Central European Gas Hub



26 January 2016



CEGH - The gateway from East to West within Europe's hub landscape

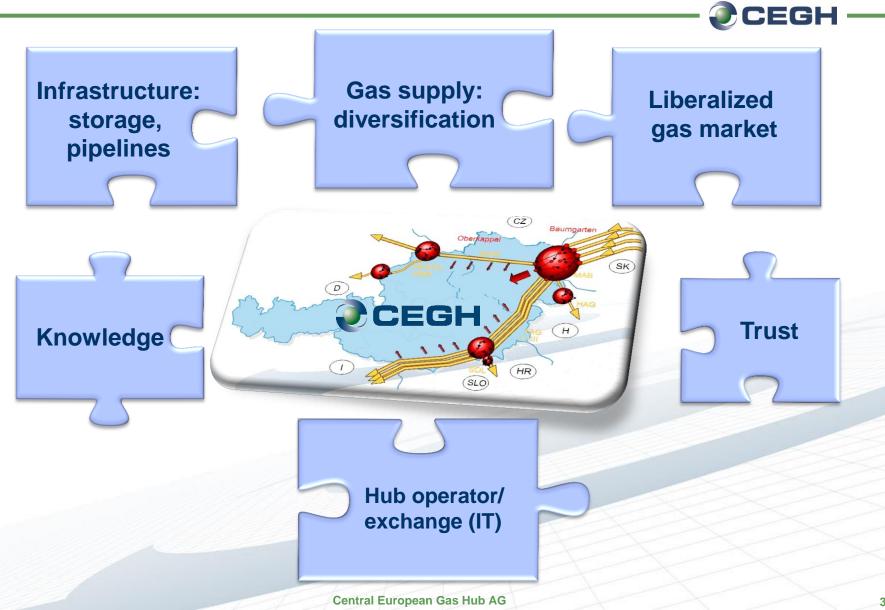




CEGH:

- Strategic location
- Gas transit routes
- Storage facilities

What is a hub?



What is a successful hub?



Goal

- Competitiveness
- Security of supply

Instruments

- Transparency (access, prices)
- Gas-Gas Competition
- Liquidity

Parameters

- Customers Standardised
- Trade volumes products, etc.
- Churn ratePrices

Central European Gas Hub



26 January 2016



Agenda



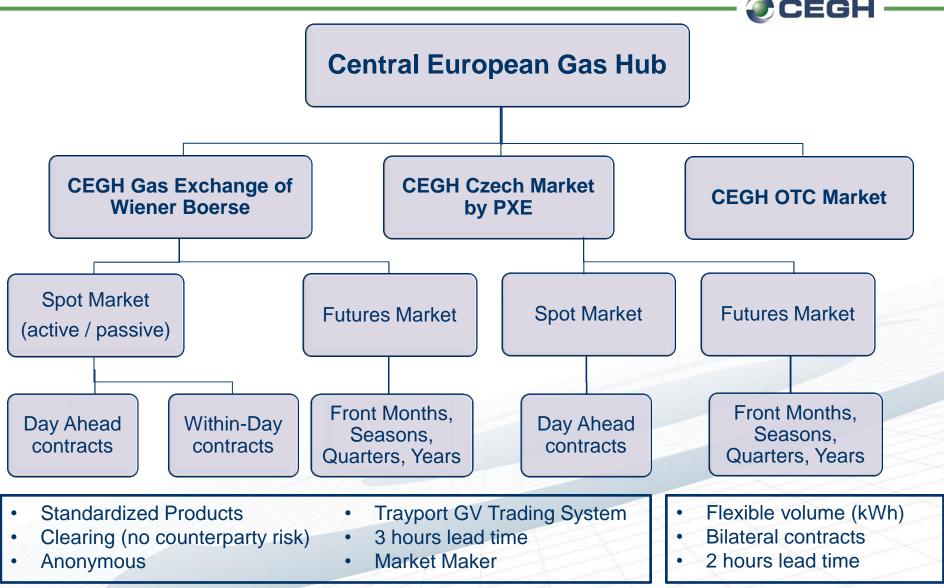
General introduction & Development

CEGH OTC Market (Virtual Trading Point of Austria)

- CEGH Gas Exchange of Wiener Boerse (Austria)
 - CEGH Czech Gas Exchange Market

Setup of CEGH Gas Exchange of Wiener Boerse (Austria)

