



SEERC



5th TAC SEERC MEETING

Split, Croatia 28-29, March 2019

HOPS – 62 YEARS OF EXPERIENCE WITH ELECTRICITY TRANSMISSION IN CROATIA

Mario Gudelj, B. Sc. EE, President of the Management Board

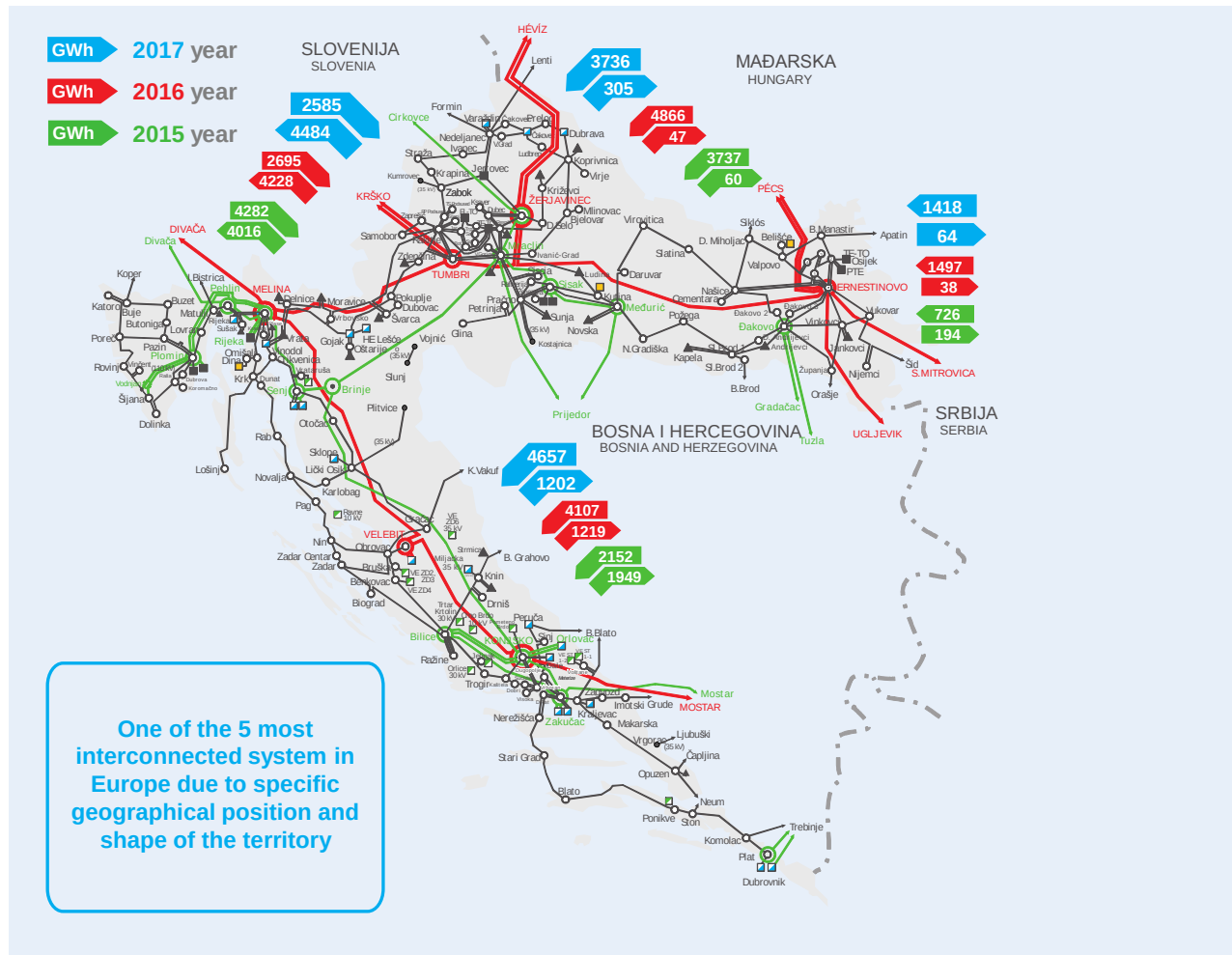
Croatian Transmission System Operator Ltd. (HOPS d.o.o.)



