

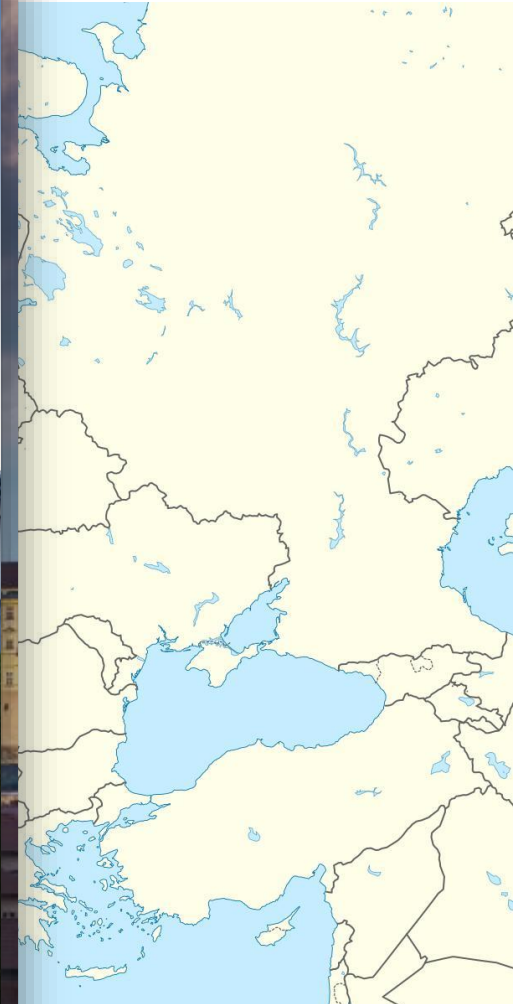
EFFECT of BATTERY CHARGING STATION on TROLLEYBUS LINE



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2018

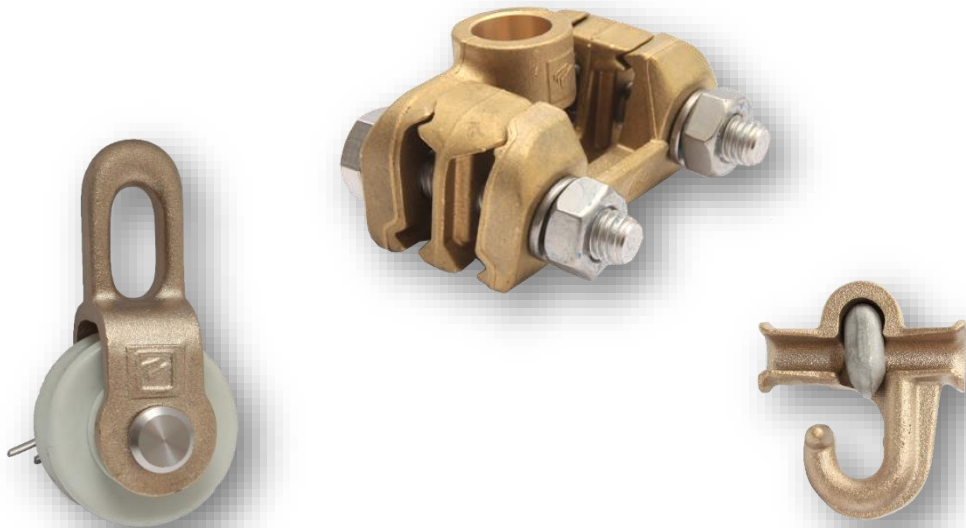


Elektroline Inc., Prague, CZ



OCS for TRAMS and TBUS

- Design
- Manufacture
- Assembly
 - All under one roof



OCS for TRAMS and TBUS

- Fiber-glass cantilevers
- Pole/wall fittings
- Balance weight anchor devices
- Section insulators
- Aerial disconnectors
- Head-span network
- Various clamps, terminals, ropes
- Contact wire suspensions
- Tbus switches and crossings



