Innovated solution of IDM/BalM

Combining opportunities with markets

Innovated solution *for trading on Intraday and Balancing Market in the Czech Republic, developed by OTE a.s., enables users to* ***respond swiftly*** *to the* ***current market situation****, 365 days a year.*

New communication and application technologies

Adjustable GUI

Automatic order matching

IDM/BalM

New FS principle

Simple order management

Technical readiness of IDM for coupling with neighboring countries

Changes in technical solution

The aim of innovating current trading platforms for IDM/BalM is the transition to cutting edge technologies, application logic, and **ensuring the fast and reliable distribution of trading data.**

- The solution is based on **a platform of quick exchanges of communication messages** using the binary protocol AMQP, defined as an open international standard (ISO / IEC 19464).

- The **AMQP server** is used to deliver messages to / from client applications and to / from market participant systems. The exchange of messages is done through the pre-existing connections without re-authentication, thus **speeding up the data exchange.**

- Access through **automatic communication** will be retained but it will be now possible to access the solution through the **trading client**, which will be installed by the market participant.

Trading client

- The trading client is executable as a **standalone application** for production environment and SANDBOX separately.

- **Installation of the application is needed before first use.**

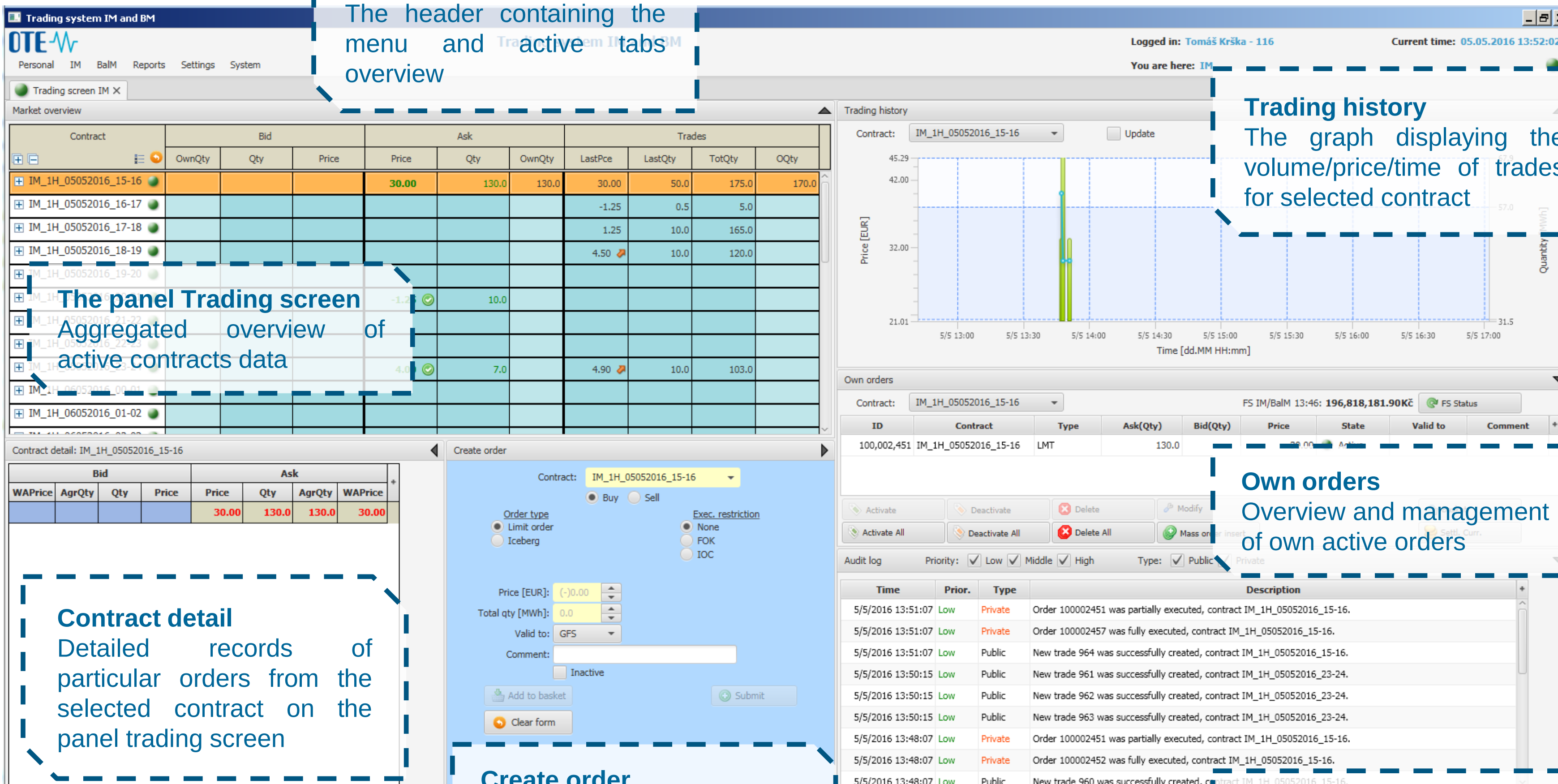
- It serves as the main user tool on IDM/BalM OTE for order insertion.