General Data

Title:	Croatian Transmission System Operator Ltd.
Date of Incorporation:	2nd July 2013 (ITO Certification as of 22nd February 2016)
Licence:	Electricity Transmission, incl. System Operation (as regulated public service activity)
Registered Capital:	657,23 mil. EUR
Owner:	Hrvatska elektroprivreda d.d.
Total revenue:	248,23 mil. EUR (2017)
Total expenses:	201,08 mil. EUR (2017)
Investments:	59,13 mil. EUR (2017)
Number of employees:	1105

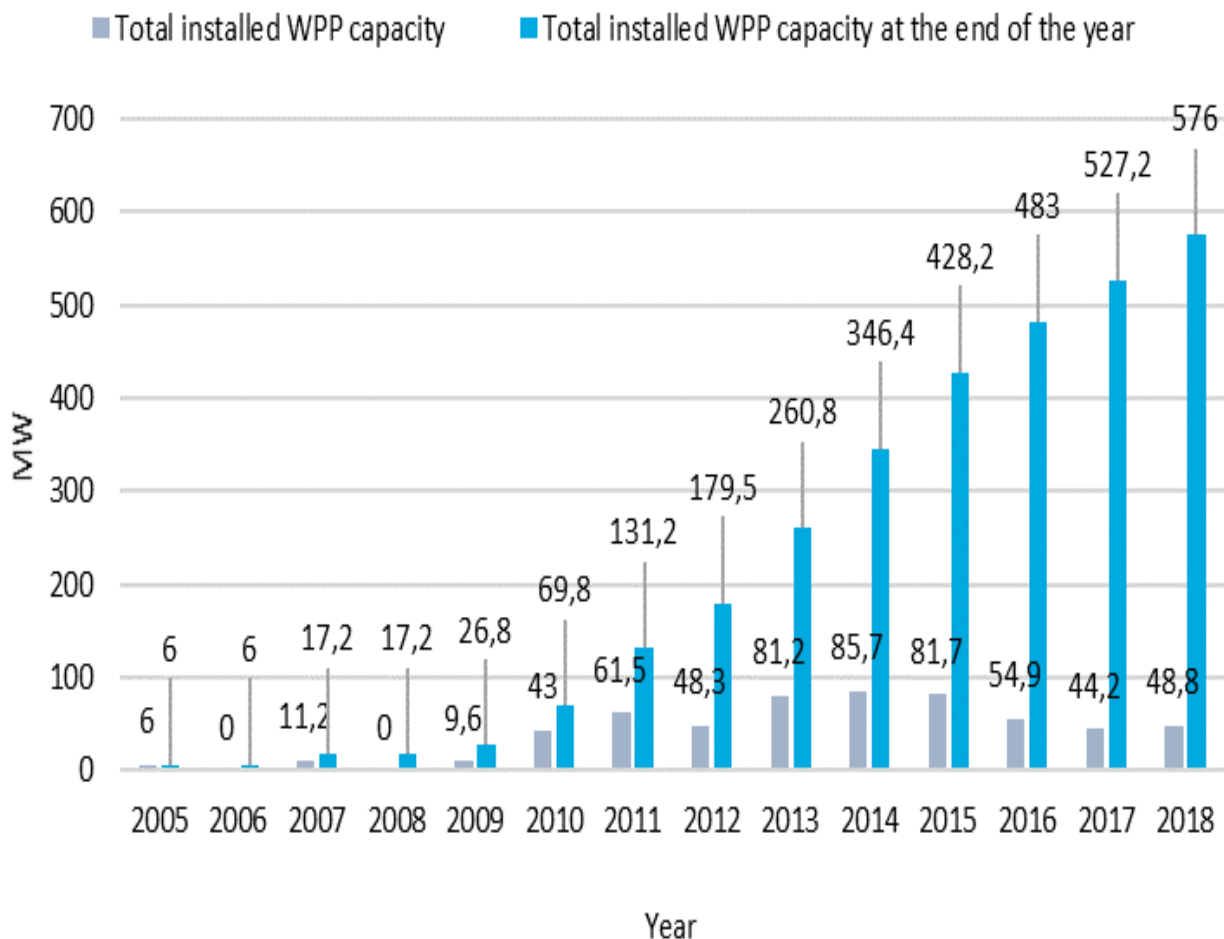
Main Features of the Croatian Power System in 2018



