

BATTERY CHARGING STATION and DC-AC Invertor



Tomáš Budka
budka@elektroline.cz
2019

Elektroline Inc., Prague, CZ



GLOBAL HEADQUARTER
PRAGUE, CZE



MORE THAN 300
EMPLOYEES



PRODUCTS SOLD & INSTALLED IN
37 COUNTRIES



ELEKTROLINE WAS FOUNDED IN
1991



APPROX. ANNUAL TURNOVER IS
35+ MILLIONS EUR



PRODUCTS SOLD & INSTALLED IN
200+ CITIES



KILOMETERS OF OCL BUILT
1200+ KMS

Battery Stations Location – Pilsen & Zlin

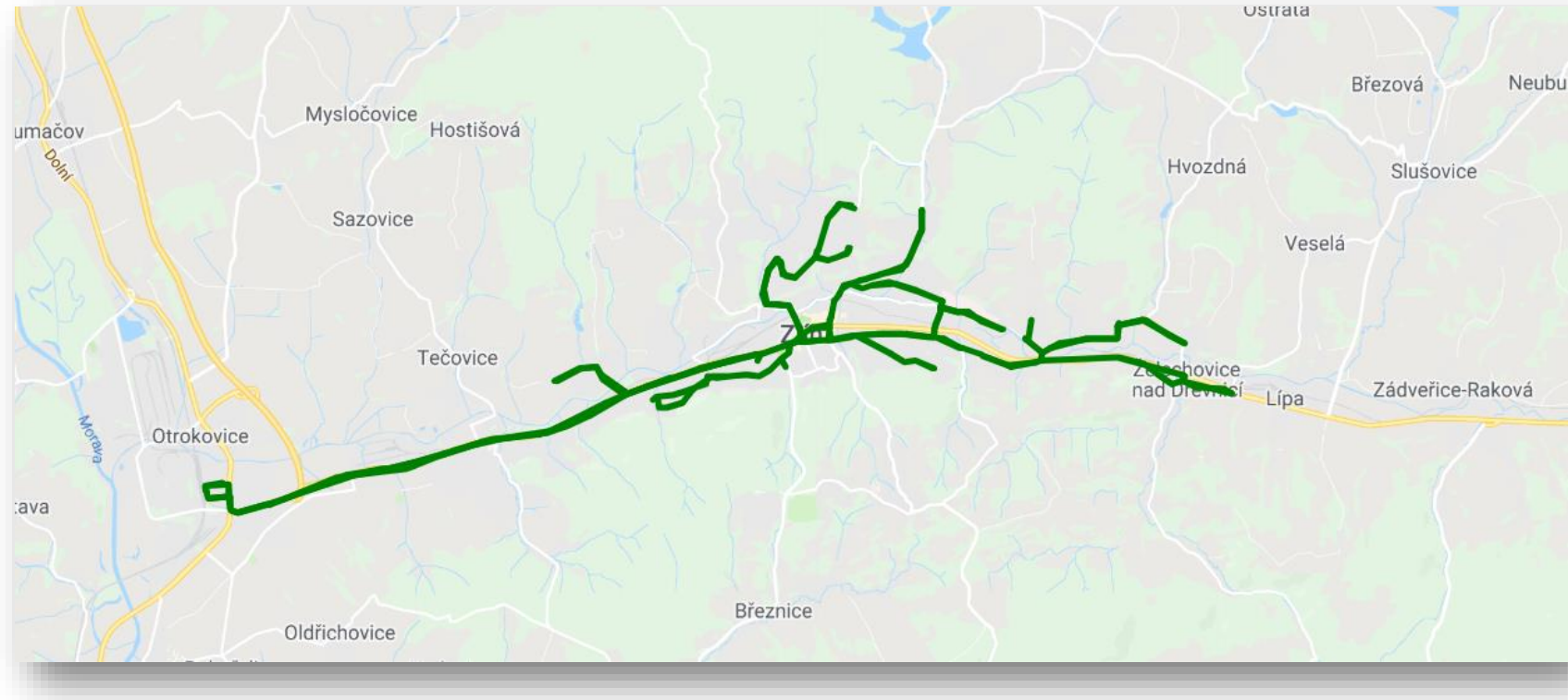


Battery Stations Location – Pilsen & Zlin

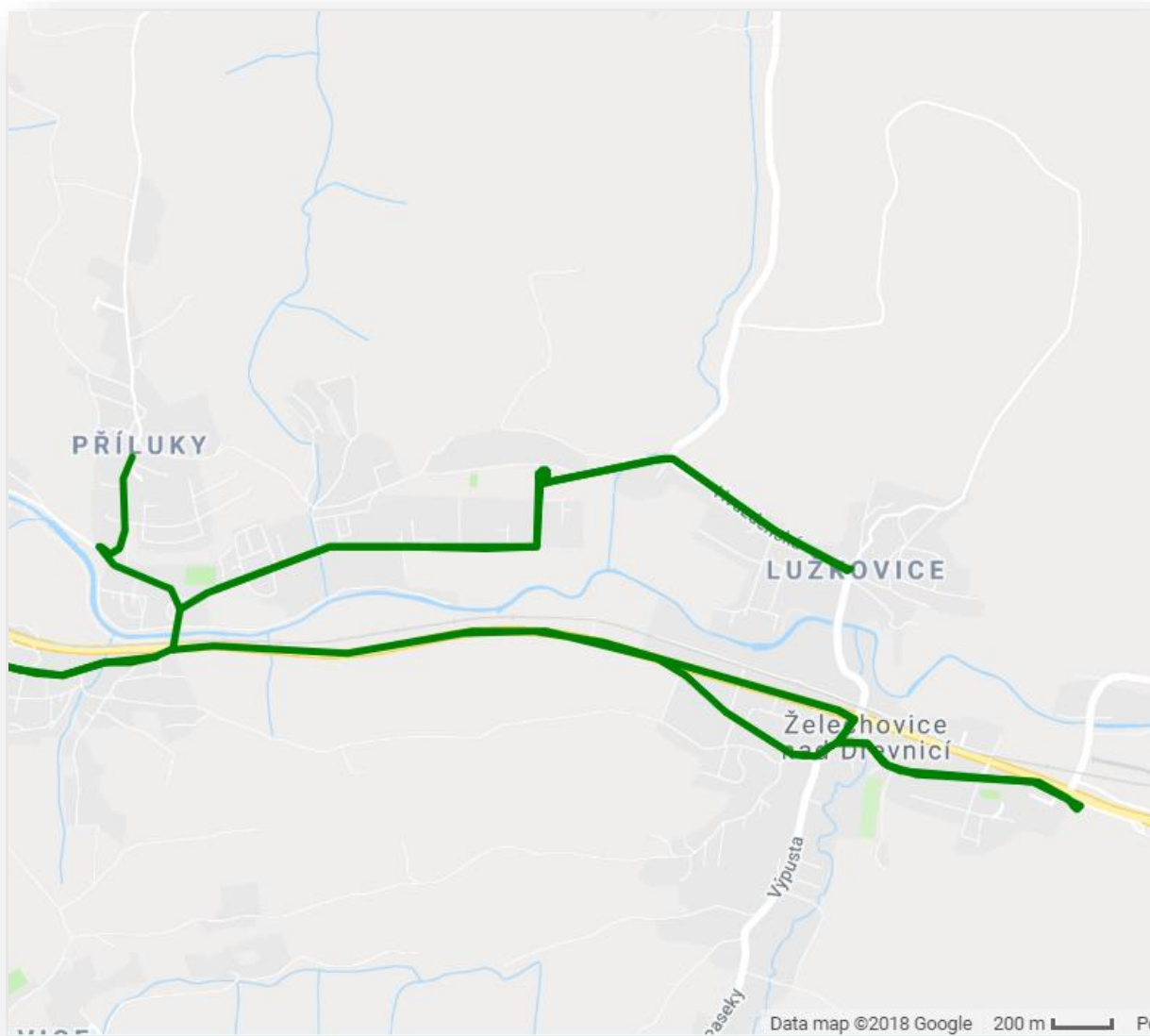


City Trolleybus Routes - Zlin

- 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



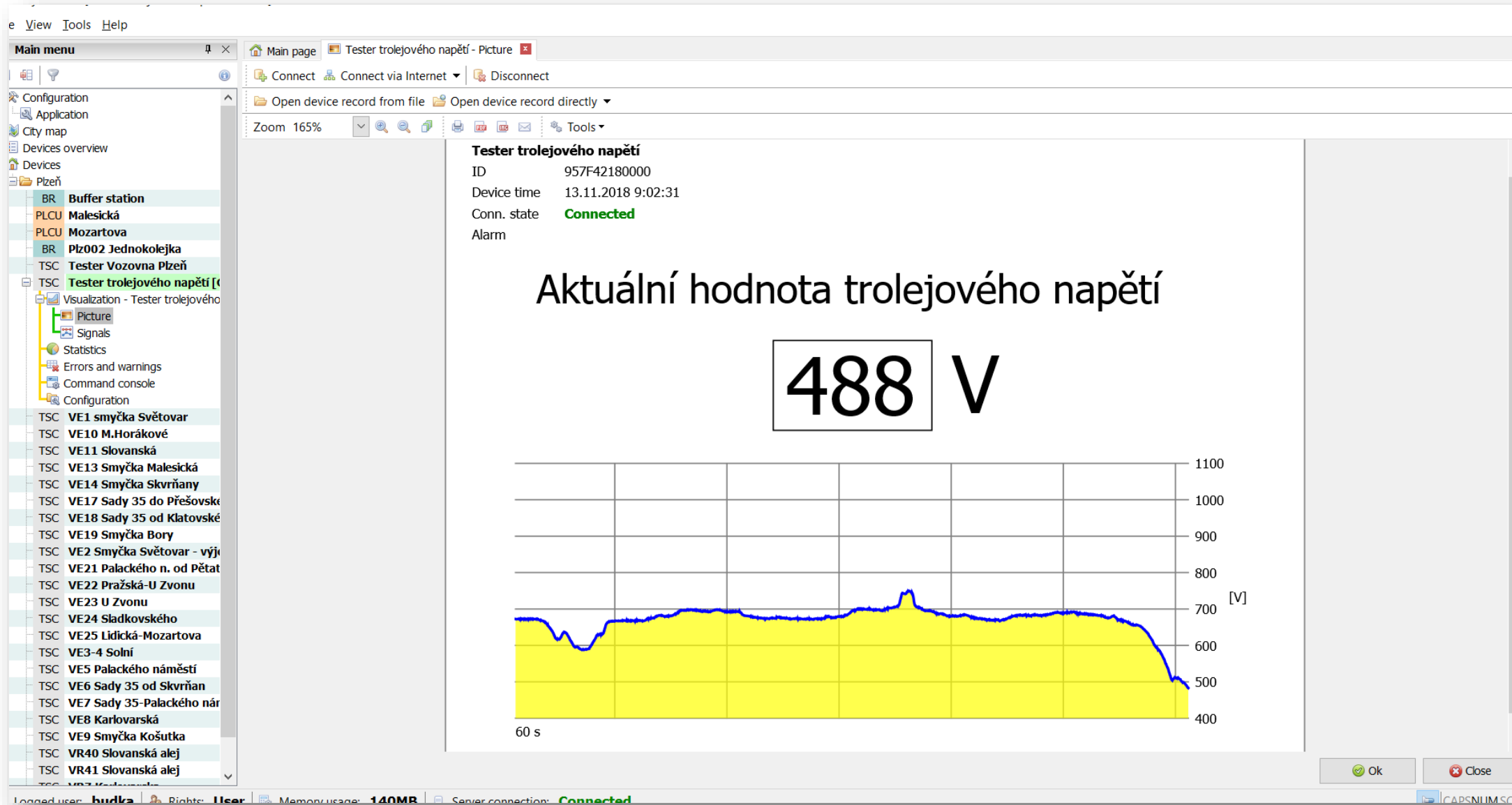
Problematic location