- Built on **JavaFX** technology (trading client). After the participant authentication (the verification of the participant is done against the LDAP server CS OTE), it connects directly to the AMQP server.

- **Supported OS versions** : Windows 7, Windows 8.1 and Windows 10 in 32 and 64 bit versions.

- The standalone application will always be launched with the required version of JAVA JRE included in the application directory. Applications will be always distributed with the corresponding version of JRE.

Trading client – Trading screen



Menu
The header containing the menu and active tabs overview

Trading history
The graph displaying the volume/price/time of trades for selected contract

The panel Trading screen
Aggregated overview of active contracts data

Own orders
Overview and management of own active orders

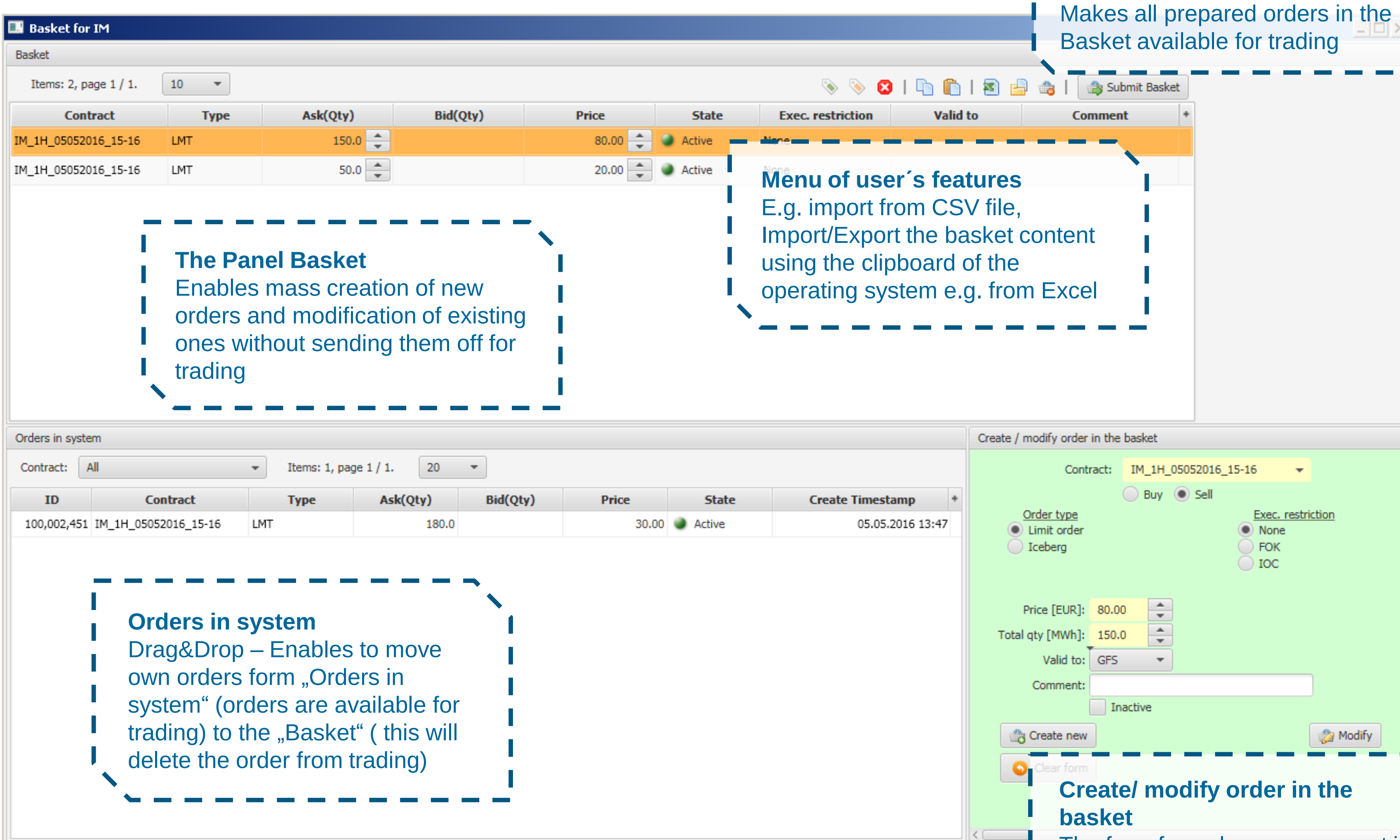
Contract detail
Detailed records of particular orders from the selected contract on the panel trading screen

Create order
The form for new order insertion

Audit log
Messages generated by the system which are relevant for logged in user

Graphical display of new trading client of the IDM/BalM in this presentation is illustrative, the final appearance might be amended.