Peak load	3168 MW
Total demand	18.3 TWh
Total net generation delivered to transmission grid	17,3 TWh
Generation mix: 4846 MW HPPs, REC, TPPs (gas, coal, oil), NPP	

Voltage level (kV)	Line length (km)	Substation (number)
400	1246	6
220	1212	14
110	5200	158
TOTAL	7658	178

Time horizon of WPP construction in Croatia



WPP – Future connections

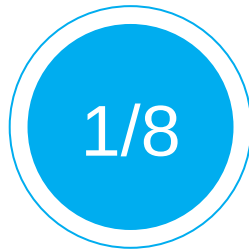


- 3 WPP, 162 MW under construction (in HROTE feed in quota)
- 6 WPP, 300 MW with connection agreement (market based)
- 5 WPP, 300 MW requests connection agreement
- 20 WPP, 1200 MW, in project phase
- Overall: in WPP projects around 1800 MW

HOPS Ownership Participations



Croatia



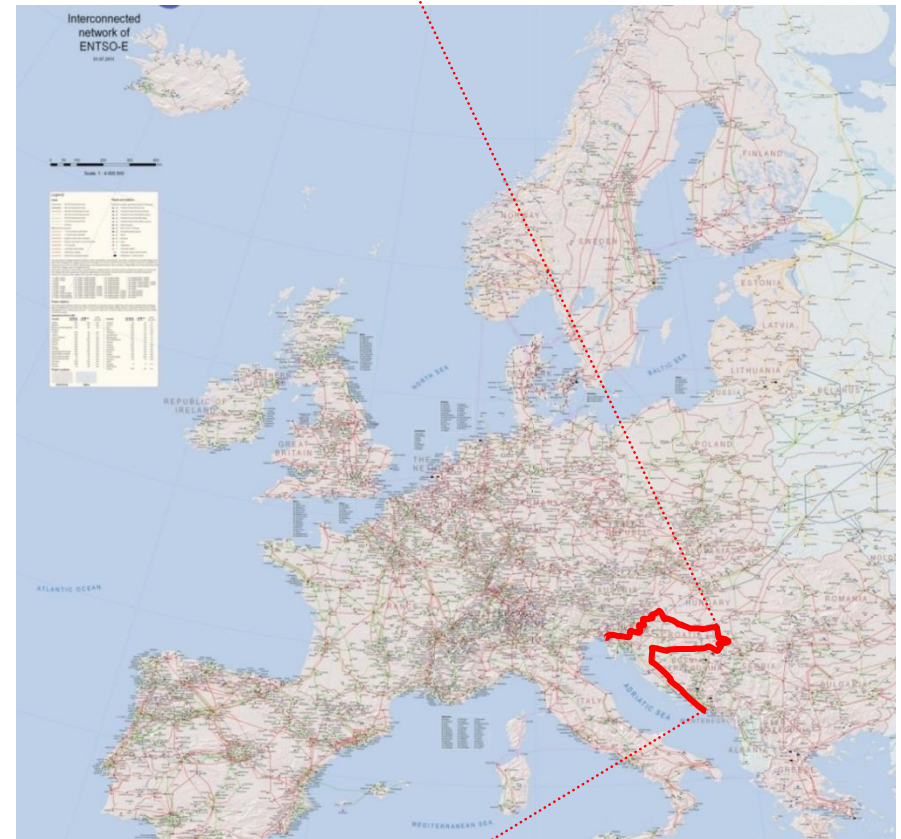
Montenegro



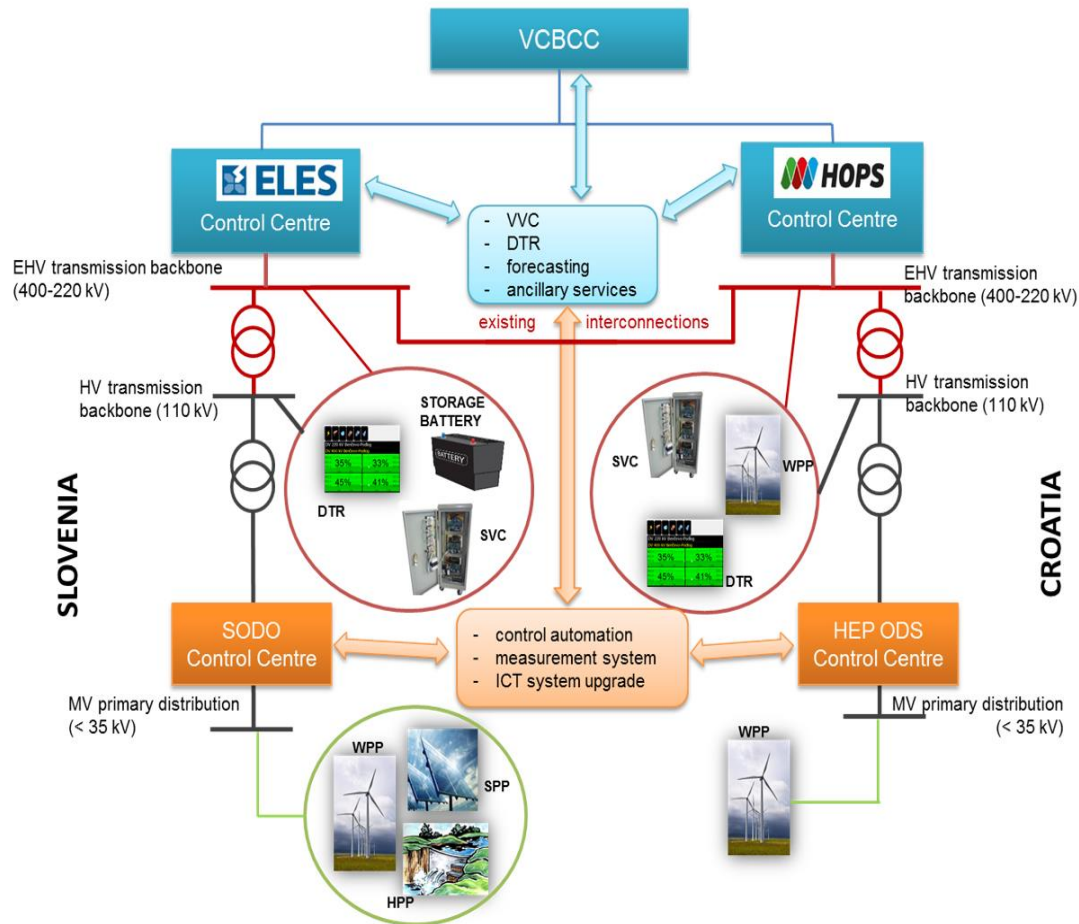
Germany



Luxemburg



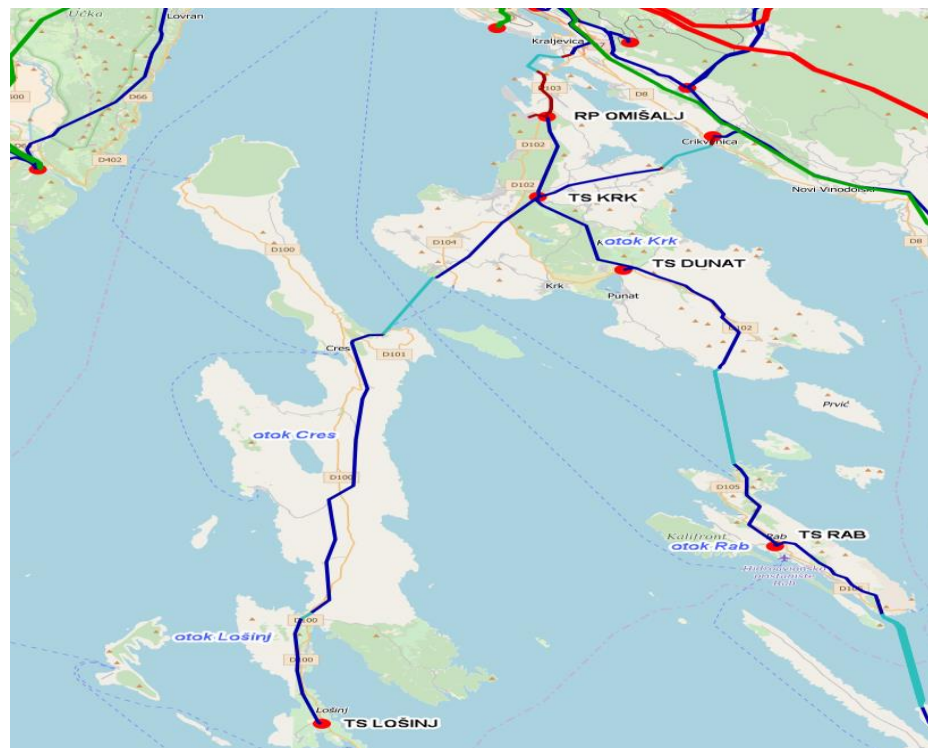
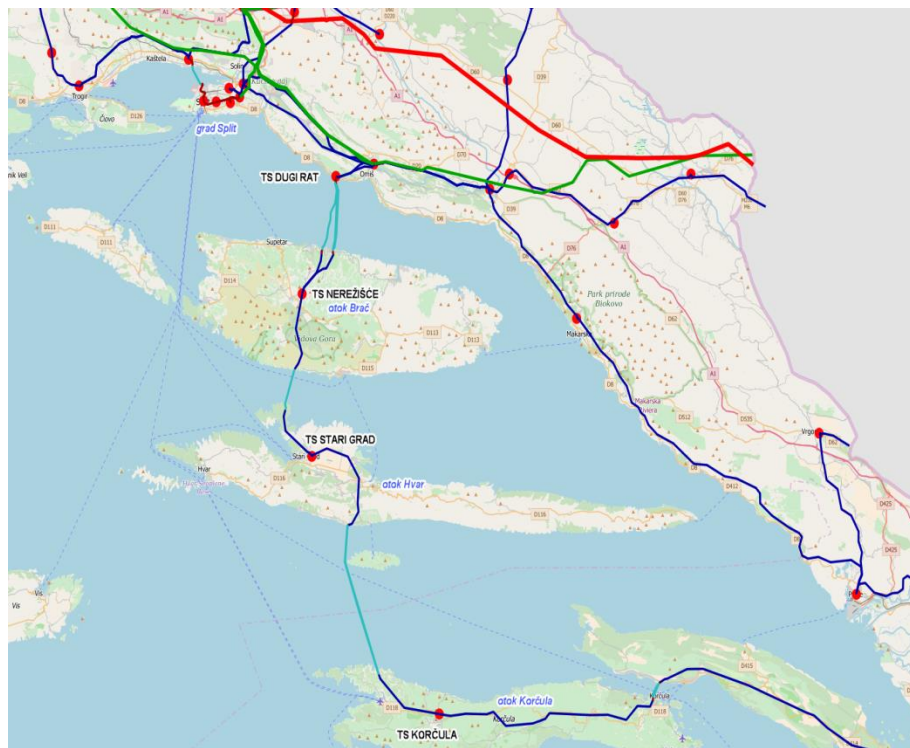
Major Projects of HOPS - Project SINCRO.GRID



- "SINCRO.GRID", the project of Croatian and Slovenian TSOs (HOPS and ELES) and two DSOs (HEP ODS and SODO).
- A Smart Grids project destined towards better integration of regional electricity markets, increase of security of supply and creation of preconditions for increase of RES share on the market
- Project of Common interest, co-financed from the Connecting Europe Facility – CEF, amounting 40.5 mil. € (51 % of investment), of which 13.5 mil. € in HOPS's network
- The project is currently half way to its completion which is planned for 2021

Major Projects of HOPS - Project of Substitution Submarine 110 kV Cables in Adriatic Sea

- Project of substitution of submarine 110 kV cables is a strategic investment project of HOPS in the period from 2018 to 2021.
- Value of the project - 65 mil.€ (for 43000 m of submarine cable) – requested non-refundable EU funds
- Security of supply on islands of Adriatic Sea, development of touristic and industrial capacities on the islands, and significant ecological contribution for preservation of cleanliness of the Adriatic Sea