Elektroline measuring and data collecting device (2006)



ELESYS – Remote Management Software



The screenshot displays the ELESYS Remote Management Software interface. On the left, a tree view shows the device hierarchy, with 'Tester trolejového napětí' selected. The main window shows the device's status and a large digital display of the current voltage.

Tester trolejového napětí
ID: 957F42180000
Device time: 13.11.2018 9:02:31
Conn. state: **Connected**
Alarm:

Aktuální hodnota trolejového napětí

488 V

The graph below shows the voltage history over a 60-second period. The y-axis represents voltage in Volts [V], ranging from 400 to 1100. The x-axis represents time in seconds, with a 60-second interval shown. The voltage is relatively stable around 700V, with a small spike to approximately 800V near the end of the period.

60 s

Ok Close

Logged user: budka Rights: User Memory usage: 140MB Server connection: Connected



ELESYS – Remote Management Software



Elesys - Plzeň [Buffer station - Picture]

File View Tools Help

Main menu Main page Buffer station - Picture

Connect Connect via Internet Disconnect

Open device record from file Open device record from server

Zoom 125%

Tools

Buffer station

ID 0002931E001F vypnuto-dispečink **ZAPNUTO** **VYPNUTO**

Device time 21.11.2018 14:32:47 porucha komunikace-dispečink

Conn. state **Connected**

Alarm

Version V2.48 - Nov 14 2018...

