



Changes in OTE's day-ahead electricity market

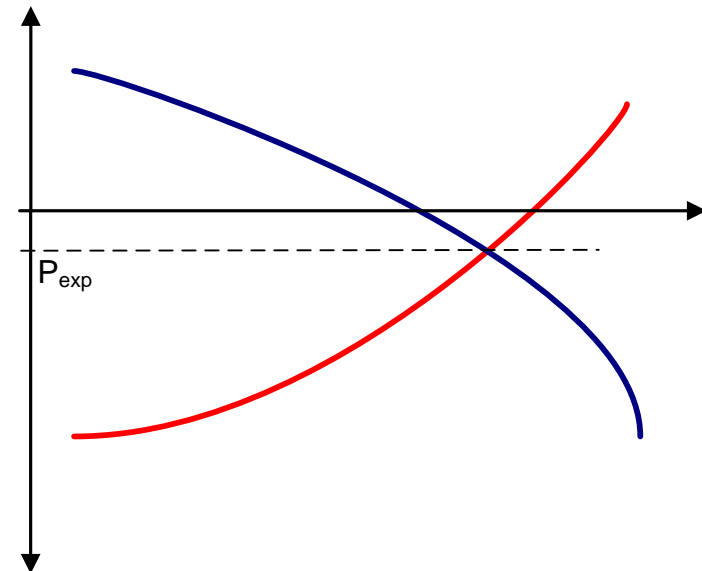
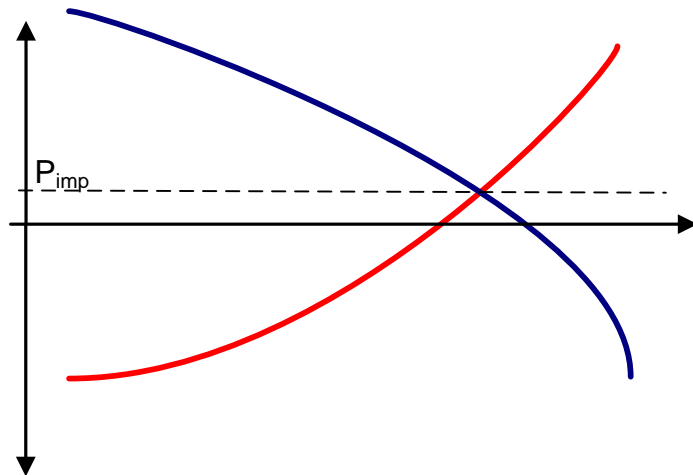
Introduction of Negative Prices and Second Auction

Currently negative prices either in the process of submission/replacement/cancellation of bids, financial security and matching, or in the process of subsequent settlement and clearing are not supported on the day-ahead electricity market (DM). Therefore the current price range is EUR 0.01 – 4,000/MWh.

OTE, a.s., in cooperation with Slovakia's market organizer OKTE, a.s., prepares to introduce negative prices on the organized day-ahead electricity market, along with the mechanism of second auction, which is organized in the event the relevant values achieved or exceed the set price limits, with the objective to integrate the existing rules with the rules in the CWE region.

Allowing electricity purchase and sale at negative prices requires making major changes across most of the day-ahead market processes, particularly submitting of order for purchase and sale, settlement, invoicing, financial security and financial flows, display and presentation of results and external interfaces.

- ❑ Purchase and sale bids can now comprise not just positive prices, but also negative or zero prices
- ❑ In general, positive, negative or zero market clearing prices may occur – the price is defined by a supply curve



- ❑ Input: bids with both negative price and zero price (*Note: zero price can also be part of a block bids*)

- ❑ Output: at some hours, as the result, market clearing price can be negative or zero (*Note: due to a zero price bid*)

- ❑ Impact on participants:
 - ❑ Factoring in negative and zero prices during submission:
 - ❑ Negative prices in bids
 - ❑ Financial security pertaining to submission of sale instructions and conducting trades at negative prices
 - ❑ Time impact related to activation of a second auction
 - ❑ Factoring in negative and zero prices in results:
 - ❑ Statistical data (Spot price)
 - ❑ Results (both spot and derivative)
 - ❑ Change in financial flows