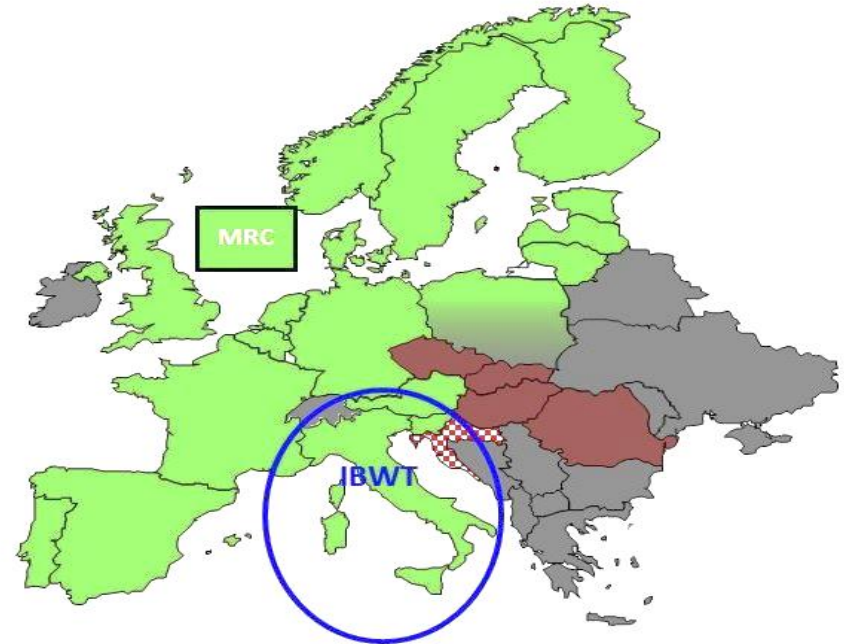
Major Projects of HOPS – Feasibility Study for Strengthening of Main Croatian Transmission North-South Axis Enabling New Interconnection development



- Feasibility Study (including Social and Environmental Impact Assessment Study) for Strengthening of Main Croatian Transmission North-South Axis Enabling New Interconnection development
- EBRD Grant of 1.2 mil. €
- Consortium lead by Energy Institute Hrvoje Požar
- Partners - Elektroprijenos BiH and Independent System Operator in Bosnia and Herzegovina (NOS BiH)
- Expected completion of the Study – 1st Q 2019

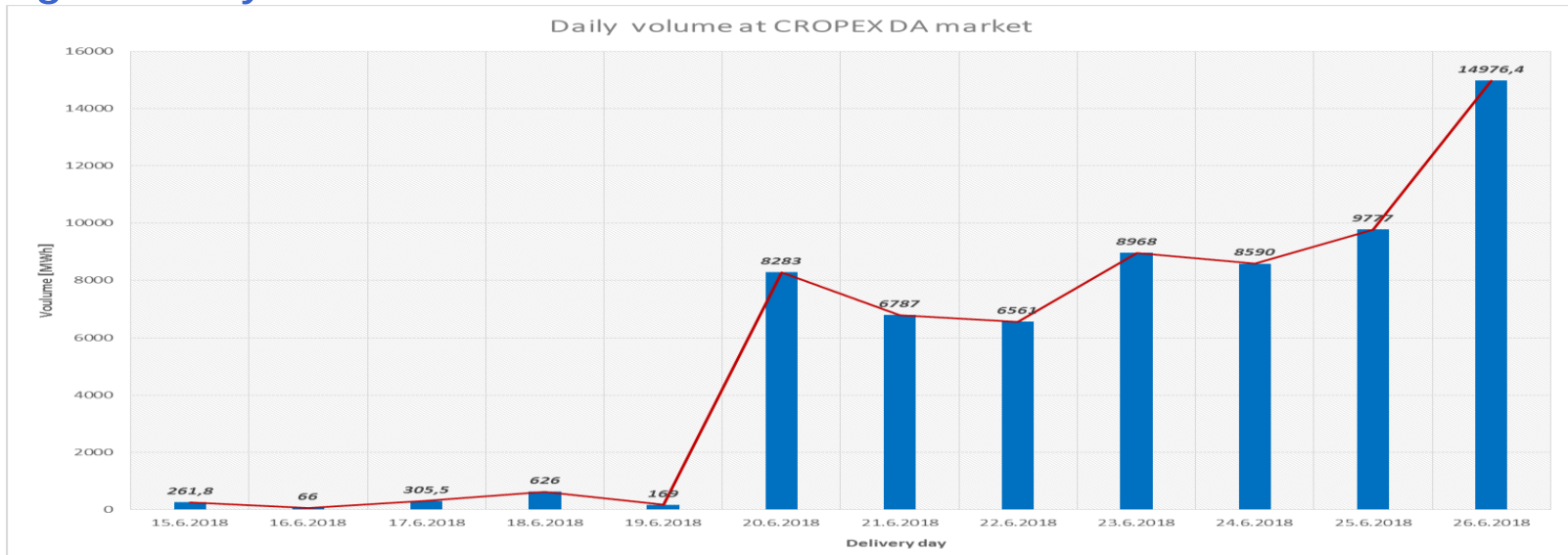
Regional Cooperation – Multi-Regional Coupling – MRC (1)

