



En.Trading 017

SARAJEVO 18TH MAY 2017

CROPEX Experience

Ante Mikulić

Head of Market Operations

CROPEX

- CROATIAN POWER EXCHANGE Ltd. – established on 20th May 2014
 - Jointly owned company (50-50) – CROATIAN ENERGY MARKET OPERATOR Ltd. (HROTE) and CROATIAN TRANSMISSION SYSTEM OPERATOR Ltd. (HOPS)
 - Capital: 12.000.000,00 HRK
 - CROPEX seat: Ulica grada Vukovara 284, Zagreb
 - www.cropex.hr
-

POWER EXCHANGE MODEL OF CROPEX

- PCR serviced PX (PCR service provider Nord Pool, co-owner of PCR algorithm)
 - Full MRC *Member with No Capacity* (until the moment of market coupling)
 - NEMO exchange for Day Ahead & Intraday market coupling
 - CROPEX: Central Counter Party (CCP) for every trade made on trading platform
 - Provides services: trading on Day Ahead & Intraday Market, Clearing and Settlement of all concluded transactions
-

CROPEX's INTERNATIONAL ACTIVITIES

- Participation in the work of MRC JSC and working groups (MRC extensions, PCR algorithm and legal issues)
 - Participation in the work of the NEMO Committee on obligations from the CACM Regulation
 - Participation in Regional Market Coupling Projects (IBWT and NWE CEE FB)
 - XBID Accession Stream member as preparation for XBID market coupling
-

CROPEX's INTERNATIONAL ACTIVITIES (2)

- March 1st 2017 CROPEX signed Addendum to WB6 MoU
 - CROPEX, together with Energy Community Secretariat, announced commitment to completion of market coupling project at least with Bosnia and Herzegovina stakeholders by WB6 MoU deadline (July 1st 2018)
-

MARKET OPERATIONS

Market Operations

**Support to members of
Day Ahead & Intraday
Market**

Market
Surveillance

REMIT

MRC/NEMO

Technical
Support


Placing
orders

Collateral
control


DAILY OPERATIONAL PROCEDURES

- Checking the orders with collaterals
 - Validation of orders
 - Solving platform access problems
 - Placing orders in the name of members
 - By establishing Intraday - members support 24/7, 365 days
-

TRADING PLATFORM - DAM




Day Ahead

 **DIGIPASS**

Username

Key

 **PERSONAL**

Username

Password

[Forgotten your password?](#)




Log In


Powered by Nord Pool

Characteristics of the Day Ahead Market

Product Type	Hourly products
Trading Hours	00:00 CET – 24:00 CET
Gate Closure	12:00 CET
Trade Lot	0,1 MW
Tick Size	0,1 €/MWh
Price Steps	200
Minimum Price Limit	-500,00 €
Maximum Price Limit	3000,00 €

TRADING PLATFORM - DAM

CROP  Day Ahead
Member Training
09:33 CET 2 CROPEXTEST user  


Wed, 23 Nov 


Orders Results

CROPEX_TE...