Change in the process of bid submission

- ❑ The system will accept negative and zero prices of bids

Specifics of negative (and positive) prices

- ❑ Checks for minimum and maximum market clearing prices
- ❑ Trade price limit: EUR (-)3,000/MWh – EUR (+)3,000/MWh

Bids submitted to DM through PXE

- ❑ The system will accept bids from the PXE system with negative (or zero) prices

Derivates' bids (FS) submitted through PXE

- ❑ FS bids continue to observe the rule that prior to matching the auction they accept the highest price of the submitted bid to buy and the lowest price of the submitted offer to sell

Pricing :

- ❑ Participants are the sole creators of the resultant market clearing price.
- ❑ **The price always reflects the participants' actual behaviour!**

Bid submission allows to submit also negative and zero prices

New order on day ahead market

Number of blocks
Number of blocks: 5

Header data
 Delivery day:* 12/14/2011
 Settlement currency code:* CZK
 Type:* Buy Sell
 Comment:

Participant:* 859 1824 0000 07 OTE, a.s.
 Default settlement currency code: CZK

Condition of acceptance
 Total block 1 acceptance:* No

Currency calculator

Detail data

Block 1				Block 2																						
Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Volume*	40	30	50																							
Price EUR/MWh*	-20,00	0,00	20																							
VolInd*	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Submission of negative or zero or positive prices

* mandatory field

- Trading screen: newly show negative or zero market clearing prices in results of closed auctions

Day ahead market - Trading screen

Day ahead market - summary

Session			SPOT MARKET INDEX (EUR/MWh)			Prices	
Delivery day	GCT	Status	BASE LOAD	PEAK LOAD	OFFPEAK LOAD	Min	Max
12/09/2011	12/08/2011 11:15 CET	Results	41,79	49,19	34,40	22,47	55,37
12/10/2011	12/09/2011 11:15 CET	Results	44,07	50,92	37,22	25,00	62,00
12/11/2011	12/10/2011 11:15 CET	Results	39,07	47,22	32,52	23,60	62,50
12/12/2011	12/11/2011 11:15 CET	Results	0,00	64,11	43,19	-20,00	73,09
12/14/2011	12/13/2011 11:15 CET	Open					
12/15/2011	12/14/2011 11:15 CET	Open					
12/16/2011	12/15/2011 11:15 CET	Open					
12/17/2011	12/16/2011 11:15 CET	Open					
12/18/2011	12/17/2011 11:15 CET	Open					
12/19/2011	12/18/2011 11:15 CET	Open					

Bids for delivery day

Matching results comprise negative, zero or positive prices

Matching plan according to market participants:

- ❑ Newly show negative or zero market clearing prices at hours;
- ❑ Zero price stands for zero market clearing price, it does not mean no set price;
- ❑ In the event the price has not been set, no value is displayed

Matching plan by market participant

Parameters

Delivery day from: 12/13/2011
Delivery day to: 12/13/2011
Participant: *
Area code: All

Show

Table

View: Default Items: 135, page 1 / 7. 20

Participant	Delivery day	Type	Description	Hour 01	Hour 02	Hour 03
	12/13/2011	Price CZ	EUR	-20,00	0,00	34,00
	12/13/2011	Price SR	EUR	37,83	36,28	34,00
	12/13/2011	Buy	MWh	0,00	0,00	0,00
	12/13/2011	Buy	MWh	4,00	2,00	0,00

Matching results comprise negative, zero or positive prices

Financial security in the OTE system - utilization

Utilization of trades on DM (only bids submitted via OTE) – inputs:

- ❑ Bids – as sum of maximum possible liabilities arising from the volumes and prices submitted by the participants bids for each hour for a specific trading day
Selling bids inserted with negative price are taken into account for the „maximum possible liabilities“ calculation
- ❑ Matched trades – purchase at a positive price (DM-) and sale at a negative price (DM+)

Risk exposure utilization (potential imbalances)

- ❑ No change, volumes are utilized based on instructions and matched trades at each hour regardless of price

Dynamic limit (trades via OTE only) – inputs:

- ❑ Matched trades – purchase at a negative price (DM-) and sale at a positive price (DM+)

- ❑ Current situation

OTE has:

- ❑ A liability (payable) to the selling market participant
- ❑ A receivable from the buying market participant

- ❑ New situation:

The following instances may occur:

- ❑ Positive prices
- ❑ Negative prices
- ❑ Positive and negative prices (at one hour in various regions) in case of Market Coupling
- ❑ Positive and negative prices (within one day)
- ❑ Zero prices

- The current invoiced type of trade DT, which defines purchase/sale on the day-ahead market in the systems, is to be divided into two types of trade according to the electricity flow direction:
 - DM+ Electricity sale (supply)
 - DM- Electricity purchase (consumption)

- The plus/minus sign of the price determines whether the type of trade represents a payable or a receivable for OTE:
 - DM+ at a positive price is a SZ's receivable from OTE
 - DM+ at a negative price is a SZ's payable to OTE
 - DM- at a positive price is a SZ's payable to OTE
 - DM- at a negative price is a SZ's receivable from OTE

Invoicing principles

Electricity flow direction	Type of trade	Price	Billed by	Performance	Electricity tax
Sale – positive price	DM+	Positive/zero	SZ	Power supply	-
Sale – negative price	DM+	Negative	OTE	Provision of services by buyer	-
			SZ	Gratuitous power supply by supplier	
Purchase – positive price	DM-	Positive/zero	OTE	Power supply	Paid by SZ*
Purchase – negative price	DM-	Negative	SZ	Provision of services by buyer	Paid by SZ*
			OTE	Gratuitous power supply by supplier	

Both types of performance – Power supply and Provision of services are subject to standard VAT rate.

* Note: Only by SZs lacking permits to acquire tax-free electricity or to acquire tax-exempt electricity

Changes in financial reporting

- Inclusion of new types of trade

DM+, DM- - subjects of settlement (SZ)

- Inclusion of electricity tax settlement for consumption at negative prices on the day-ahead market in OTE's billing reports (only for subjects of settlement without permit to acquire electricity without tax)

Statement of the General Financial Directorate on the Czech Tax

Administration website: (only in the Czech language)

http://cds.mfcr.cz/cps/rde/xchg/cds/xsl/dane_poplatky_14118.html?year=PRESENT

New types of trade

Current types of trade	New types of trade	Description	Netting
OKO (DT)	DM+	Day-ahead market - sale	EC0 or EE0
	DM-	Day-ahead market - purchase	

Financial flows in results of DM settlement - participants



Profile	Instruction code	Instruction name	Flow direction	Volume	Market clearing price	Amount
XP03	DM-	DM purchase - SPT	purchase	minus	positive/zero	negative/zero
XP04	DM+	DM sale - SPT	sale	plus	positive/zero	positive/zero
XP53	DM-	DM purchase - SPT	purchase	minus	negative	positive
XP54	DM+	DM sale - SPT	sale	plus	negative	negative

Example of the Daily payments confirmation report - NETTING

Daily report for bank (credit-debit/confirmation)

Period from 03.09.2011 to 03.09.2011

Subj.	OTE	EAN	Subj	VAT						
Settlement:	Daily									
Payment type:	+ Credit / - Debit									
Supply date	Type	Supply rate	Price without VAT	Price with VAT	VAT	Energy volume (MWh)	Currency	Payment date	+ Credit - debit Payment	Variable symbol
03.09.2011	DM+	24,250	1 212,50	1 212,50	0,00	5,000	CZK		1 212,50	
			50,00	50,00	0,00		EUR			
03.09.2011	DM-	24,250	1 697,50	1 697,50	0,00	7,000	CZK		1 697,50	
			70,00	70,00	0,00		EUR			
03.09.2011	DM+	24,250	-727,50	-727,50	0,00	3,000	CZK		-727,50	
			-30,00	-30,00	0,00		EUR			
03.09.2011	DM-	24,250	-485,00	-485,00	0,00	2,000	CZK		-485,00	
			-20,00	-20,00	0,00		EUR			
03.09.2011	Total payment - electricity						CZK	paid - 12.09.2011	1 697,50	8773721111

new types of trade DM+, DM-

Modifications of the DM settlement section

Items of Daily payments: newly show negative or zero amounts

- ❑ A new receivable from OTE will arise for a participant that has purchased energy at a negative market clearing price
- ❑ A new payable to OTE will arise for a participant that has sold energy at a negative price
- ❑ In the event of a zero amount (zero market clearing price), the trade is deemed a transaction bearing a positive market clearing price