Trading Client - Basket



Submit Basket
Makes all prepared orders in the Basket available for trading

Menu of user´s features
E.g. import from CSV file, Import/Export the basket content using the clipboard of the operating system e.g. from Excel

The Panel Basket
Enables mass creation of new orders and modification of existing ones without sending them off for trading

Orders in system
Drag&Drop – Enables to move own orders form „Orders in system“ (orders are available for trading) to the „Basket“ (this will delete the order from trading)

Create/ modify order in the basket
The form for order management in the Basket

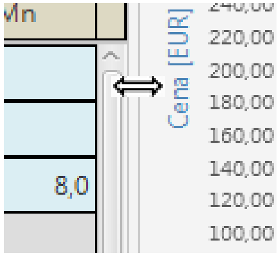
Graphical display of new trading application of the IDM/BalM in this presentation is illustrative, the final appearance might be amended.

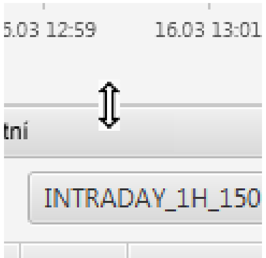
Trading application– GUI

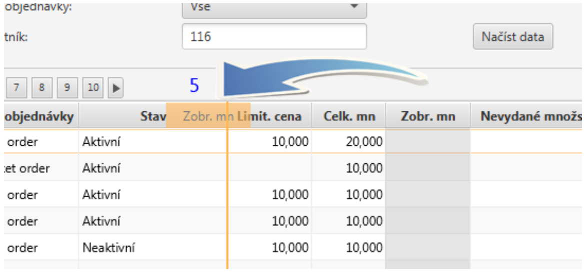
- **Selection of panel display** and **layout** on the trading screen is **definable by the user.** The size of the individual section adjusted by moving the dividing outlines.

- There is choice of saving **several types of trading screen layouts** for a quick selection.

- Reports are also available for users adaptation. The user can **move individual columns** according to own preferences.







External interface- automatic communication

Participants who prefer using their internal IT systems for trading on IDM/BaIM can carry out all business activities by way of **automatic communication**

- Automatic communication will be mediated by communication with the **AMQP server RabbitMQ** (www.rabbitmq.com) to ensure high penetration and fast distribution of messages.

- Compared with the current solution, **special settings / permissions on OTE´s IDM/BalM will not be required** and the interface to RabbitMQ AMQP server will be available to all participants, regardless of the client.

- Market participant implements own client that will connect to the MQ server and will be used to send requests, and receive responses and mass messages (with the possibility to use AMQP client library RabbitMQ).

The process of establishing communication and individual communication scenarios is described in the document **External interface CS OTE.**

External interface – Communication messages

All messages sent between the user and the IDM/BalM application have their own message content, defined by **XML format.**

Two basic types of communication are used for Client – MQ server exchange:

- **Request-response** – requests initiated by client to which the MQ server will respond asynchronously. The response is sent only to the initiator of the communication.

- **Mass message** – global message distribution from the MQ server to clients. Distribution is performed on the basis of defined distributional rules and access rights.

The description of individual messages can be found in the **External interface CS OTE.**

Changes in IDM/BaIM financial security principle

- Orders inserted in IDM/BalM **will be secured within the single trading limit** designated separately for IDM/BaIM, which will be singled out from the current trading limit.

- Exclusion of the single trading limit will **hasten the process of order validation** on IDM/BaIM.

- **Market Participant** will **set up and manage** the single trading for IM / BaIM as needed (within the range of disposable financial resources of the current trading limit).