All Portfolios ▼

Croatia

REFERENCE 

Tue, 22 Nov 


Area Price ▼

ORDERS (0, 2 MISSING) ↕

Hourly (0, 2 missing) ↕

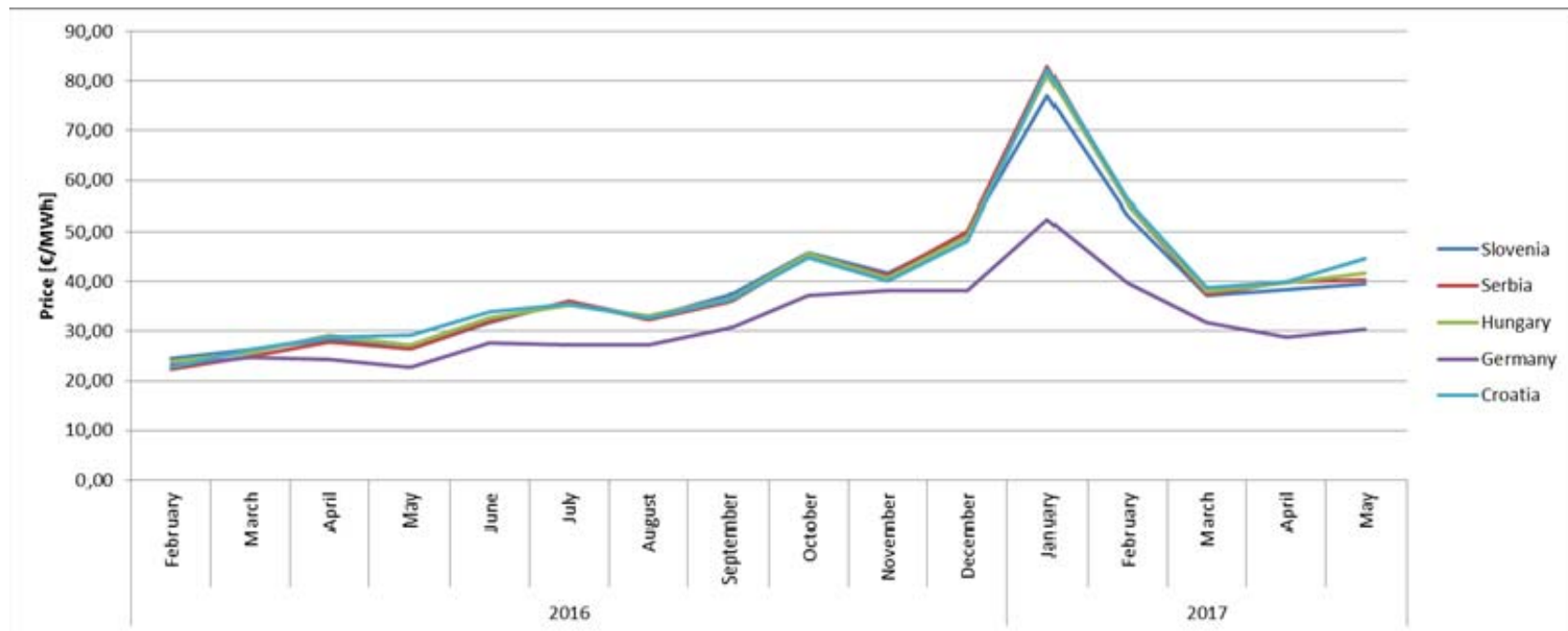
Portfolio	Order(s) at reference price			Sum	Last Updated
CROPEX_TEST_BUY	Create	From Past	Zero		
CROPEX_TEST_SELL	Create	From Past	Zero		

00:00 06:00 12:00 18:00 24:00

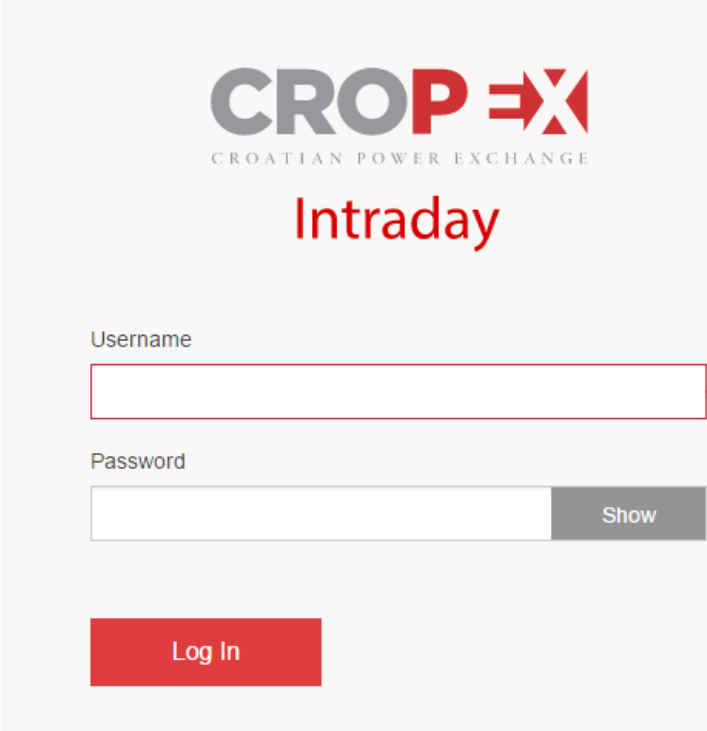
Currency: EUR	at ref. price 											3.000,0 +
Hour 1	00 - 01	20,0	20,0	20,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 2	01 - 02	20,0	20,0	20,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 3	02 - 03	20,0	20,0	20,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 4	03 - 04	20,0	20,0	20,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 5	04 - 05	20,0	20,0	20,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 6	05 - 06	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 7	06 - 07	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 8	07 - 08	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 9	08 - 09	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 10	09 - 10	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 11	10 - 11	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 12	11 - 12	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 13	12 - 13	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 14	13 - 14	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 15	14 - 15	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 16	15 - 16	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 17	16 - 17	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 18	17 - 18	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 19	18 - 19	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 20	19 - 20	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0
Hour 21	20 - 21	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 22	21 - 22	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 23	22 - 23	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Hour 24	23 - 24	20,0	20,0	20,0	10,0	10,0	0,0	0,0	0,0	0,0	0,0	0,0
Sum		-	480,0	480,0	480,0	190,0	190,0	90,0	90,0	90,0	0,0	0,0
Min		-	20,0	20,0	20,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Max		-	20,0	20,0	20,0	10,0	10,0	10,0	10,0	10,0	0,0	0,0