Daily payments							
Parameters							
Delivery day from	<input type="text" value="09/11/2011"/>						
Delivery day to	<input type="text" value="09/11/2011"/>						
Participant	<input type="text" value="*"/>		<input type="button" value="Show"/>				
Table							
View:	Default		Items: 6, page 1 / 1.	<input type="text" value="10"/>			
Participant	Delivery day	Version	Amount for	Operation	Volume [MW]	Amount excl. VAT	Currency of payment
			DM settlement - SPT				
	09/11/2011	Results of Day-ahead Market	DM settlement - SPT	Payable	-20,000	-400,00	EUR
	09/11/2011	Results of Day-ahead Market	DM settlement - SPT	Receivable	100,000	0,00	EUR
	09/11/2011	Results of Day-ahead	DM settlement - SPT	Receivable	-180,000	1 600,00	EUR
	09/11/2011	Results of Day-ahead	DM settlement - SPT	Payable	100,000	-1 200,00	EUR

Day-ahead market settlement - Purchase - receivable

Day-ahead market settlement - Sale - payable

Settlement – Break-down of settlement results by hour


- Signs attached to amounts vary according to market clearing price

Hourly breakdown of settlement results

Parameters

Delivery day from: 09/11/2011
Delivery day to: 09/11/2011
Version: Day-ahead market settlement
Participant: * [Show](#)

Table

View: Default  Items: 13, page 1 / 1. 20

Participant	Date	Type	Currency/Unit	Hour 01	Hour 02	Hour 03
	09/11/2011	DM sale - SPT	MWh	80,000		20,000
	09/11/2011	DM purchase - SPT	MWh	-80,000	-100,000	
	09/11/2011	Total sale	MWh	80,000		20,000
	09/11/2011	Total buy	MWh	-80,000	-100,000	
	09/11/2011	Amount - DM purchase - SPT	EUR	-600,000	0,000	
	09/11/2011	Amount - DM sale - SPT	EUR	-1 600,000		400,000
	09/11/2011	DM trading fee	CZK	-320,000	-200,000	-40,000

First hour - negative market clearing price, third hour – positive market clearing price

OTE's public website

Published values of the market clearing price can be both positive and negative.

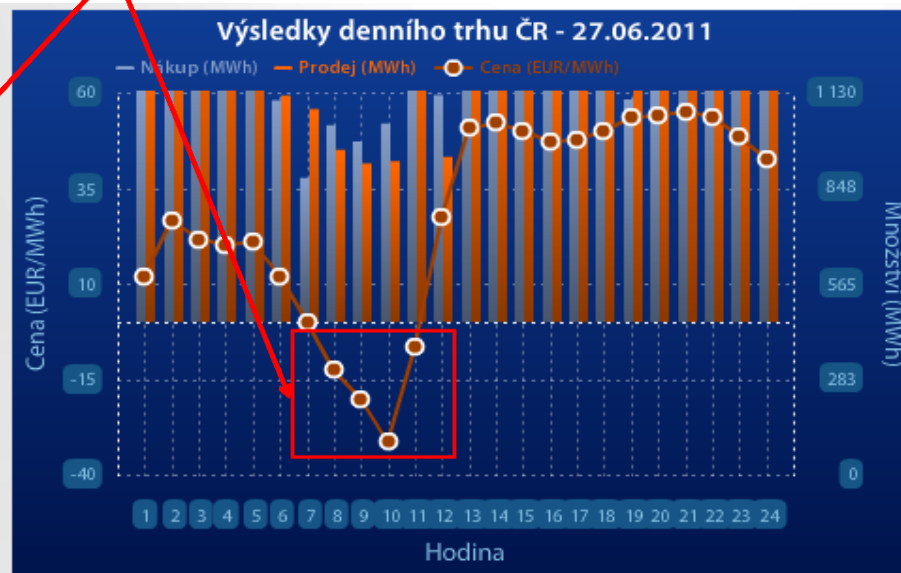
Changes affect the following webpages:

- Day-ahead market
- Day-ahead market CR-SR
- Matching curves
- Annual report
- Tables and schemes showing day-ahead market results
- DM Indices

OTE's public website - example

Market clearing price can be both positive and negative

Výsledky denního trhu ČR - 27.06.2011			
Hodina	Cena (EUR/MWh)	Množství (MWh)	
		Prodej	Nákup
1	12,00	751,6	690,8
2	26,65	835,7	774,4
3	21,69	890,6	886,3
4	20,20	916,8	882,4
5	20,80	981,4	973,4
6	12,00	670,4	655,9
7	0,10	629,3	426,2
8	-12,69	509,2	582,5
9	-20,20	468,9	534,4
10	-31,50	475,8	586,9
11	-6,50	798,0	765,4
12	27,60	488,2	671,4
13	50,70	790,7	891,2
14	52,00	773,9	803,5
15	50,00	871,3	919,0
16	47,15	763,1	836,5
17	47,64	773,1	760,5
18	50,00	851,2	813,6
19	53,39	797,3	658,8



SPOT MARKET INDEX - 27.06.2011		
Index	EUR/MWh	Změna (%)
BASE LOAD	-6,49	-814,08 ▼
PEAK LOAD	-10,82	-44,27 ▼
OFFPEAK LOAD	-15,15	-6,02 ▼

Second auction

- ❑ Currently the process of DM settlement is executed through a single auction

- ❑ A “second auction” aims to allow reopening DM to update bids to correct extraordinary conditions on DM and on the electricity market
 - these conditions are characterized by achieved or exceeded price threshold values of market clearing prices, defined in the Business Terms for the Power Sector (BTP), at a specific trading hour;
 - Upper threshold: EUR+ 500/MWh
 - Lower threshold: EUR- 150/MWh

- ❑ **The second auction procedure, however, does not guarantee correction of the extraordinary conditions!**

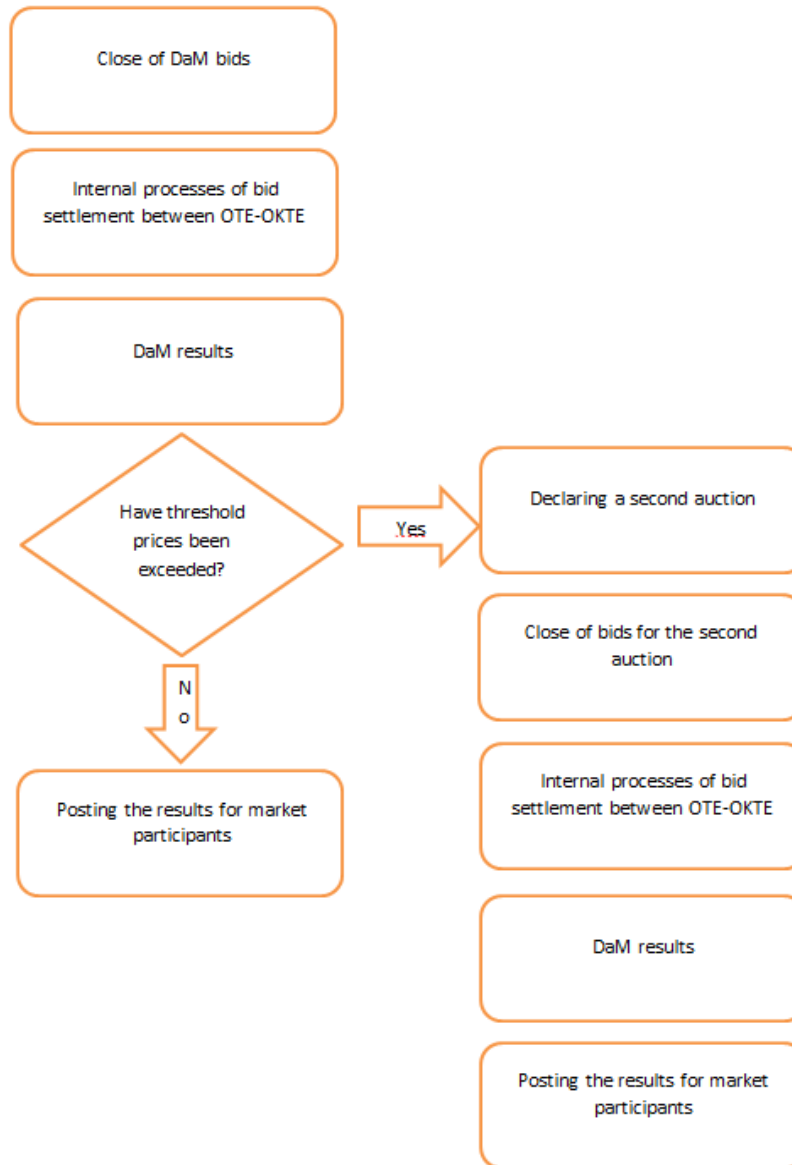
- ❑ The range of thresholds of the market clearing price with the same values for declaring a second auction is identical in both regions (CR and SR)