CEGH Markets: OTC and Exchange under one umbrella



CEGH Volume Development 2015: Overview



OTC Market:

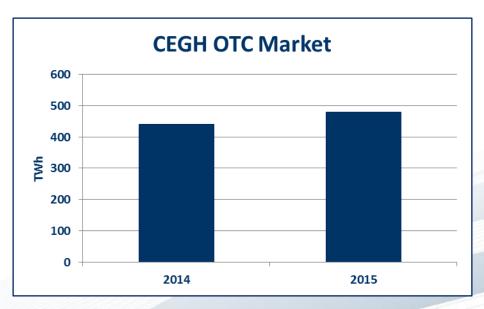
1 - 12 / 2015: 478.30 TWh

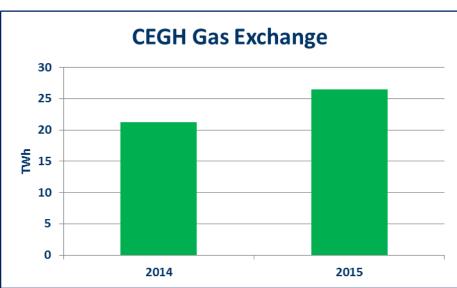
(y-t-y: +9%)

Gas Exchange:

1 - 12 / 2015: 26.48 TWh

(y-t-y: +25%)





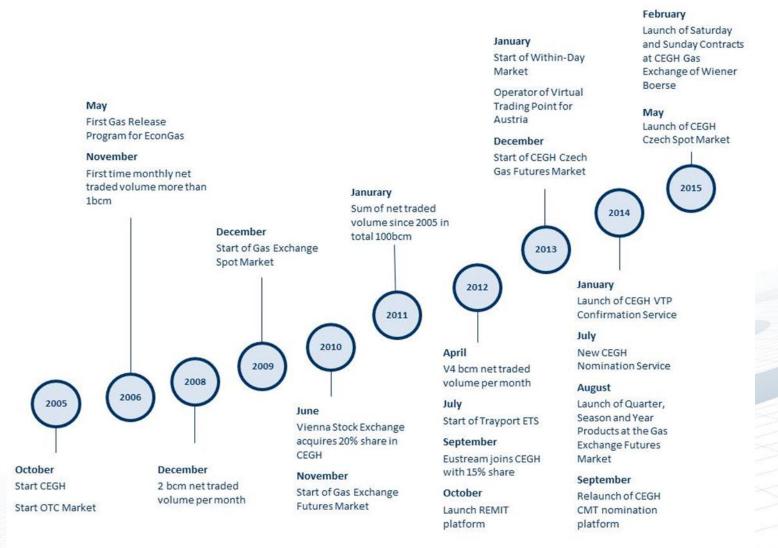
Relation between CEGH, Huberator, NCG, TTF and PSV





CEGH – 10 Years anniversary





10 Years of Central European Gas Hub



Some key figures of 10 years of CEGH:

 First nominations in October 2015 with 12 registered members (November 2015: 188 members)

Total nominated volume in 2005 (Oct – Dec 2005): 8.6 TWh total nominated volume 2015: 478.3 TWh

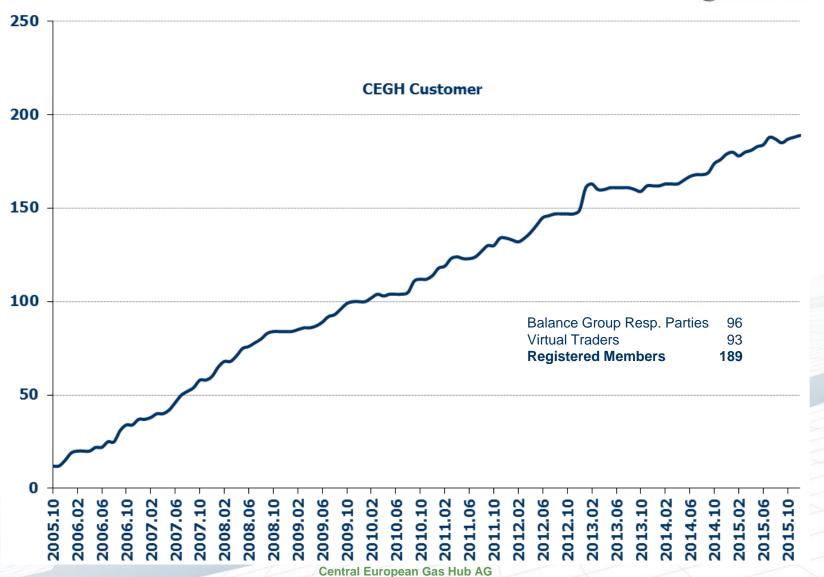
Total nominated volume at CEGH in 10 years: 3,374 TWh (= approx. 300 bcm)
 physical volume in 10 years (since Oct 2005): 998 TWh