DAM MARKET RESULTS

- 2016 Volume: 285.405,1 MWh
- 2016 Turnover: 8.623.230,92 €



TRADING PLATFORM - ID








The screenshot shows the login interface for the CROP Intraday trading platform. At the top, the CROP logo and 'CROATIAN POWER EXCHANGE' are displayed, followed by the word 'Intraday' in a large red font. Below this, there are two input fields: 'Username' and 'Password'. The 'Password' field has a 'Show' button next to it. At the bottom, there is a red 'Log In' button.

Characteristics of the Intraday Market

Trading starts	15:45 D-1
Trading ends	30 minutes prior to start of Delivery Period
Product Type	Power Hour, Day Base, Day Peak and Block orders defined by members
Trade Lot	0,1 MW
Tick Size	0,1 €/MWh
Order Types	Fill, All-or-Nothing, Fill-or-Kill, Immediate-or-Cancel, Iceberg Order
Minimum Price Limit	-500,00 €
Maximum Price Limit	3.000,00 €

TRADING PLATFORM - ID








CROP Intraday 12:51:30 CEST  Cropex Observer  

Cropex_observer  HR All Products 




Product	(CET/CEST)	Close	Bid		Order Depth	Ask		Trade History	High	Low	Price	Last	Time	DAM	VWAP	Turnover	My Purchases		My Sa
			Qty	Price		Price	Qty										Qty	Price	
PH-04	03:00 - 04:00							5.0 MWh 19.30 EUR	19,30	19,30	19,30	5,0	21:35	22,22	19,30	5,0			
PH-05	04:00 - 05:00							15.0 MWh 20,70 EUR	20,70	20,70	20,70	15,0	21:34	23,72	20,70	15,0			
PH-06	05:00 - 06:00							15.0 MWh 45,90 EUR	45,90	45,90	45,90	16,0	22:46	35,12	45,90	21,0			
PH-07	06:00 - 07:00							9.0 MWh 55,30 EUR	55,30	55,30	55,30	9,0	22:47	44,65	55,30	9,0			
PH-08	07:00 - 08:00							8.0 MWh 62,20 EUR	62,20	62,20	62,20	8,0	18:07	57,25	62,20	8,0			
DP	08:00 - 20:00																		
PH-09	08:00 - 09:00							10.0 MWh 67,40 EUR	67,40	67,40	67,40	10,0	19:16	66,85	67,40	10,0			
PH-10	09:00 - 10:00							12.0 MWh 66,80 EUR	66,80	66,80	66,80	12,0	19:16	66,80	66,80	12,0			
PH-11	10:00 - 11:00							8.0 MWh 66,80 EUR	66,80	66,80	66,80	8,0	19:17	63,50	66,80	8,0			
PH-12	11:00 - 12:00							4.0 MWh 66,20 EUR	66,20	66,20	66,20	4,0	19:17	65,72	66,20	4,0			
PH-13	12:00 - 13:00																		
PH-14	13:00 - 14:00																		
PH-15	14:00 - 15:00	13.30																	
PH-16	15:00 - 16:00	14.30																	
PH-17	16:00 - 17:00	15.30																	
PH-18	17:00 - 18:00	16.30																	
PH-19	18:00 - 19:00	17.30																	
PH-20	19:00 - 20:00	18.30																	
PH-21	20:00 - 21:00	19.30	2,0	71,40															
PH-22	21:00 - 22:00	20.30																	
PH-23	22:00 - 23:00	21.30																	
PH-24	23:00 - 00:00	22.30																	