Electric Vehicles Are The Future



Battery Stations Location – Pilsen & Zlin



Pilsen - OCS vs. Beer



OCS for TRAMS and TBUS

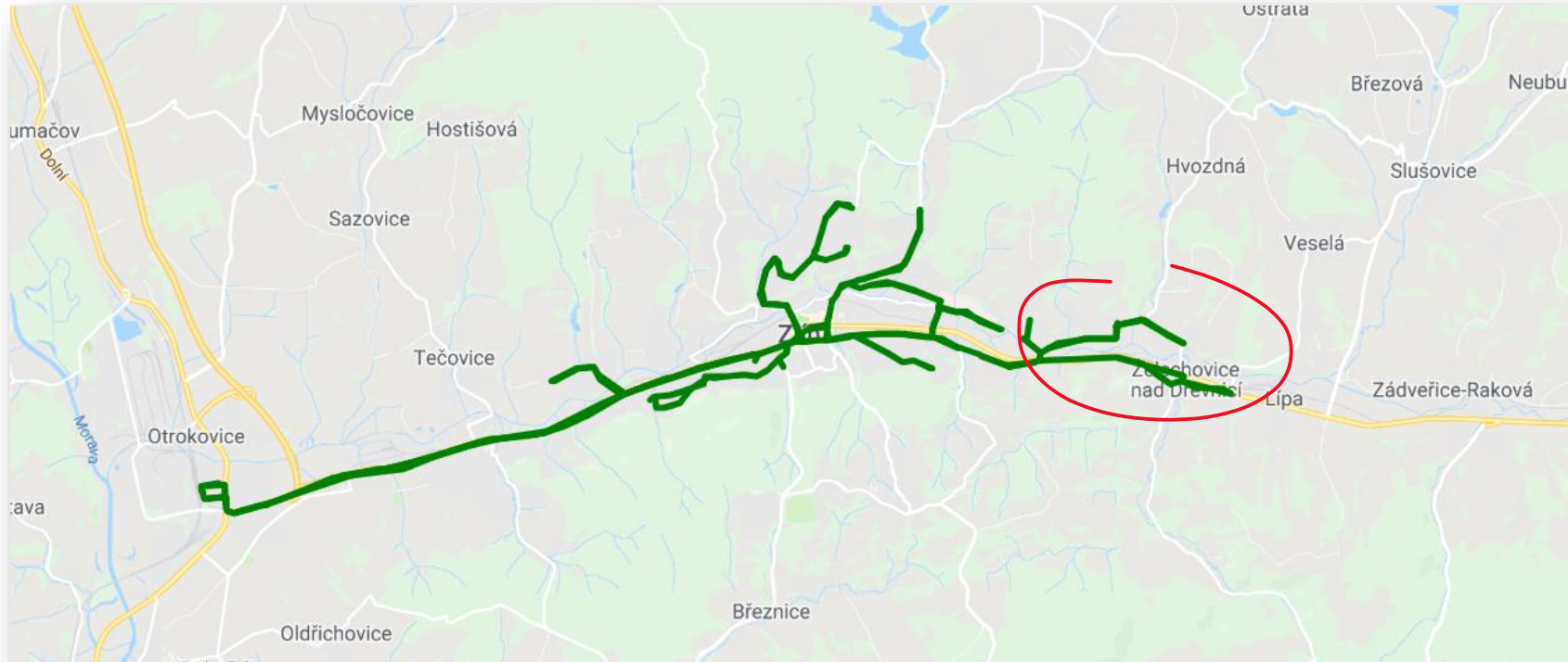


Battery Stations Location – Pilsen & Zlin

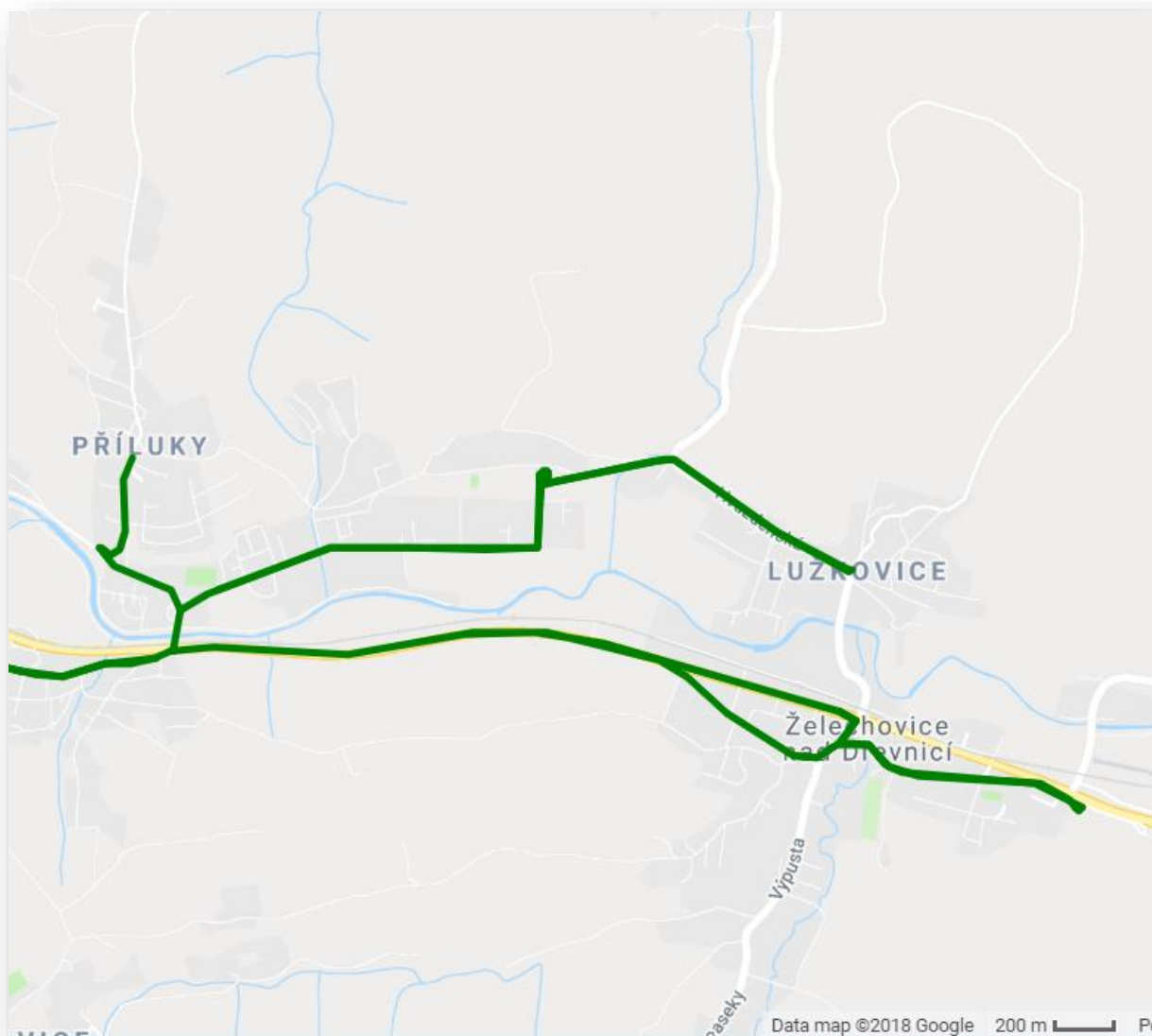


City Trolleybus Routes - Zlin

- 14 Tbus lines
- 53 Tbus units
- 40 diesel buses