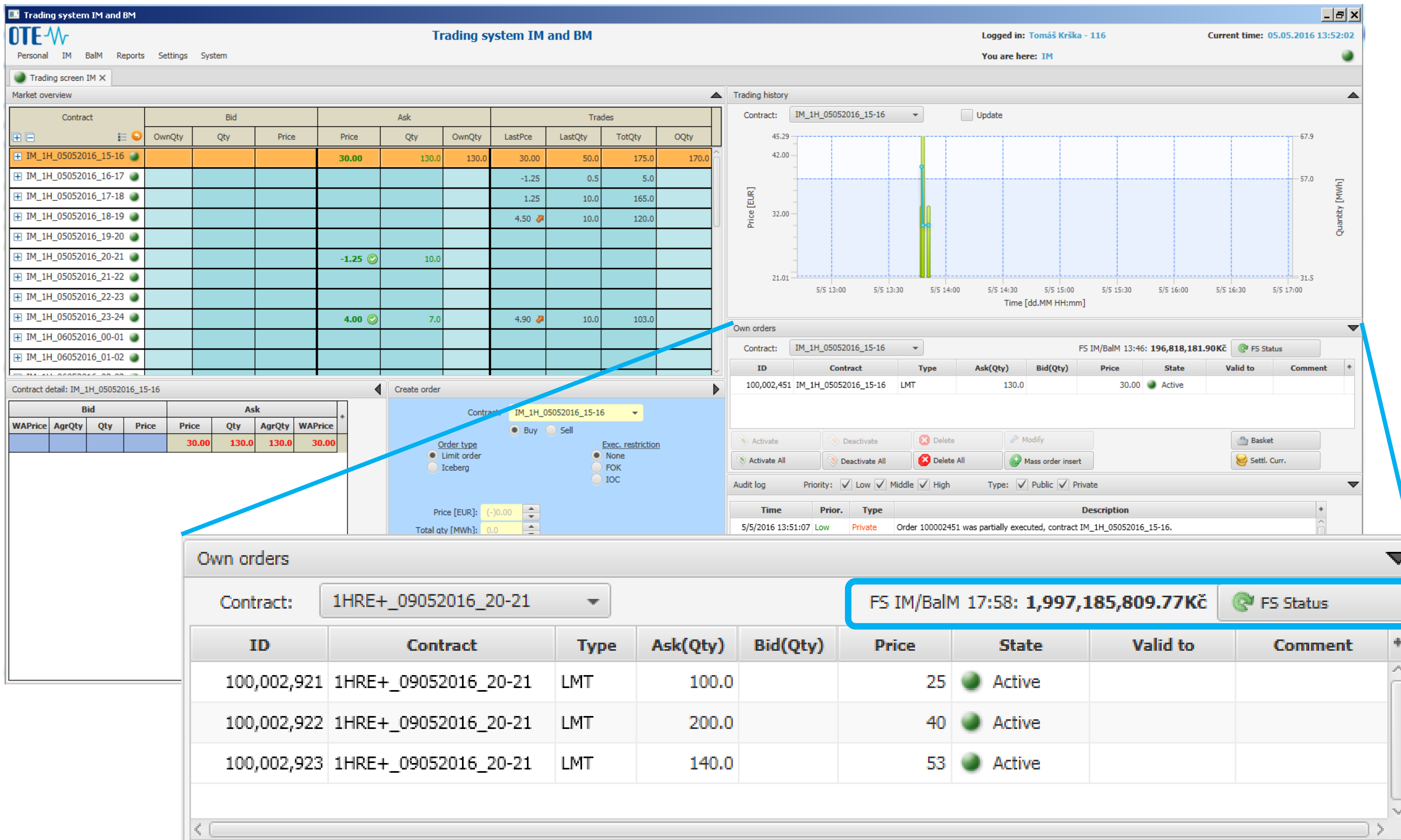
- **Individual orders will be secured by the following principle**: the sum for imbalance security will be calculated using the parametric price and sum for commodity security (only for IDM), which will be calculated based on the price limit stated in the order (positive prices for buy, negative prices for sell).

- **The parametric price** will be newly determined **for the delivery days** and not for the calendar days of the relevant month.

- **Concluded trades on IDM/BaIM will be secured within the range of the current trading limit** and according to the current principles, and the sum that has been blocked for the order security on IDM/BaIM in the single trading limit will be released throughout this process.

Changes in financial security principle

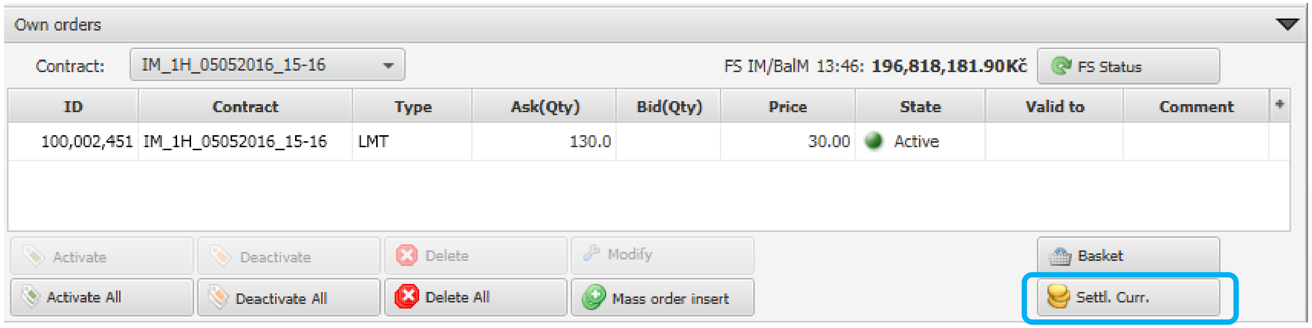
- Indicative information about the trading limit designated separately for IDM/BaIM will be available both on the main trading screen and in a separate report.