OMPAG 3 A MSW HSSW 4 A Iref Ichar 0 A HSSW FSW

498 V 490 V 500 V 500 V

584 V HUH

230 V 230 V Chyba kom Porucha

UPS 24V OK Buffering Replace Batt 13,8 V 13,9 V

T... 8,3 °C 7,9 °C 7,4 °C 6,8 °C 6,8 °C 6,8 °C

60 s

Ok Close

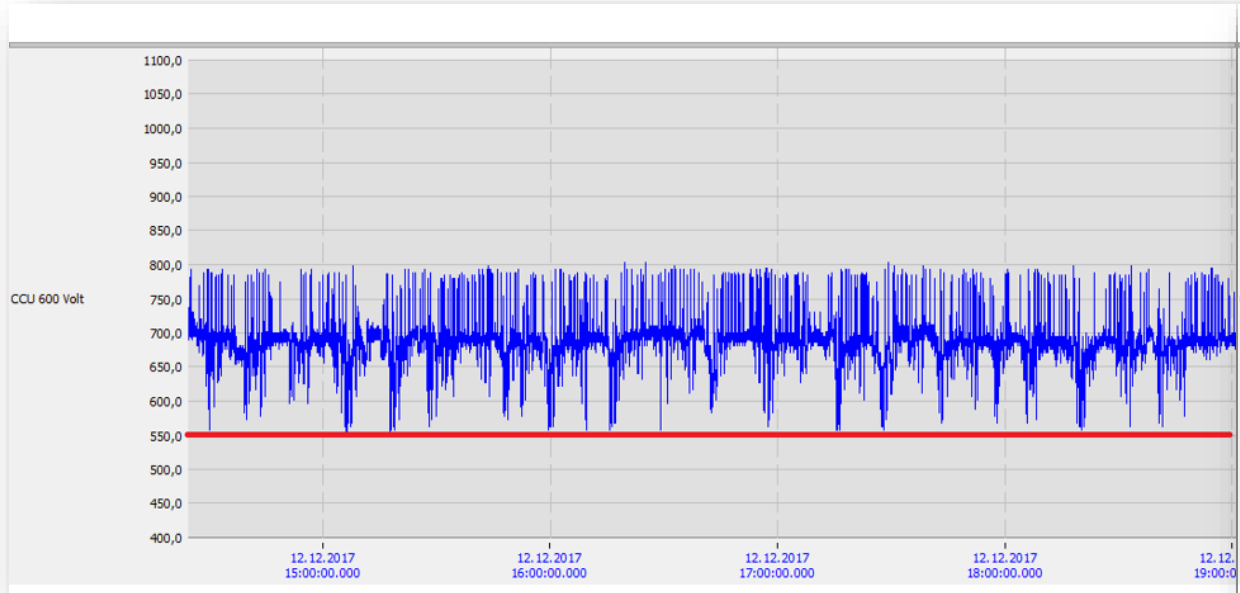
Logged user: budka Rights: User Memory usage: 123MB Server connection: Connected