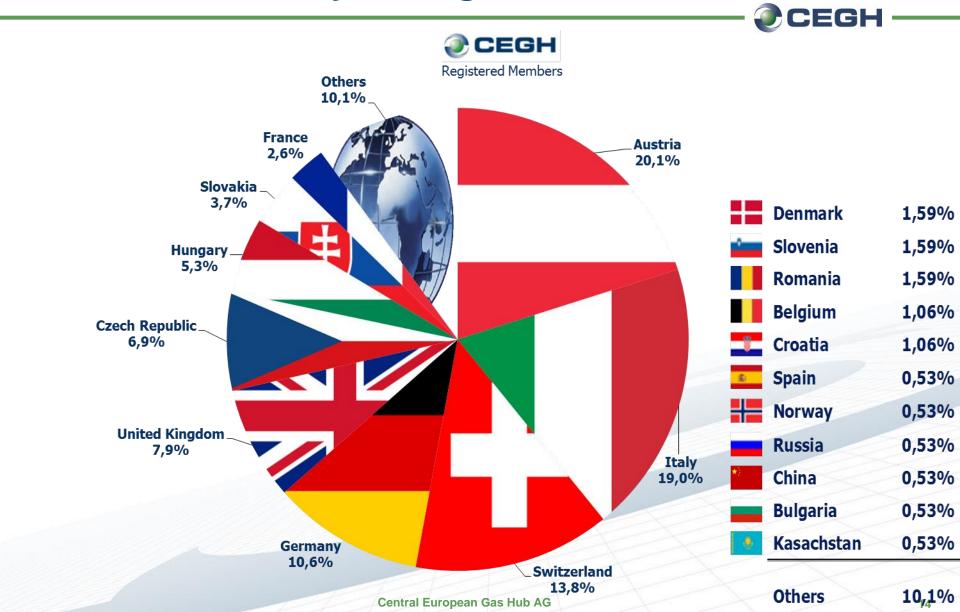
CEGH OTC Market (Virtual Trading Point of Austria)