Change of IDM trading currency

- As preparation for future integration of **IDM** the **trading currency** will be **changed to EUR/MWh.**

- The user can:
  - **set up the IDM settlement currency** using the form accessible on the panel Own orders, for delivery dates of IDM for which the trading hasn´t been started yet (if the user doesn´t select the settlement currency, default settings from the module Prodis will be applied for settlement the concluded trades on IDM).



  - **display** a separate report containing **an overview of IDM settlement currency** for chosen delivery days period.

Remark: Settlement currency of BalM remains without changes (i.e. CZK/MWh)

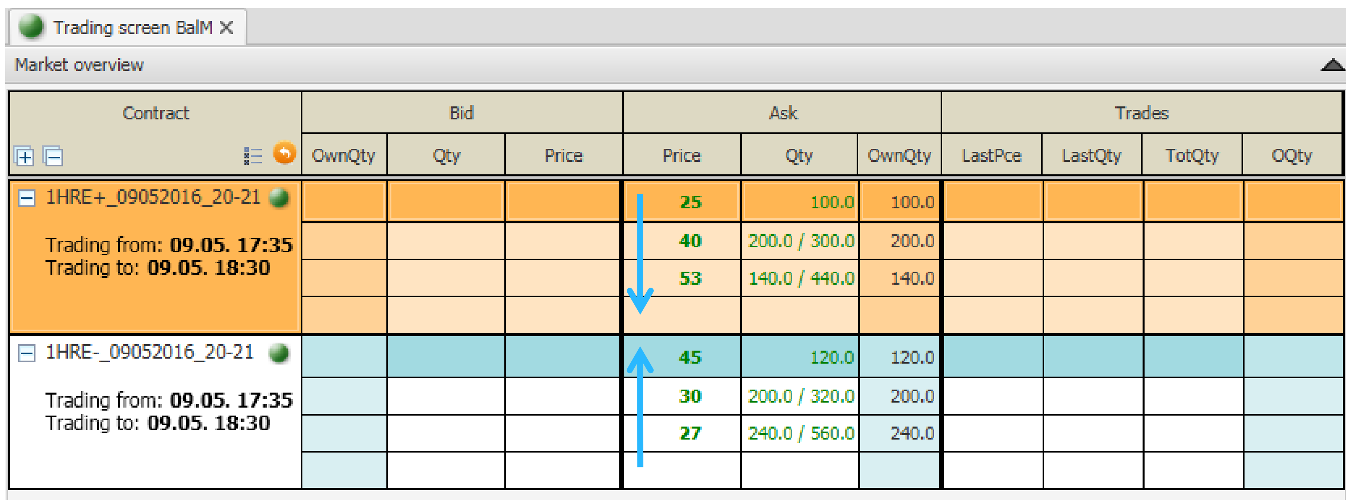
Changes in trading

Current solution		Innovated solution
is based on the **„Hit and Trade“** principle	⟹	is based on the principle of **automatic order matching**
buy and sale orders are displayed on the **notice board**	⟹	current notice board is replaced by the **trading screen**
trade is concluded by **accepting selected orders** on the notice board (potential risk of accepting suboptimal order)	⟹	**automatic matching** of existing and entering orders is used to conclude trades (best price and time criterion)

Changes in BalM

- There will be **no interconnection between IDM and BalM** modules in innovated solution and orders which haven´t been traded will not be automatically offered for trading on BalM, after the end of IDM trading period.

- **RE- orders will be now lined up** so the orders with the highest price for sell and the lowest price for buy are displayed on the top. The clearing principle remains unchanged: participant offering RE- with negative price will receive the payment in case of concluded trade.