- 31,7 millions of passengers per year
- Frequency: 12 mins
- Trolleybus types:
 - 15Tr
 - 16Tr
 - 24Tr
 - 26Tr Solaris (two partial trolleybuses with batteries) – new six tbus to come
 - 27Tr Solaris



Problematic location



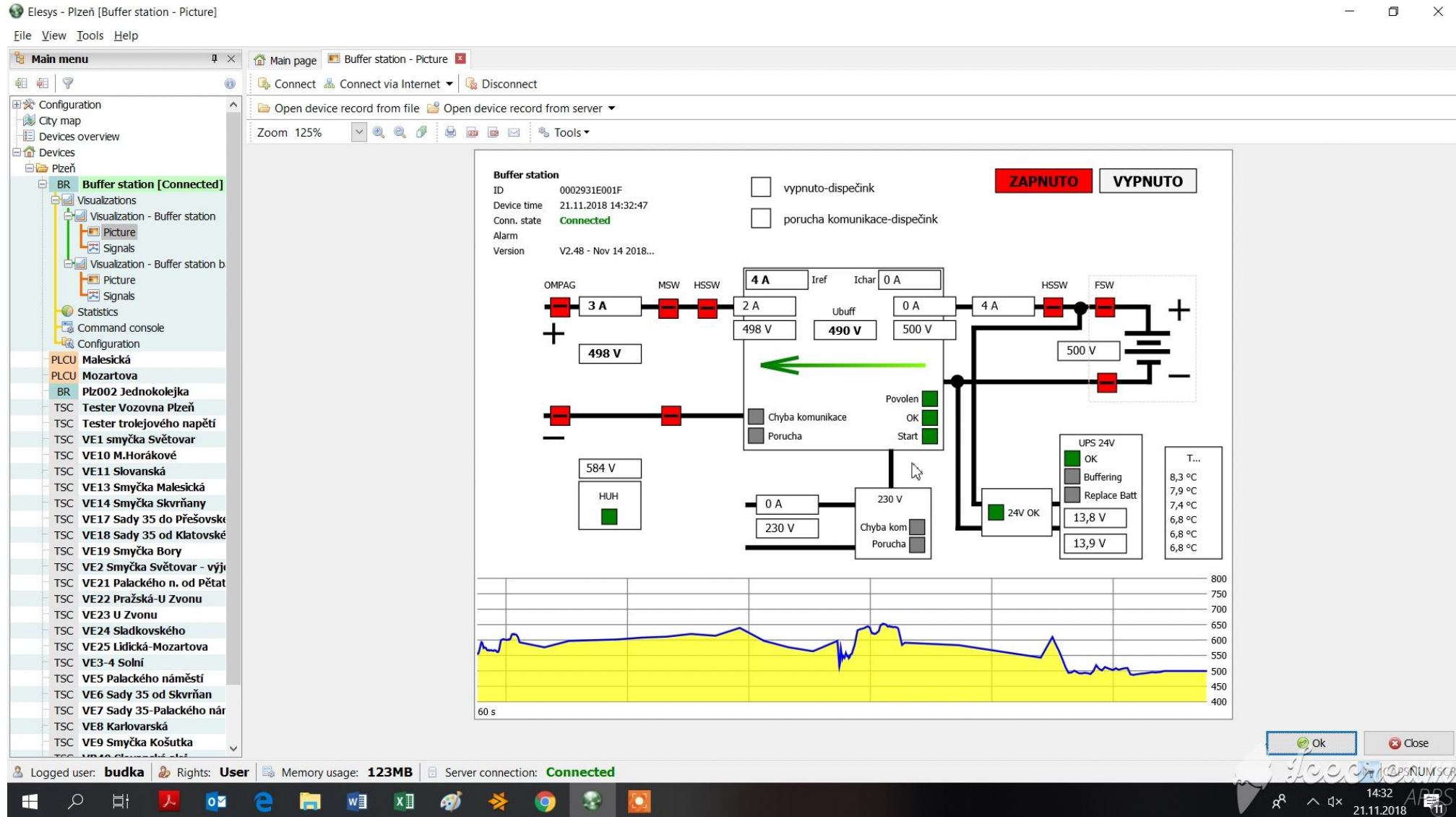
Elektroline measuring and data collecting device (2006)