HR PH-15 DD TH 5 X

Where	Bid Qty	Price	Ask Qty	Where
		51,80	4,0	HR

My Orders  All States  All Products  All Areas  All Portfolios  All Users  Last 2 Days 

#	State	Area	Product	Dir	Qty	Price	Type	Label	When	Who	Portfolio
<i>There are no orders matching the current criteria.</i>											

Ticker - All  All Products  HR only  Today, Yesterday...

Product	Qty	Price	Buyer	Seller	Agg.	When
PH-20170502-22	3,0	67,50	HR	HR	S	7 hours ago
PH-20170502-07	9,0	55,30	HR	HR	S	14 hours ago
PH-20170502-06	16,0	45,90	HR	HR	S	14 hours ago
PH-20170502-02	14,0	21,10	HR	HR	S	14 hours ago
PH-20170502-21	2,0	71,40	HR	HR	S	15 hours ago
PH-20170502-03	5,0	18,40	HR	HR	S	15 hours ago
PH-20170502-04	5,0	19,30	HR	HR	S	15 hours ago
PH-20170502-05	15,0	20,70	HR	HR	S	15 hours ago
PH-20170502-06	5,0	45,90	HR	HR	S	15 hours ago

CROATIAN INTRADAY MARKET

- Continuous trading 24/7, 365 days a year
 - Trading in standard products
 - Each trade has a unique price and quantity
 - Trading in EUR
 - Clearing and settlement within the existing CROPEX clearing and settlement system, integrated with the DAM auctions results
-

INTRADAY MARKET - GENERAL

- Optimization of trading portfolio
 - The greatest benefit for balance responsible renewable energy sources, e.g. wind power plants and unplanned outages of generations units or consumers
 - Transmission System Operator uses it to reduce system balancing costs
-

INTRADAY RESULTS - until 15TH May 2017

- Traded Volume from 26.04. → 4209 MWh
 - Highest daily volume → 656 MWh
 - Highest hourly volume → 105 MW
 - Number of trades → 299
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RENEWABLE BALANCE GROUP

- Optimization of renewable portfolio through the Intraday Market
- Balancing energy → Most expensive energy

Month	Current model [HRK]	50% ID + 50% EN.UR. [HRK]	Savings [HRK]	Savings [%]
January	-8.221.043,96	-6.003.842,49	2.217.201,46	26,97
February	-3.444.796,45	-1.835.778,46	1.609.017,98	46,71
March	-6.449.226,76	-4.773.138,06	1.676.088,70	25,99
Total	-18.115.067,16	-12.612.759,02	5.502.308,14	30,37

Market Coupling project

- Integration of CROPEX market into the MRC through the IBWT (Italian Borders Working Table) project of implicit allocation of capacity at the HR-SI border
 - On 21st March 2017, HOPS and CROPEX officially became IBWT Project Parties
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INTRADAY CAPACITY

- 3 Intraday Markets in the region : BSP Southpool (Slovenia), HUPX (Hungary), CROPEX (Croatia)
 - Intraday cross border capacity on Hungarian border allocated in 4 hour blocks.
 - Intraday cross border capacity on all other Croatian borders allocated hourly.
 - **CROPEX presents the closest and easiest accessible Intraday Market for all the market participants from Serbia, Bosnia and Herzegovina, Montenegro, Albania, Kosovo and Macedonia.**
-

FUTURE PROJECTS

- Implementation of the CACM Methodologies under the NEMO Committee
 - MRC DAM Market Coupling project on the HR-SI border, through IBWT Regional Project
 - Start of the DAM Market Coupling projects on other HR borders (EU and non EU)
 - Start of the Local Implementation Projects (LIPs) for the ID Market Coupling
 - Market Coupling Project based on the flow based capacity allocation inside NWE CEE FB/CORE Project
-

CROPEX MEMBERS



THANK YOU FOR YOUR ATTENTION.