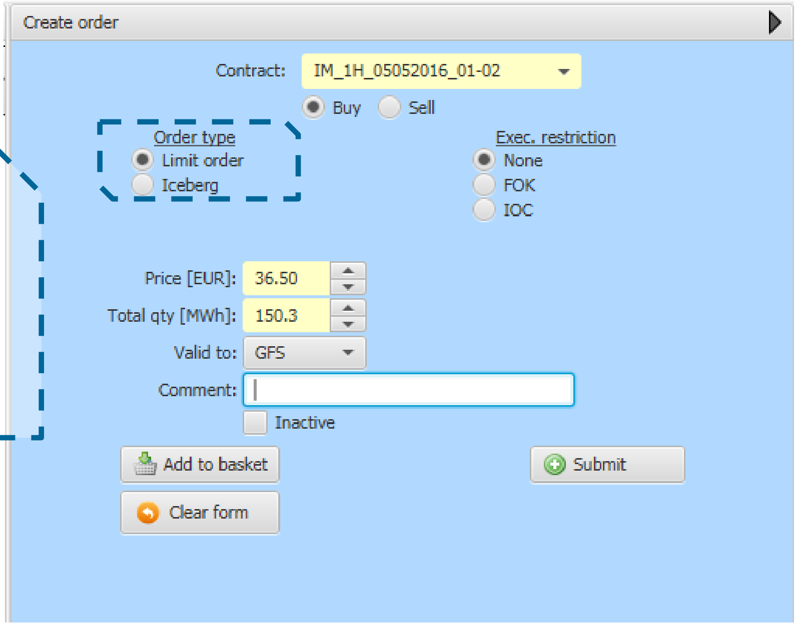


Contract	Bid			Ask			Trades			
	OwnQty	Qty	Price	Price	Qty	OwnQty	LastPce	LastQty	TotQty	OQty
1HRE+_09052016_20-21				25	100.0	100.0				
Trading from: **09.05. 17:35**				40	200.0 / 300.0	200.0				
Trading to: **09.05. 18:30**				53	140.0 / 440.0	140.0				
1HRE-_09052016_20-21				45	120.0	120.0				
Trading from: **09.05. 17:35**				30	200.0 / 320.0	200.0				
Trading to: **09.05. 18:30**				27	240.0 / 560.0	240.0				

Types of orders– Limit order

Hour instrument - an instrument with the delivery period of 1 hour

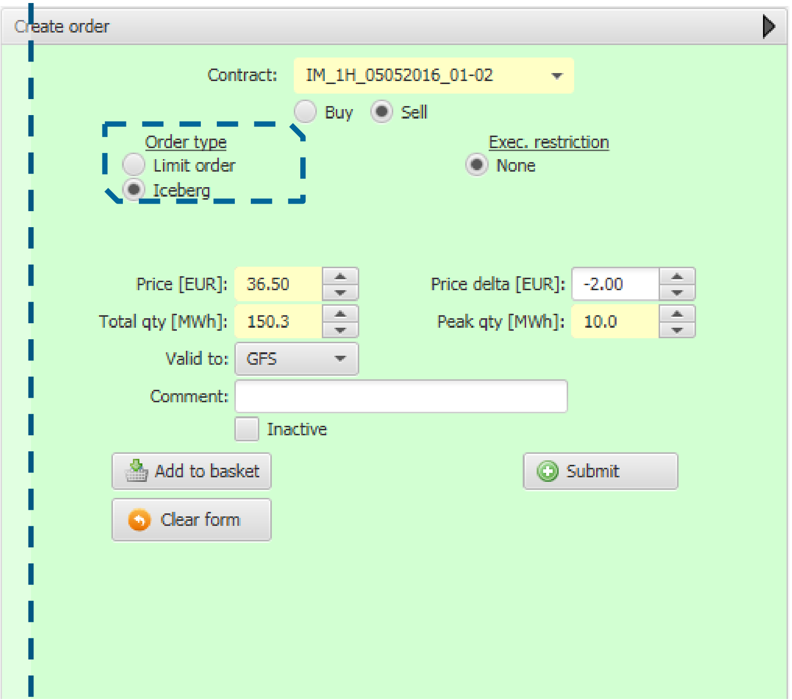
Any amount of the order will be traded at a price which is lower or equal to the limit price of the buy order, or at a price which is higher or equal to the limit price of the sale order



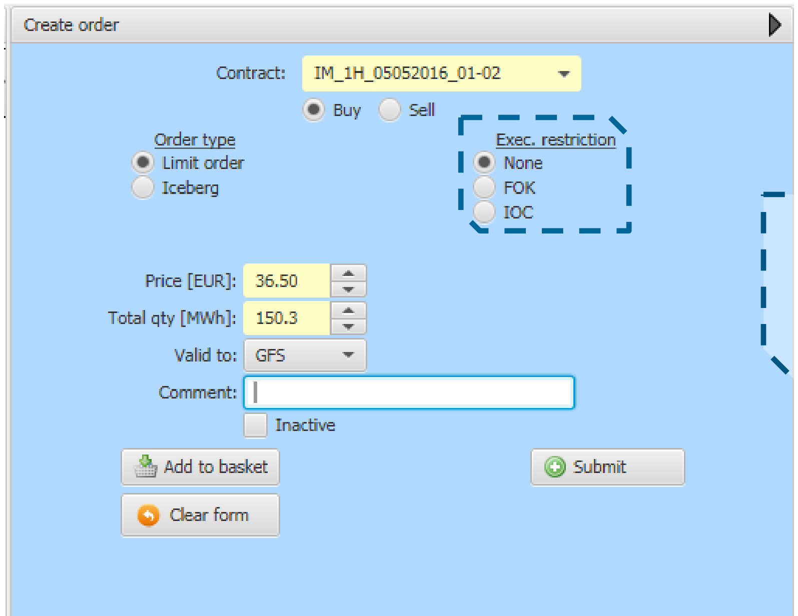
Types of orders– ICEBERG

Hour instrument - an instrument with the delivery period of 1 hour

The amount of the order will be exposed to the market gradually according to the user´s definition of price and volume step. Once the displayed amount is fully executed, the system automatically publishes another part of the order. If the remaining amount of the order is smaller than the defined volume step, the remaining amount of the order is published in full. This gradual cyclical publication is done until the total amount of the order is traded or the time validity of the order expires (in case of order with defined time restriction GTD) **(IDM only)**