14:32 21.11.2018

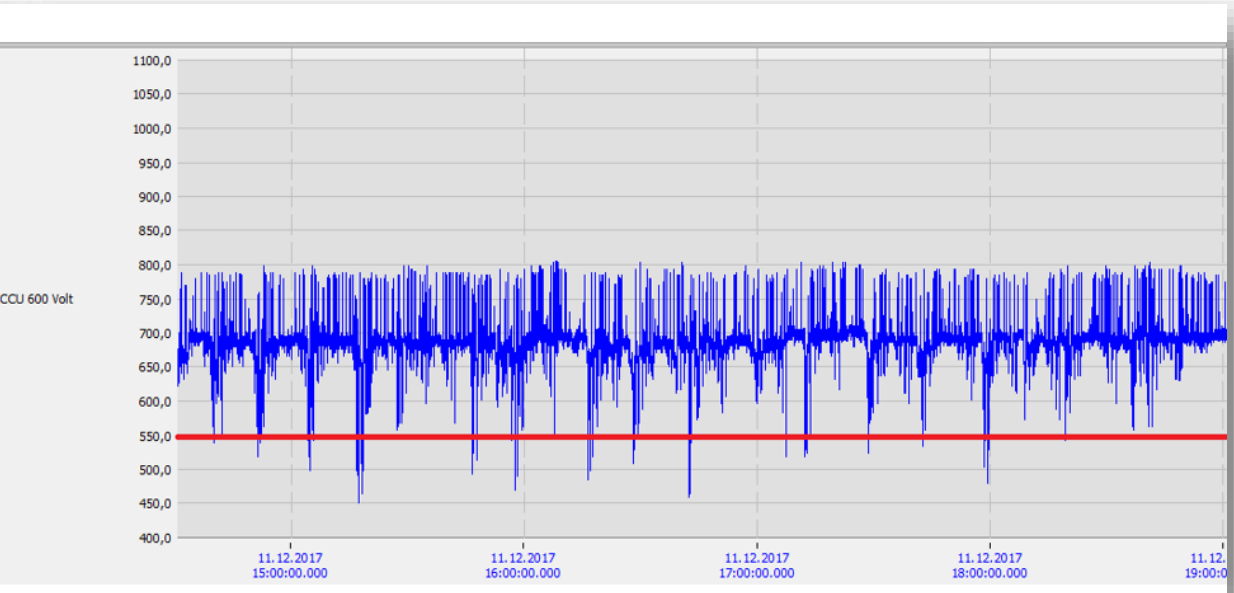


Waveforms

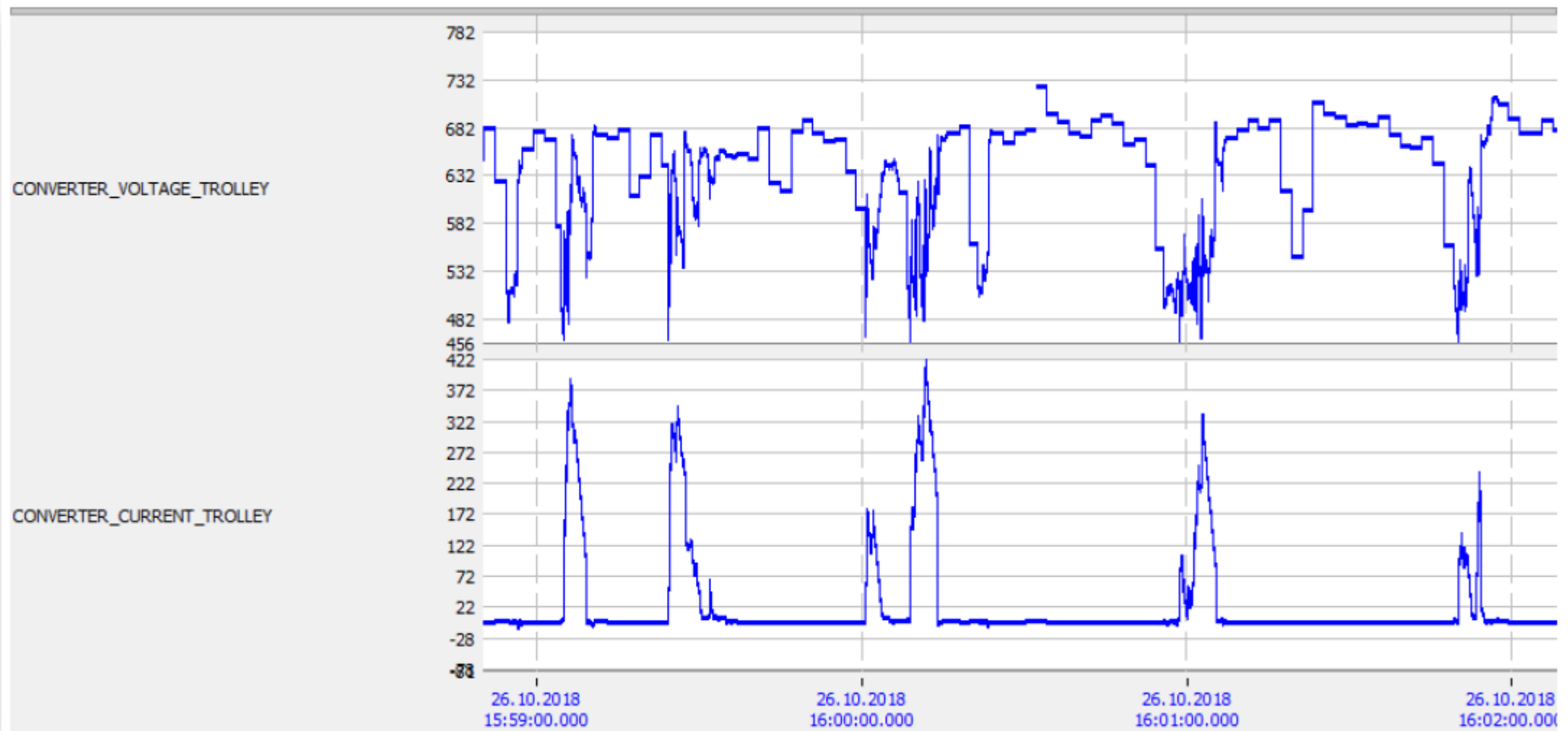
WITH



WITHOUT

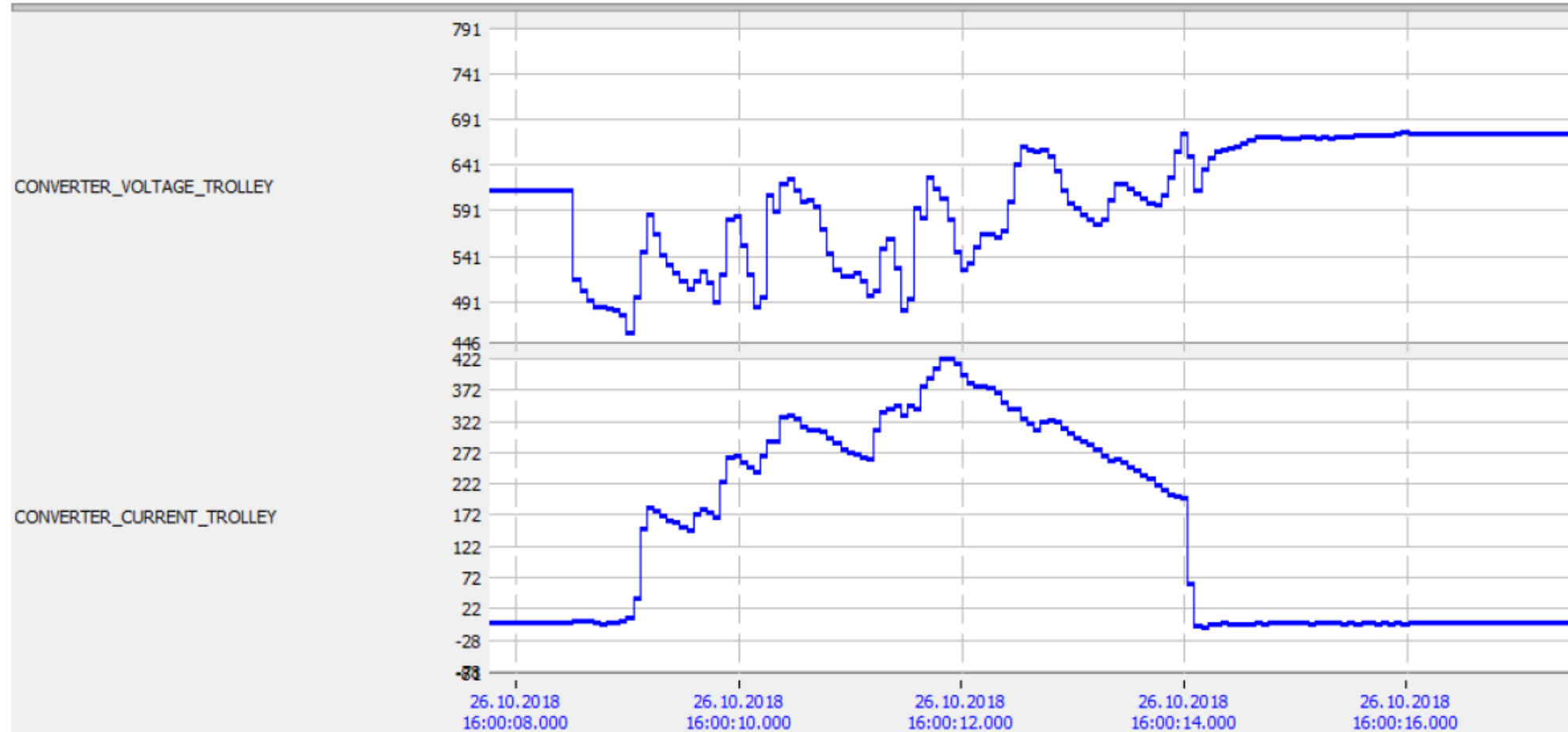


Waveforms