- 21 countries involved in this project
- HOPS and CROPEX have joined regional IBWT project in March 2017
 - It was a formal start of preparatory process for Croatian day-ahead electricity market coupling through SI-HR border
- GO-LIVE for SI-HR border - 19th June 2018 (for delivery day June 20th).
 - capacity for the SI - HR border are implicitly allocated through the PCR solution for the Day-Ahead markets, making the border a part of the MRC

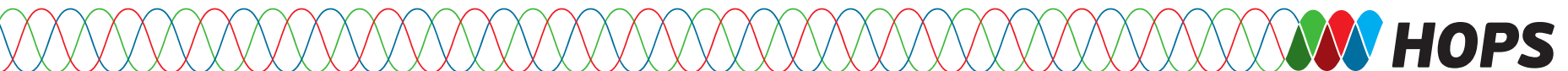


Regional Cooperation – Multi-Regional Coupling (MRC) (2)

- SI-HR Market Coupling results facilitate market liquidity
- Significantly increased traded volume on CROPEX

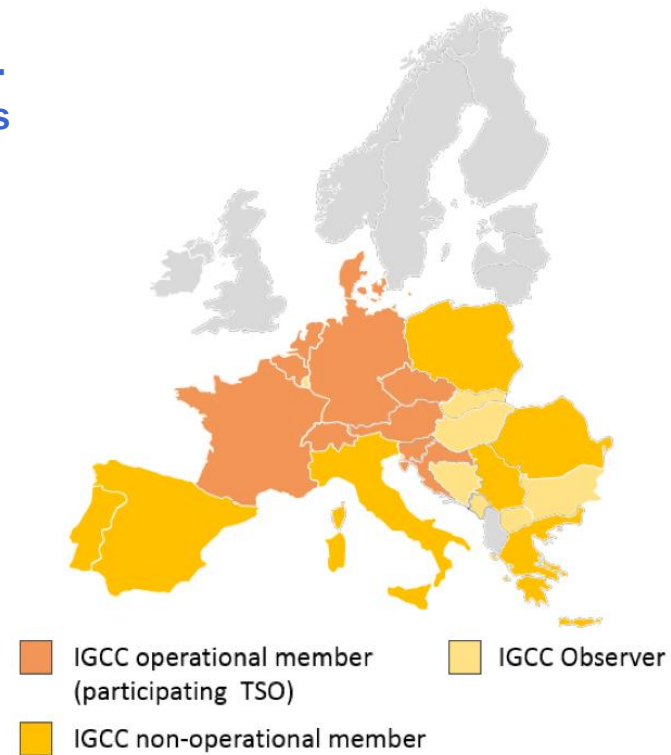


- Commercial power flows in both directions, but mainly in HR->SI direction



International grid control cooperation (IGCC)

- On 1st February 2019 started operational participation TSOs from Croatia and Slovenia, HOPS and ELES, in IGCC.
- The number of TSOs exchanging energy by using IGCC has increased to thirteen TSOs.
- The Imbalance Netting Cooperation (INC), a cooperation on imbalance netting between APG (AT), ELES (SI) and HOPS (HR), came to an end, and it was replaced by IGCC.





Thank You for Your Attention!

Croatian Transmission System Operator Ltd.
www.hops.hr