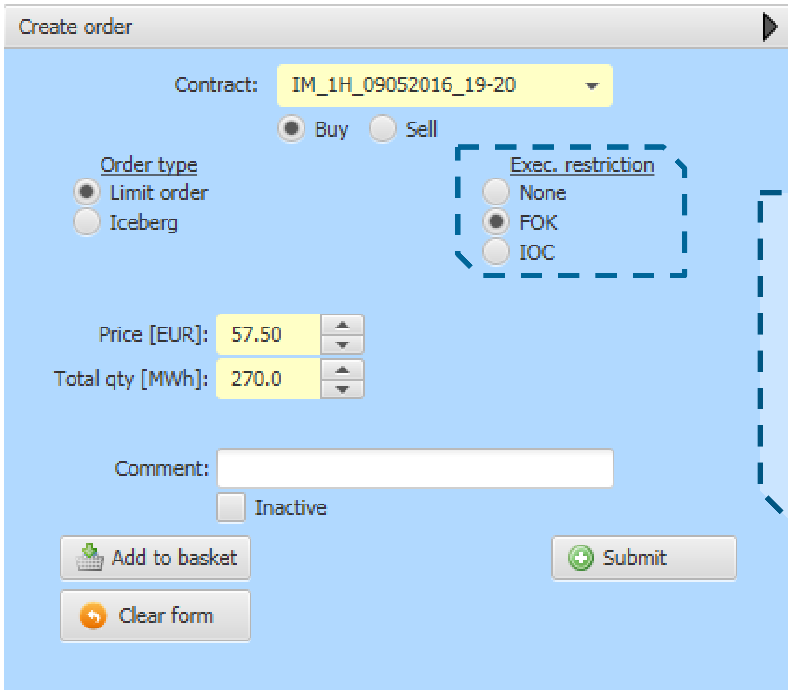


Executive restriction – None



Order can be traded immediately or successively against one, or more orders, resulting in one or more trades

Executive restriction – Fill or Kill FOK

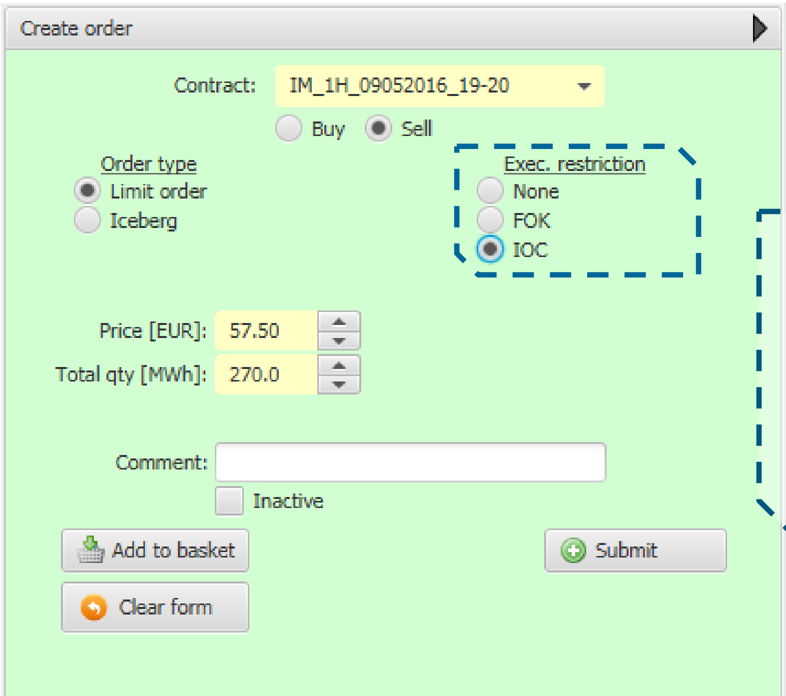


The whole amount is traded immediately right after the insertion of the order to the system. If this condition is not met, order will be withdrawn from the market at once.

(IDM only)

Restriction All or none (AON) is not going to be supported due to continuous matching principle.