ELESYS – Remote Management Software

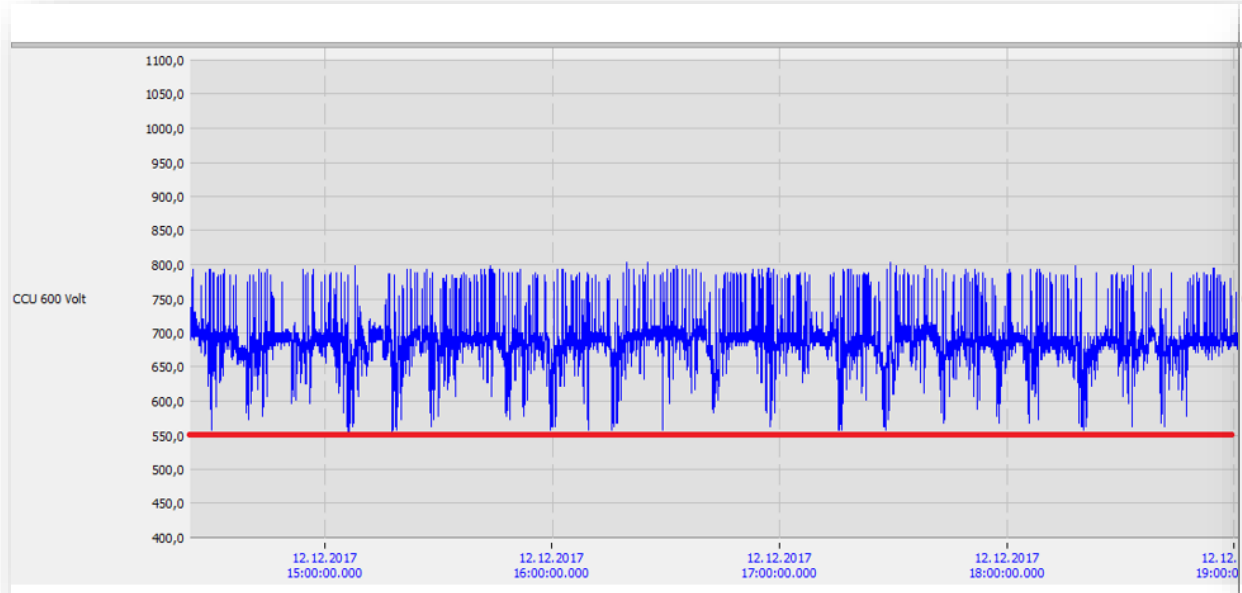


ELESYS – Remote Management Software

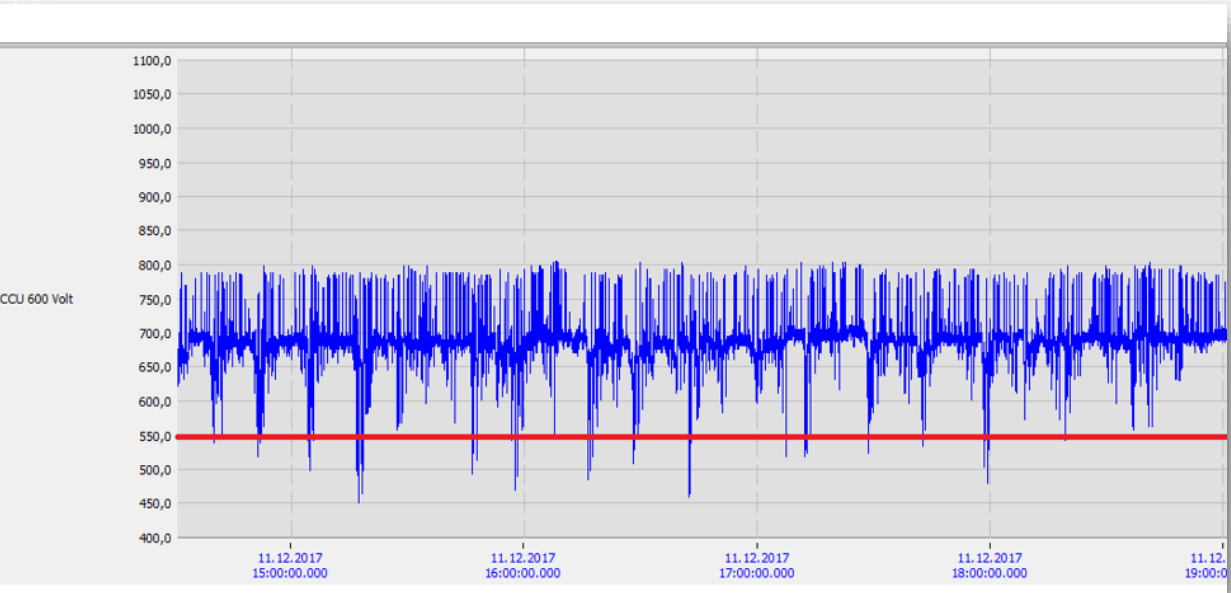


Waveforms

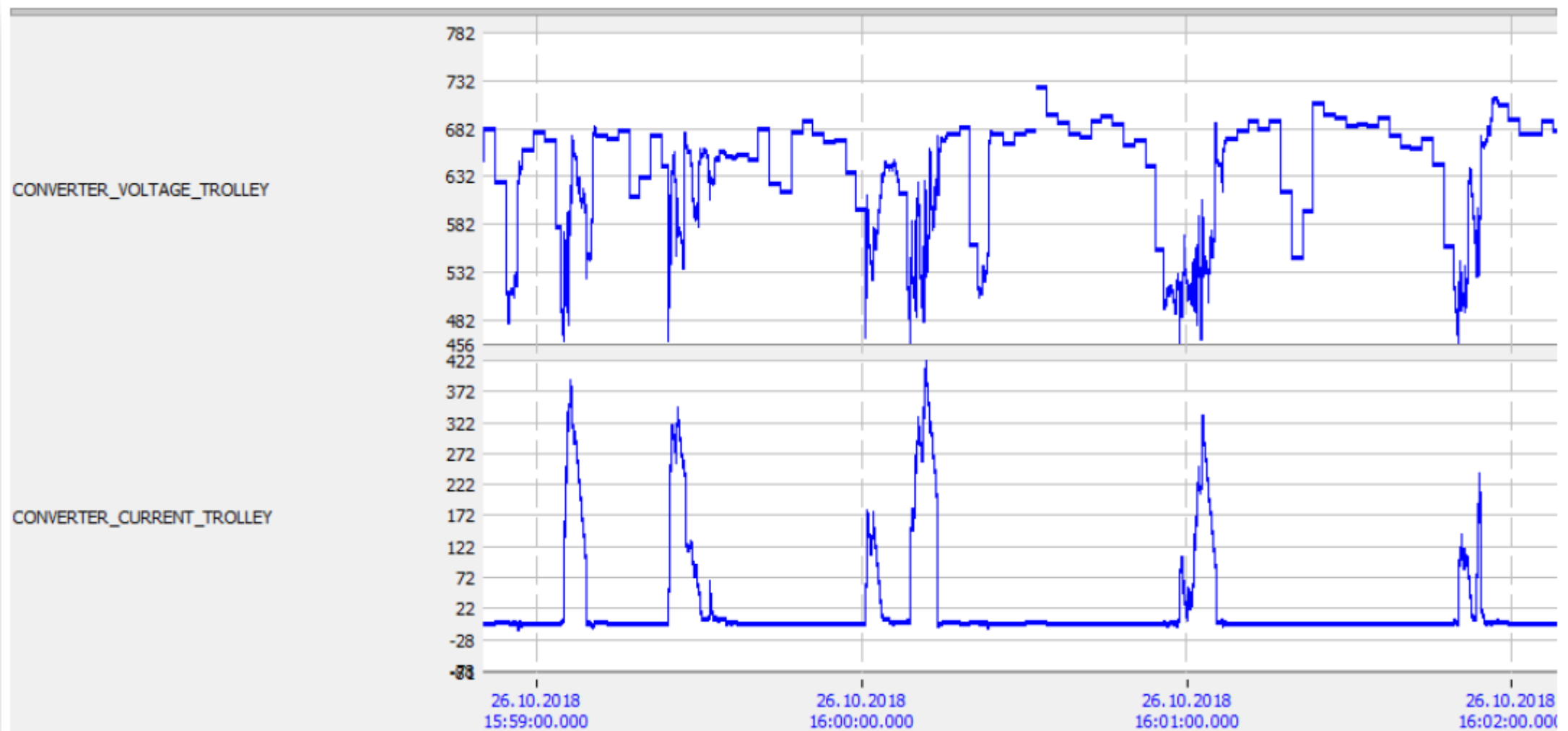
WITH



WITHOUT

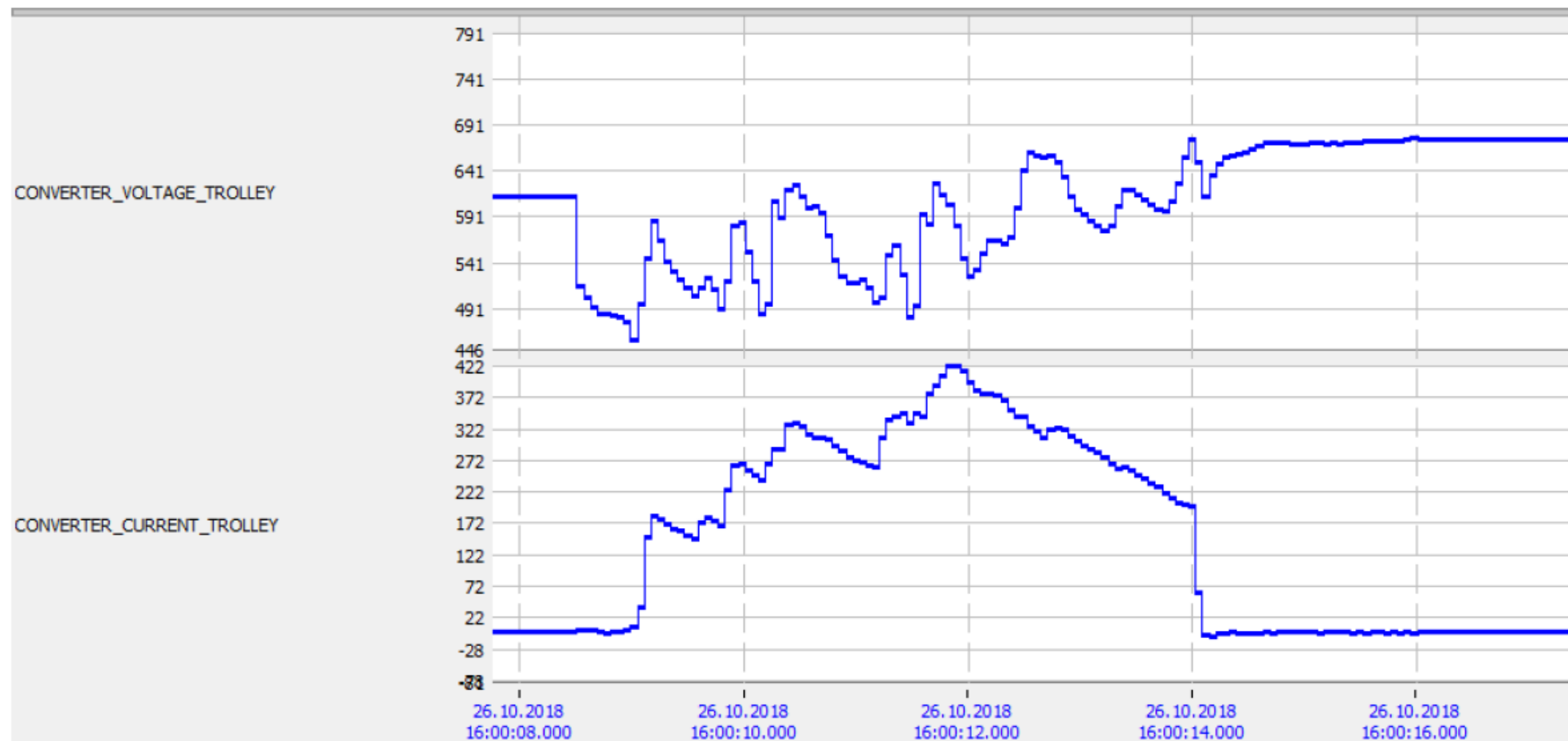


Waveforms



Waveforms

Visualization: Buffer station
Printed: 31.10.2018 15:36:07
Logged user: myslík



Technical Specification

Nominal voltage:	600 V, 750 V
Charging current of batteries:	60 A
Feeding current from BS to OCS:	1000 A
Batteries:	40xPb/200Ah, total 96 kWh
Battery:	balancing
Sensors/supervision for:	Temperature / hydrogen /smoke-fumes
Remote supervision and control:	Support for operational analysis and for maintenance teams
Remote upgrade:	Modifying of configuration etc.
Dimensions (L x W x H):	4.00 x 2.20 x 2.80 m
Weight:	8000 kg
Data transfer into cloud	