OTC Trading: Number of Registered Members

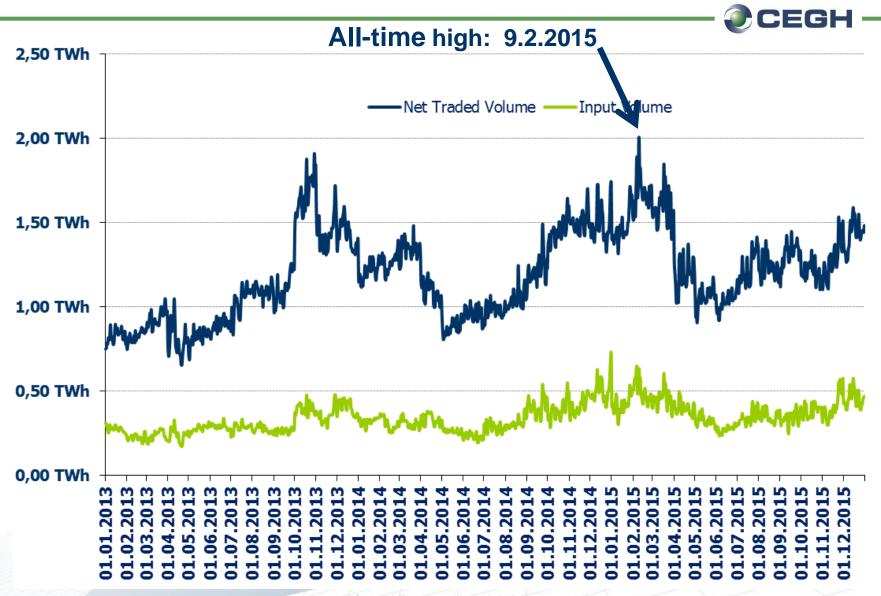




CEGH - Development of OTC Trading Diversity of Registered Members

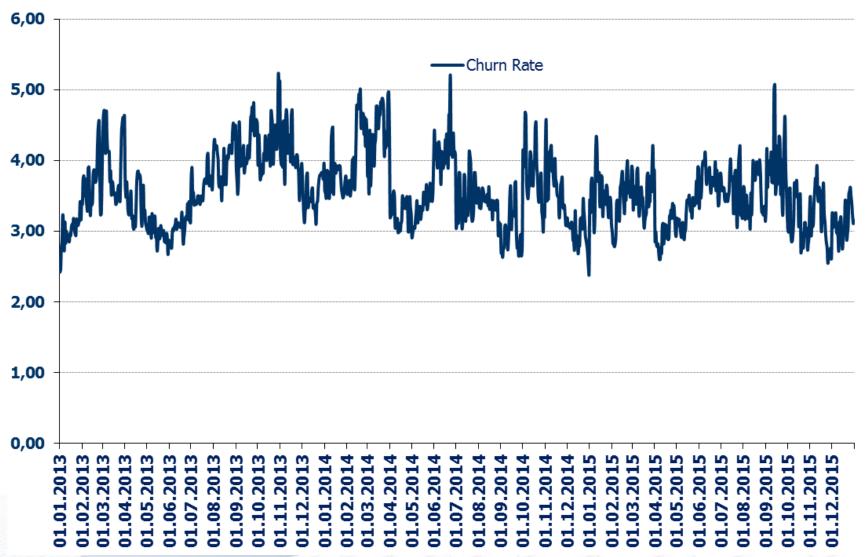


OTC Trading: Daily Trading Volume since Jan 2013



OTC Trading: Daily Churn Rate since 01.2013

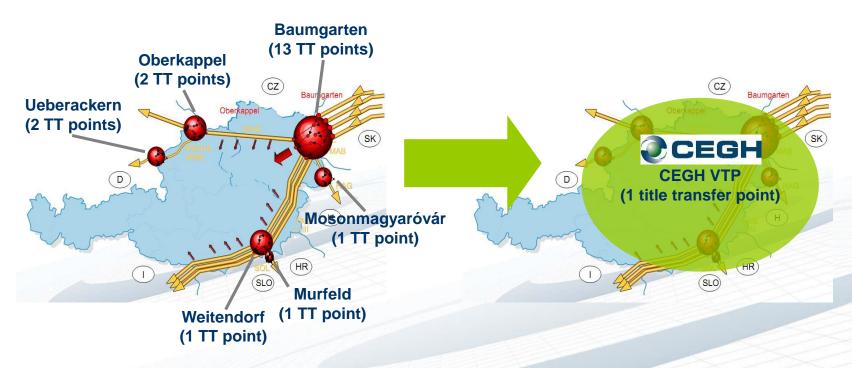




Introduction of the CEGH VTP and consequences for CEGH title transfer points ©CEGH

