requires handling
- Slow / fast charging

### Pantograph
- Up to 450 kW
- Automatic operation
- Resonable cost
- Quite simple solution
- Other opt. possible

### Induction
- 200 kW
- Automatic operation
- Contactless
- Most expensive
- Other opt. possible
Open charging **infrastructure**

- Solaris in cooperation with group of European bus producers and charging infrastructure suppliers have agreed to make universal charging systems.
- Main aim of the project is guarantee the open charging interface for the electric vehicles and create universal and reliable system for chargers and buses from different manufacturers.

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![PANTOGRAPH](image1.png)

![PLUG-IN](image2.png)

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www.solarisbus.com
Solaris Urbino 12 electric

NEW SOLARIS URBINO 12 ELECTRIC

BUS OF THE YEAR 2017

HIGH ENERGY BATTERIES
(240 kWh)

PANTOGRAPH
(up to 450 kW)

Innovative ELECTRIC AXLE

ERGONOMIC distribution of roof equipment

Lightweight elements

NEW CONSTRUCTION added strength, reduced weight

SPACIOUS and inviting INTERIOR

ERGONOMIC driver’s cabin

NEW SOLARIS URBINO 12 ELECTRIC

BUS OF THE YEAR 2017
For the Film Spring Open foundation we have built a mobile film studio. During the inauguration Natalie Portman and other distinguished guests from cinema industry were present.
Era of electromobility in Hannover

- **3 Solaris Urbino 12 electric** have been officially battery-powered Urbino in Hannover
- Since April battery-powered Urbino have been running on the city’s streets
- Hanover’s municipal operator already runs Solaris hybrid buses
Solaris and JBM Group established joint venture company in India.

The strategic goals of the cooperation are development, sales and service maintenance of vehicles with alternative powertrains – electric and hybrid buses – in the Indian market.

The role of Solaris is to develop, integrate and deliver components as well as know-how for the alternative propulsion systems to JBM.
Riga City Transport ordered **10 articulated trolleybuses Trollino 18.75 equipped with fuel cell range extender**

- LTO batteries in each Trollino allow the vehicle to drive separately from the overhead wires, with fuel cell onboard the distant can reach up to 100 km

- Solaris to develop this solution in trolleybuses as **the first manufacturer in Europe**
News

- 3 new Urbino 12 electric with **pantograph charging** by Siemens were officially presented on 17th August 2016
- Battery-powered vehicles run on the **innovative bus line 109**

**Hamburg**

- The city operator in **Jaworzno** ordered 23 Urbino 12 electric with pantograph charging system
- Urbino 12 electric which has been running in Jaworzno for **15 months** has travelled 100,000 kilometres

**Jaworzno**

- Solaris and **Cracow** city operator signed a contract for a delivery of **20 electric buses new-generation**
- There will be 25 Solaris battery-powered buses running in Cracow altogether

**Cracow**

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The Solaris Urbino has been named **best city bus of the year 2017**

- The vehicle has been evaluated by a jury of editors from 20 countries
- It is the **first time** in the history of the competition that the **award goes to a battery-driven vehicle**
Thank you for your attention!