Executive restriction– Immediate or Cancel IOC

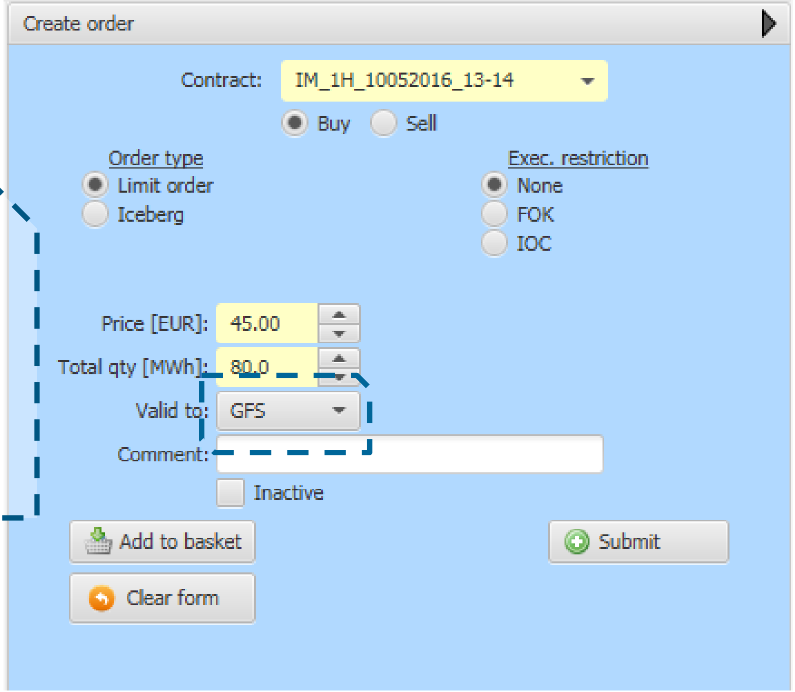


Any amount of the order is traded immediately right after the insertion of the order in the system. If this condition is not met and the amount is not traded completely, the order is withdrawn from market at once. **(IDM only)**

Restriction All or none (AON) is not going to be supported due to continuous matching principle.

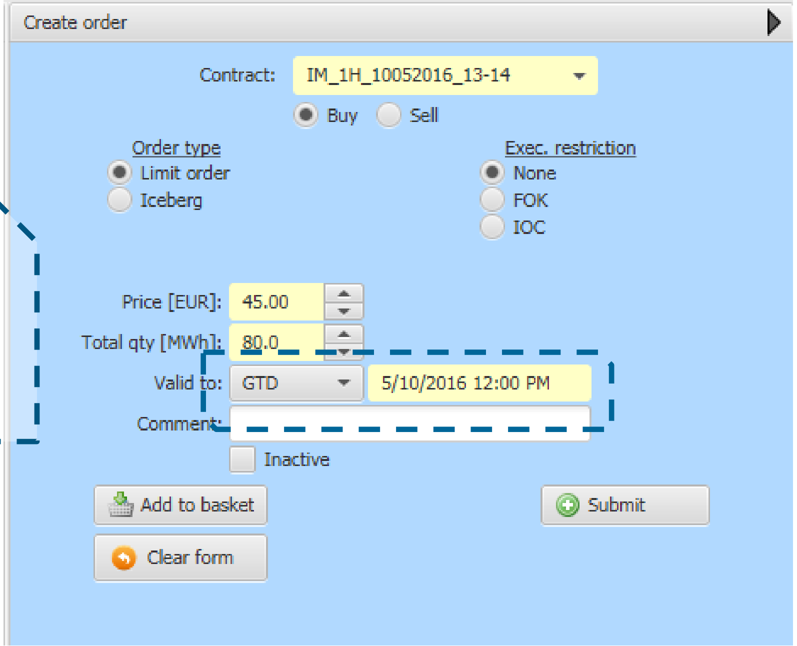
Time restriction – Good for trading session GFS

Validity of the order is not restricted by time and the order remains available for trading until the end of trading with the respective contract or until it is fully executed or annulled by the market participant.



Time restriction – Good till date GTD

Order with defined time restriction by time and date. After the validity expiration the order is automatically withdrawn from trading.



Restrictions and order types combination

Available combination / Unsupported combination	FOK	IOC	NON
Limit order	No time Restriction	No time Restriction	GTD or GFS
ICEBERG	No time Restriction	No time Restriction	GTD or GFS

As orders with FOK and IOC execution restrictions are either immediately executed or cancelled, the time restriction can be set only for orders with no execution restriction. Note also that FOK and IOC execution restriction in principle cannot be setup for Iceberg orders.

Testing with market participants

- The start of the **testing with market participants** is expected **at the end of July/ beginning of August**. Concrete date will be confirmed in the middle of June, at the same time the information for automatic communication set up will be handed over.

- **Workshop** targeted on familiarization market participants with the innovated solution of IDM/BalM and with the course of testing will be organized prior to the testing. The form of the workshop and the exact date (second half of July) will be confirmed.

- Market participants need to perform **an installation of client application** in order to participate on the testing. The application including the testing environment URL will be available ca. 3 weeks before the start of testing. It will be possible to conduct **connectivity tests** in this week for market participants who will use automatic communication.

- No additional information regarding IP, URL etc. will be needed from market participants with regard to automatic communication of innovated IDM/BalM.

- **Accession certificates will be identical with** those used on **OTE SANDBOX**, eventually it will be possible to send new ones.

spot-markets@ote-cr.cz