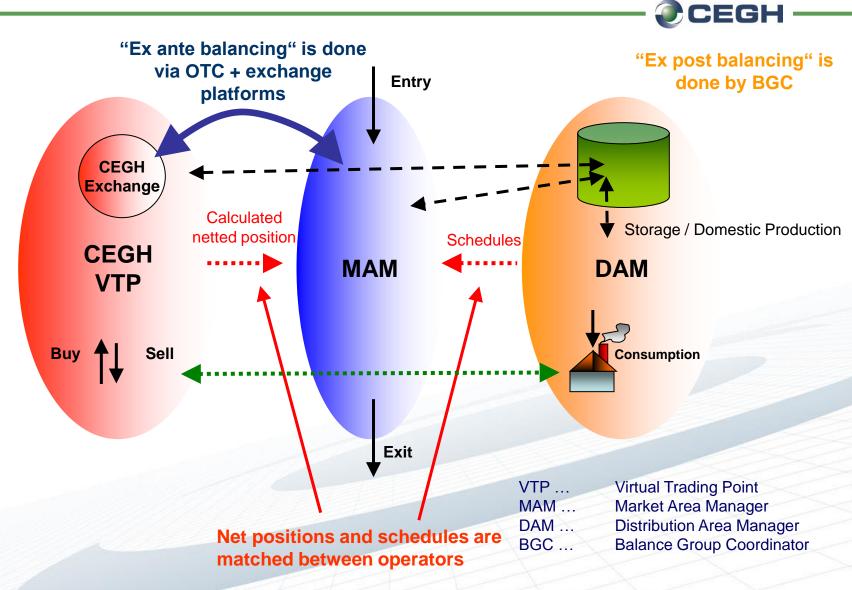
Previous CEGH locations

Current CEGH location



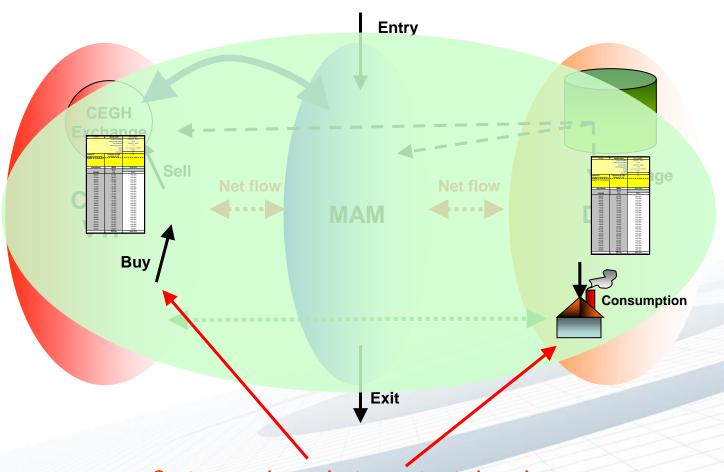
TT...title transfer

Interaction between operators



Simplified + barrier-free access to VTP





Customer only nominates contracted services:
Single combined market model

Net position calculation per balance group

BGR @ CEGH

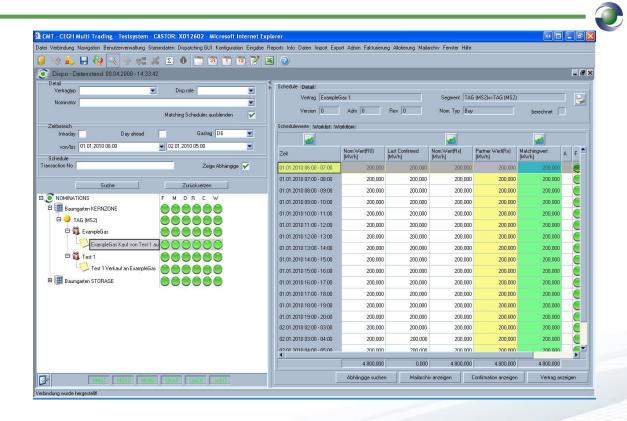
- 50 Sell to X Buy from A + 400 Buy from B Sell to Y - 40 + 40 Buy from C Sell to Z + 10- 10 + 350 **OTC** - 30 Sell on Exchange Sell on Exchange - 20 **Exchange** - 50