- ❑ Determining price thresholds – defined in BTP:
 - EUR -150/MWh
 - EUR +500/MWhNote: harmonized with the CWE region

- ❑ After evaluation of market clearing prices of the first auction, a check is performed whether thresholds were achieved or exceeded in either of the regions at any hour.

- ❑ In the event the resultant market clearing price achieves or exceeds price thresholds at any hour in at least one region, a second auction is organized, i.e. trading opens in both regions.

Second auction – procedures of organization a second auction



In the event problem hours are identified in either region:

- ❑ Participants in both regions will be notified about organization a second auction with specifics about the start of the auction, its duration and the presumed time of posting the results, and about the exceeded threshold
- ❑ Thresholds of market clearing prices for declaring a second auction are identical in both regions
- ❑ The second auction will be accessible for all DM participants in both regions, but only for modification/submission of bids for specified hours. In modification of bids, values can be changed solely for the problem hours, whereas the remaining hours must retain the same values as bids submitted in the first auction.
- ❑ **Market participants should carry out bid modification/submission for the foregoing hours with the aim to achieve a market clearing price at an interval given by the range of threshold values!**

- ❑ In the event of declaring a second auction, participants will be notified via a message about the problem hours and exceeded thresholds of the market clearing price:
- ❑ Example of the message text:
 - 2nd auction for delivery day 17. 1. 2012
 - 2nd auction for delivery day 17. 1. 2012 has been called:
 - Opening of 2nd auction session: GOT: 14:35
 - Closing of 2nd auction session: GCT: 14:55
 - Result time of 2nd auction: GPT: 15:20
 - Problematic hours - Market CZ:
 - Upper threshold exceeded for hour 1, 2, 3, 4
 - Lower threshold exceeded for hour 5, 6, 7, 8
 - Problematic hours - Market SK:
 - Upper threshold exceeded for hours 9, 10, 11, 12
 - Lower threshold exceeded for hours 13, 14, 15, 16
- ❑ The second auction will be accessible also for participants that had not submitted any bid to a regular auction at the hours of exceeded threshold values

The second auction will allow to modify only a previously created bid (price, volume) at the problem hours (price, volume, Vol Ind), modification/cancelation of bids for the remaining hours won't be allowed. The second auction does not allow time divisibility/bid indivisibility.

Restore order on DM

Number of blocks

Number of blocks:

Identification

Bid ID: Version: Submission timestamp:
 Valid: Found error: Replaced:
 Cancelled: Cancellation date: Cancellation timestamp:

Header data

Delivery day:* Participant:*
 Settlement currency code:* Default settlement currency code:
 Type:* Buy Sell
 Comment:

Condition of acceptance

Total block 1 acceptance:*

Currency calculator

Detail data

Problem hour – upper limit exceeded

Block 1																										
Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Volume*	10,0	10,0																								
Price EUR/MWh*	110,00	100,00																								
VolInd*	N	N																								

Block 2																										
Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Volume*																										
Price EUR/MWh*																										

The second auction will allow to submit a new bid for the problem hours only, the submitting of bids for the remaining hours won't be allowed.