Photos of Buffer Station



Photos of Buffer Station



Photos of Buffer Station



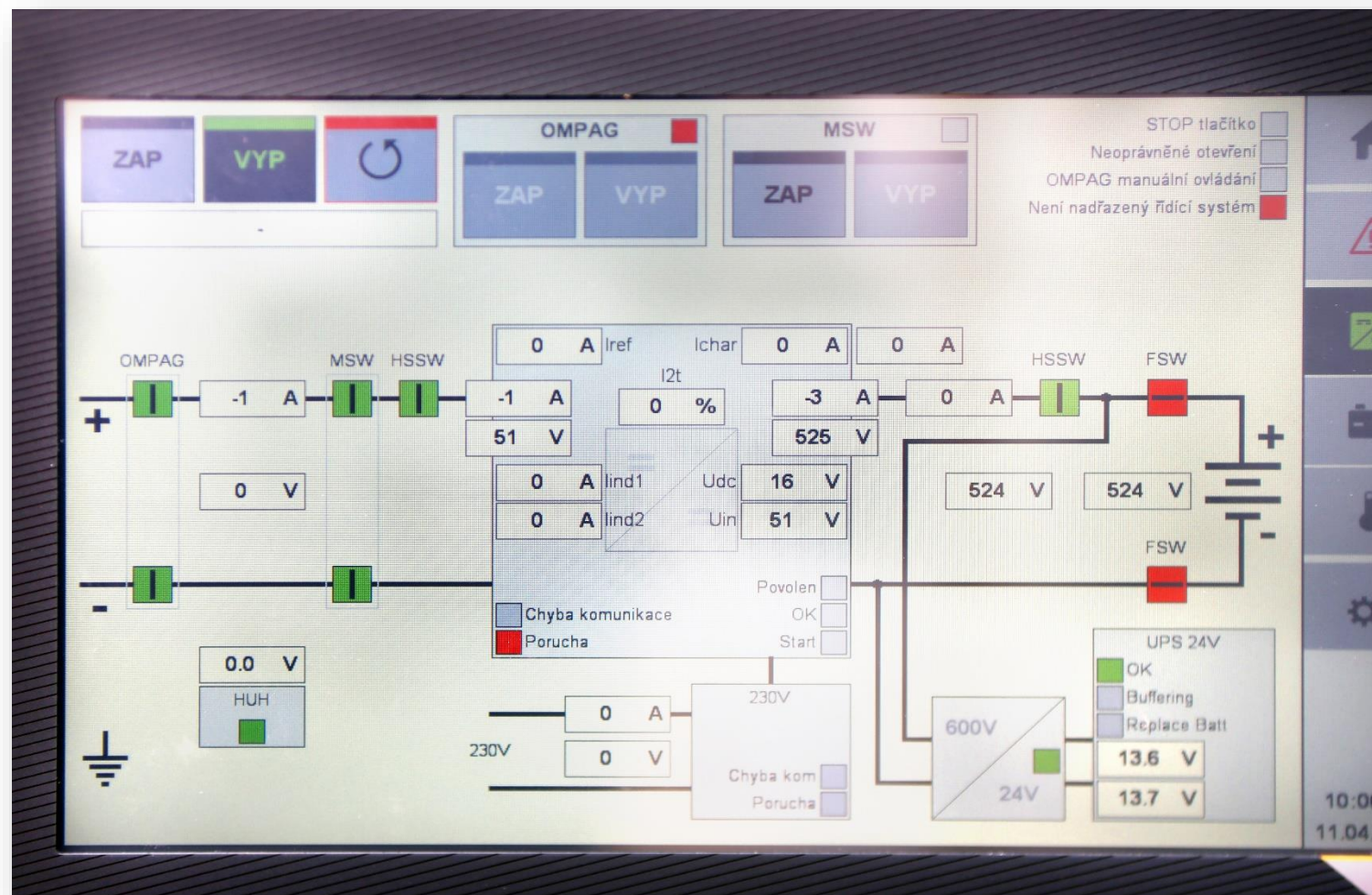
Photos of Buffer Station



Photos of Buffer Station

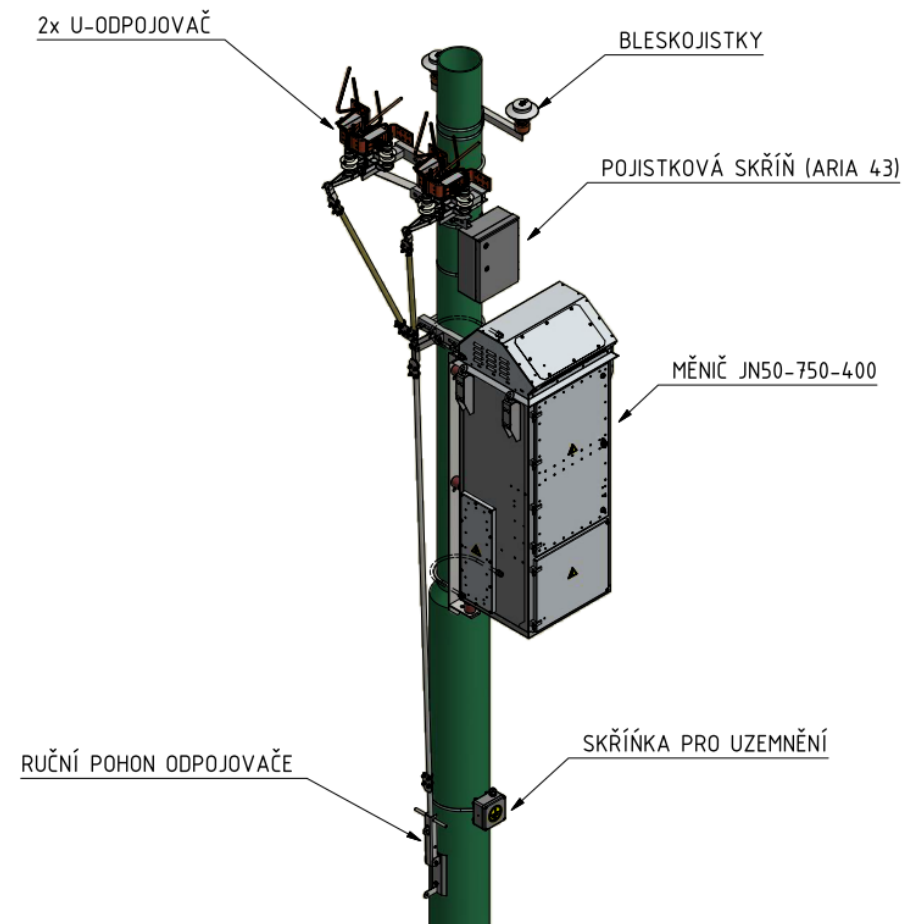
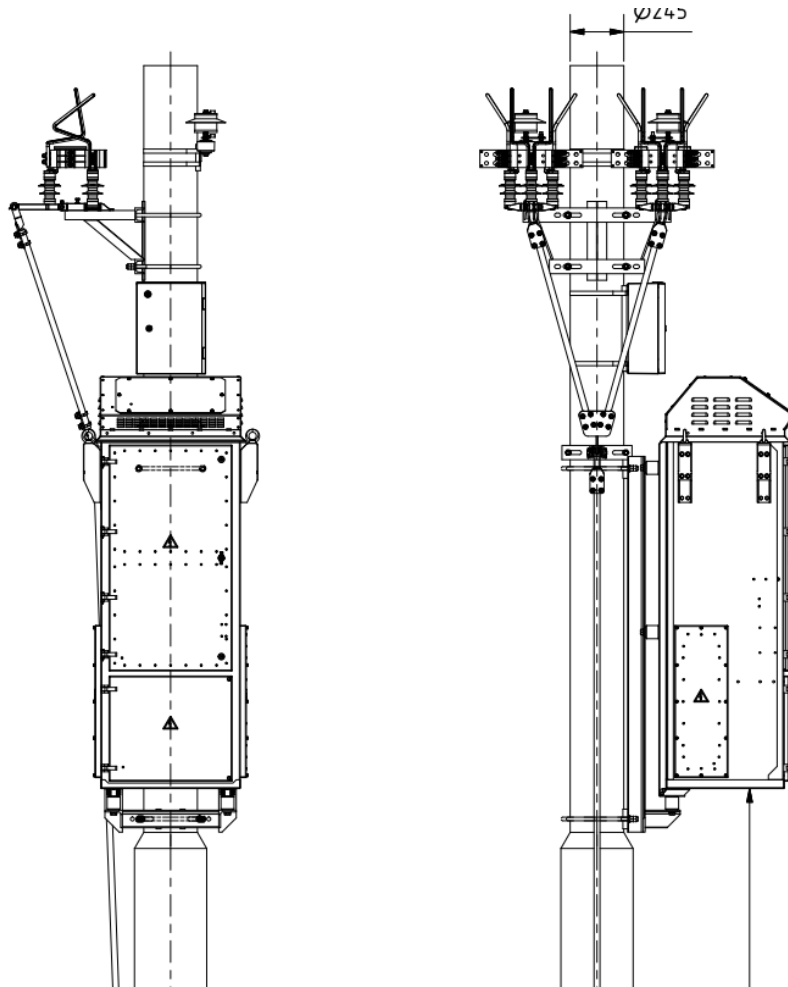


Photos of Buffer Station



DC-AC Invertor & DC-DC Convertor

- Charging and fast-charging of electric vehicles from OCS



DC-AC Invertor & DC-DC Converter



Elektroline

Thank you for your attention.

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