net position to MAM

Total

+ 300

Quick look on CMT ... CEGH Multi Trading System



- In-house development of whole system
- Covering multiple operational processes

CMT 2.0 = CEGH Multi Trading System Core of CEGHs VTP Operation

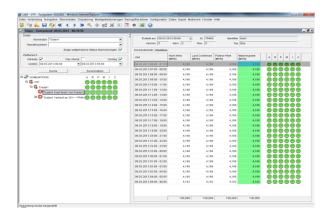


CMT 1.0



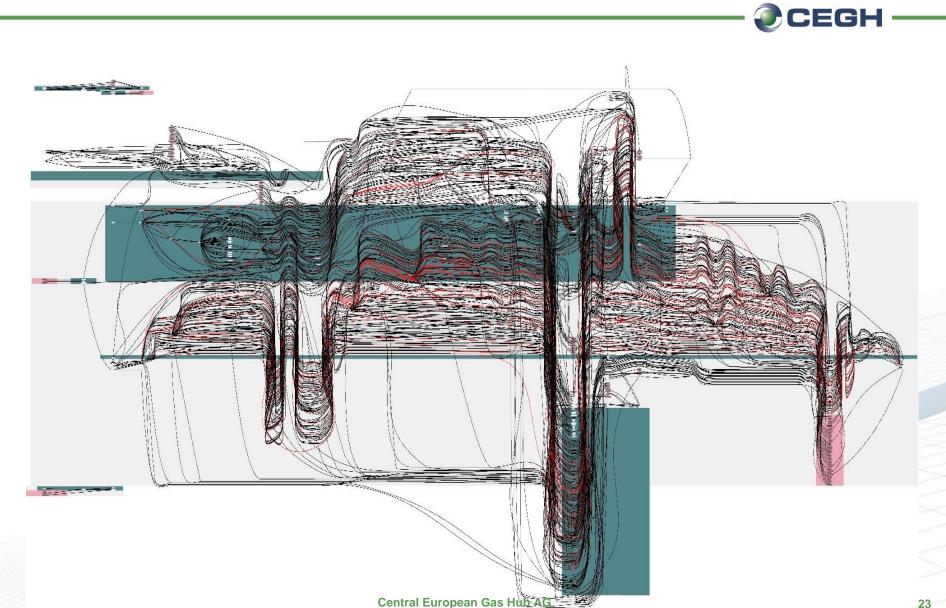


CMT 2.0

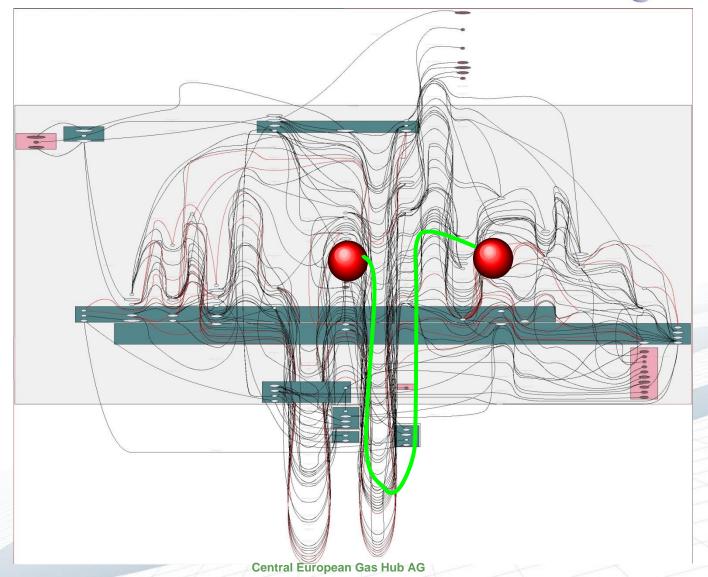


- handling (currently) >2,500+ VTP nominations per day
- intraday trading with 2 hours lead times
- every 60 seconds new matching cycle
- every 20 seconds new nomination processing
- total matching cycle calculation has been reduced from 240 sec. to 7 sec.
 - > ready for ultra short term balancing