Waveforms

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



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



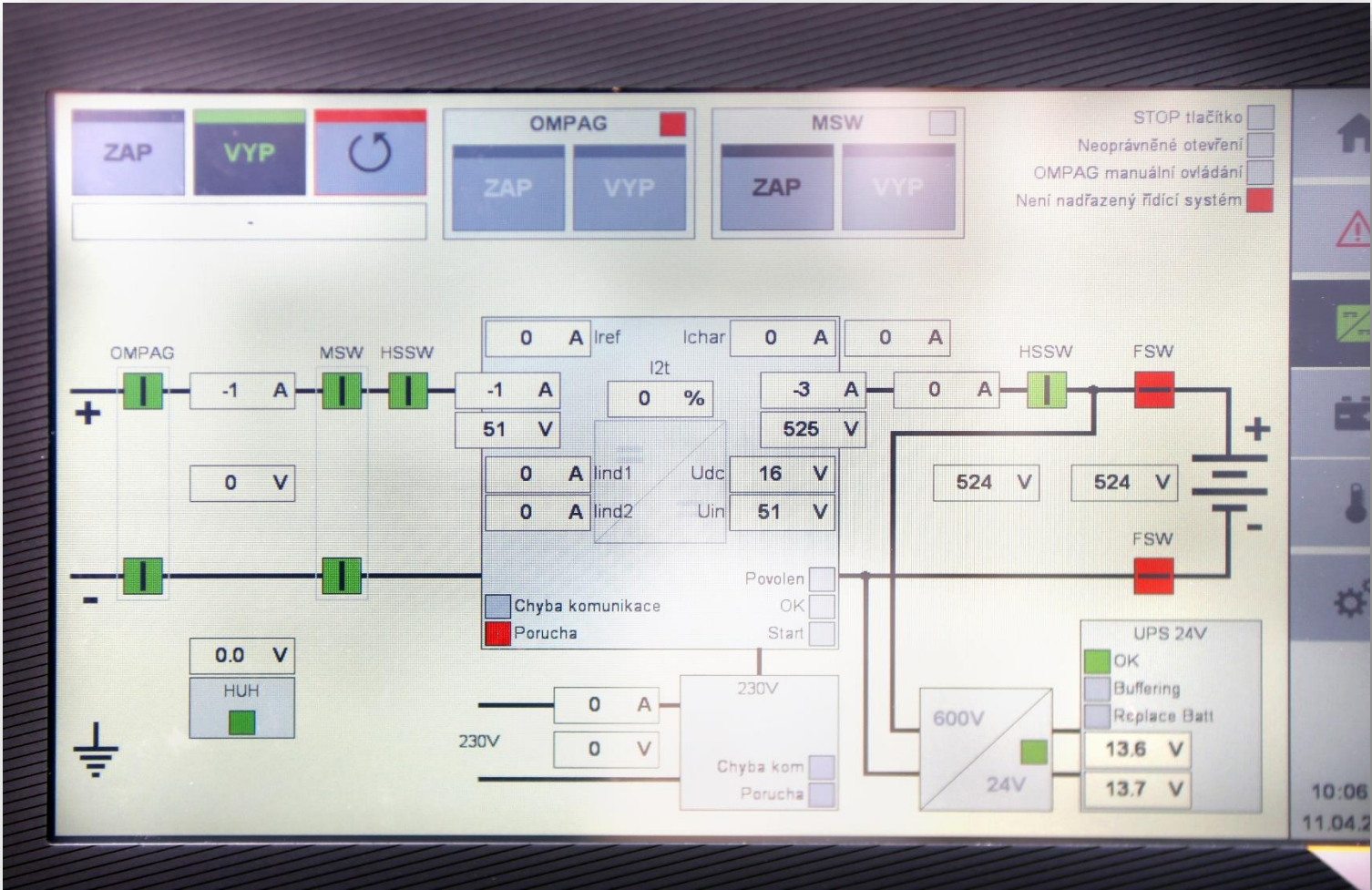