Restore order on DM							
Number of blocks							
Number of blocks:	5						
Identification							
Bid ID:	172125	Version:					
Valid:	Yes	Found er					
Cancelled:	No	Cancellat					
Header data							
Delivery day:*	12/12/2009	Particip					
Settlement currency code:*	EUR	Default					
Type:*	<input type="radio"/> Buy <input checked="" type="radio"/> Sell						
Comment:							
Condition acceptance							
Total block 1 acceptance:*	No						
Currency calculator							
Detail data							
Block 1							
Hour	1	2	3	4	5	6	7
Volume*	20,0	20,0	20,0				
Price EUR/MWh	-30,00	0,00	10,00				
VolInd*	Y	N	N				
Block 2							
Hour	1	2	3	4	5	6	7

Problem hour – lower limit exceeded

- ❑ **Day-ahead market - overview**

At the time of opening a second auction for the relevant trading day, the “Status” of the session will be displayed as “Open” for the respective trading day.

- ❑ **Bids according to delivery day**

At the time of opening a second auction for the relevant trading day, active bids for the respective day will be also displayed.

- ❑ **Daily statistics**

After publishing the second auction results, statistical results of regions created only in the second auction will be made available.

- ❑ Introduction of a second auction does not have impact on changes in the settlement process
- ❑ Declaring a second auction causes a time delay in the results of trading on the day-ahead market
- ❑ In the event of declaring a second auction, participants will not be informed about the results of the first auction either via Trading screen or via automatic communication
- ❑ Opening a second auction does not alter the structure of automatic communication messages, only their distribution in time (delayed compared to trading days when only first auction is held)
- ❑ If market clearing prices of the second auction again exceed trading thresholds, the new market clearing prices will be declared as the final market clearing price for respective delivery hour.

Changes in automatic communication messages

Following changes in the automatic communication will be done:

Data transcript - 833 – Specific bid data:

- ❑ message 833 comprises bid types for the relevant participant (DER and SPT), prices are negative (profiles BP01-25).

Data transcript - 946 – Market clearing prices on DM:

- ❑ message 946 comprises both positive and negative market clearing prices (profile SP20).

Data transcript - 953 – Settlement by hour – SZ

- ❑ comprises new profiles:
- ❑ XC07 – DM settlement (spot bids) purchase – negative energy at positive price
- ❑ XC08 - DM settlement (spot bids) sale – positive energy at negative price
- ❑ XC55 - DM settlement (FS bids) purchase - negative energy at positive price
- ❑ XC56 - DM settlement (FS bids) sale - positive energy at negative price
- ❑ XP07 - DM settlement (spot bids) purchase – positive price of negative energy
- ❑ XP08 - DM settlement (spot bids) sale – negative price of positive energy
- ❑ XP55 - DM settlement (FS bids) purchase – positive price of negative energy
- ❑ XP56 - DM settlement (FS bids) sale – negative price of positive energy

Data transcript - 963 – Settlement by day – SZ comprises new profiles:

- ❑ XC07 - DM settlement (spot bids) purchase - negative energy at positive price
- ❑ XC08 - DM settlement (spot bids) sale - positive energy at negative price
- ❑ XC55 - DM settlement (FS bids) purchase - negative energy at positive price
- ❑ XC56 - DM settlement (FS bids) sale - positive energy at negative price
- ❑ XP07 - DM settlement (spot bids) purchase – positive price of negative energy
- ❑ XP08 - DM settlement (spot bids) sale – negative price of positive energy
- ❑ XP55 - DM settlement (FS bids) purchase – positive price of negative energy
- ❑ XP56 - DM settlement (FS bids) sale – negative price of positive energy

- ❑ Inquiry about DM market clearing prices – 944
 - ❑ In the event of declaring a second auction, this inquiry will return empty data for the period from notification of opening the second auction to publishing its results
 - ❑ After publishing the second auction results the inquiry will be filled with market clearing prices of all matched hours
- ❑ Structure of messages for Automatic communication – Day-ahead market – remains unchanged in relation to introduction of a second auction
- ❑ Bid modification for second auction for Automatic communication
 - ❑ Only values at hours opened for the second auction can be modified
 - ❑ Values at other hours must be submitted identically with the values in the first auction, otherwise the modified bids will be rejected for the second auction and the bids submitted in the first auction remain valid.

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OTE  Combining opportunities with markets