Photos of Buffer Station



Photos of Buffer Station



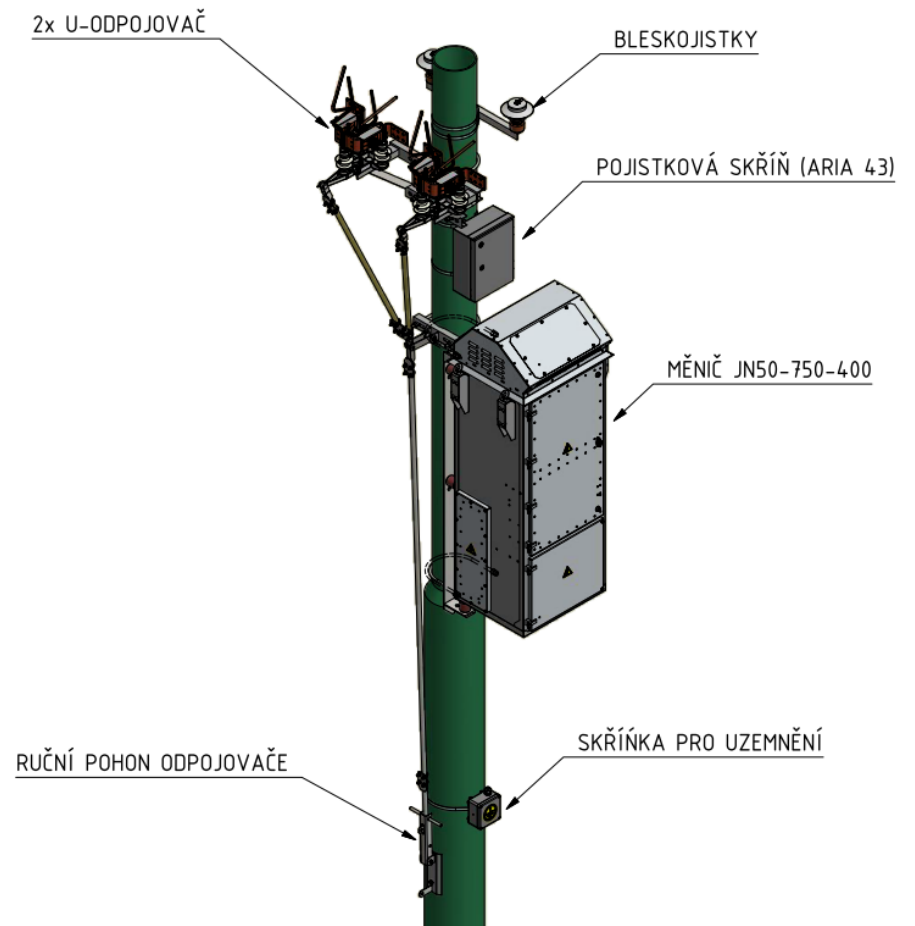
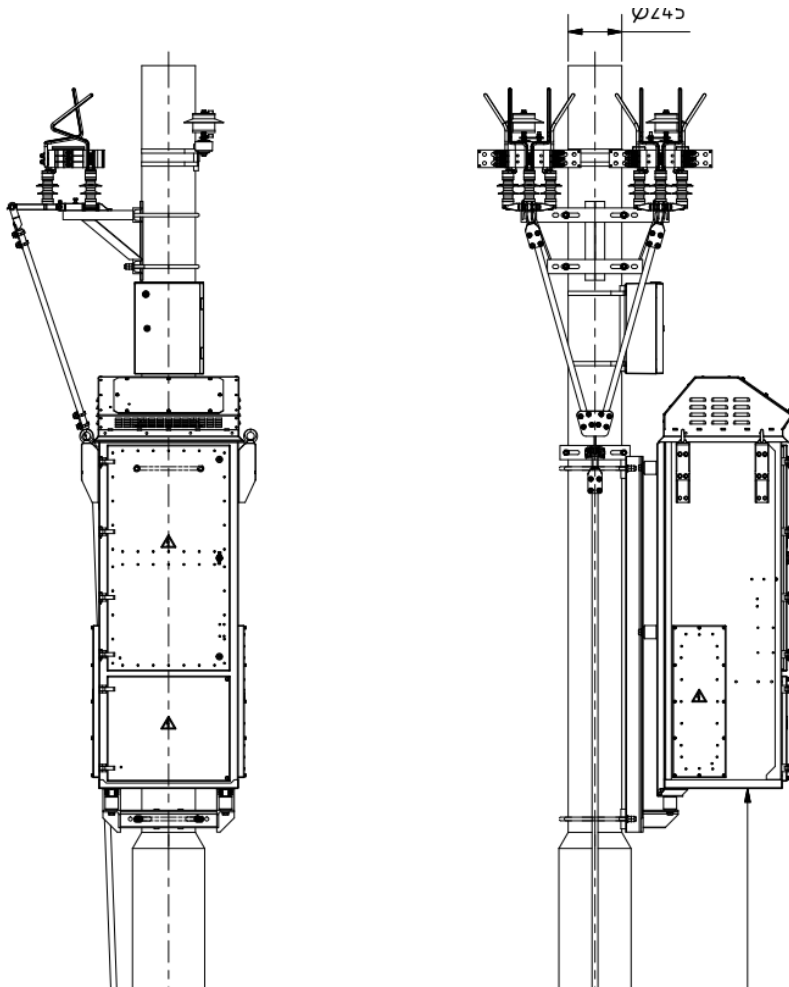
Photos of Buffer Station



Electric Vehicles Are The Future



- Charging and fast-charging of electric vehicles from OCS



DC-AC Invertor



Elektroline

Thank you for your attention.

Tomáš Budka

budka@elektroline.cz

2019