Modern art by CEGH? all bilateral trading relations for one gas day



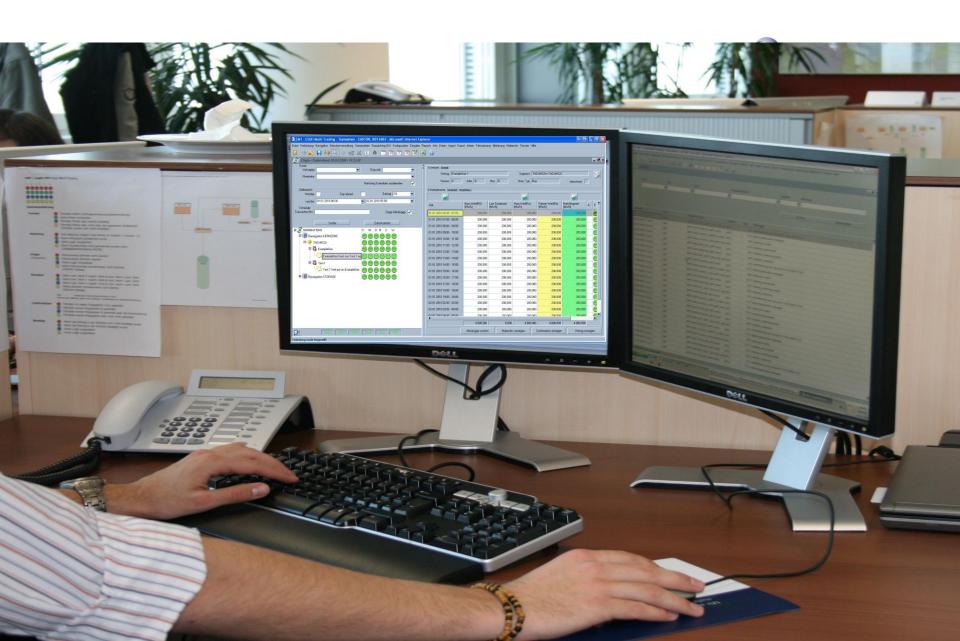


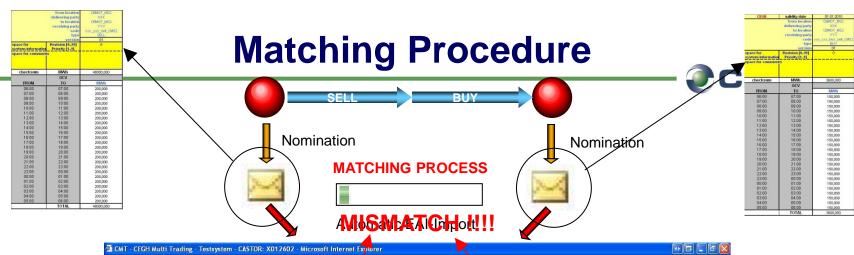


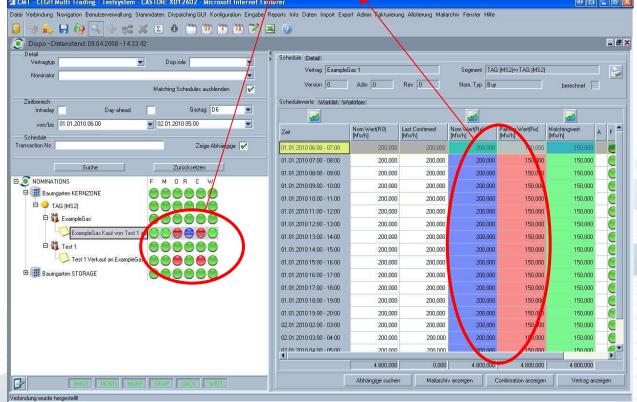








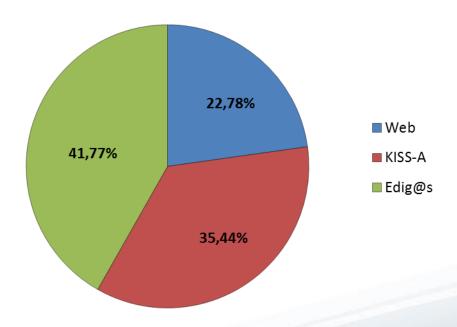




CEGH's experience since market start Jan 1st



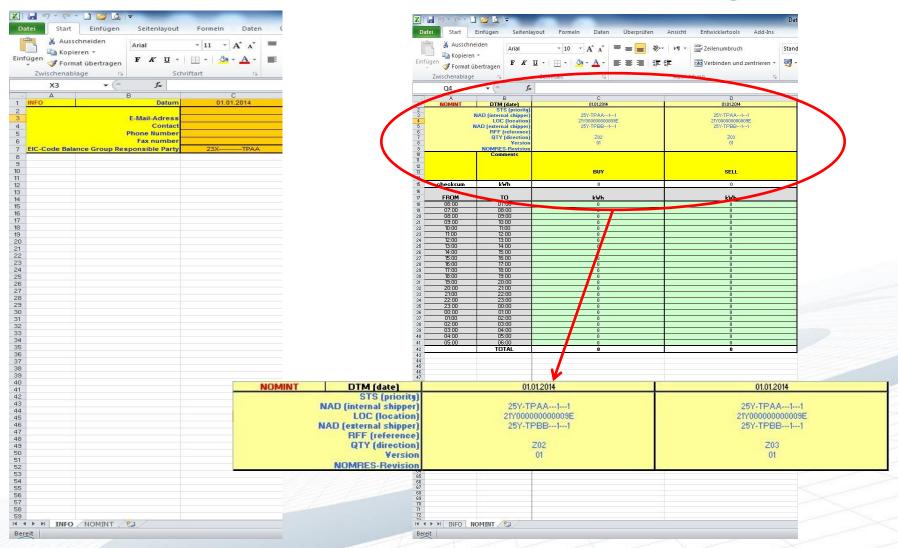
Nomination formats used by active customers:



- Edig@s 4.0 XML transmitted via AS2 connection or email
- KISS-A still very popular due to the ease of use
- Web often used by smaller companies or for renominations

Kiss-A



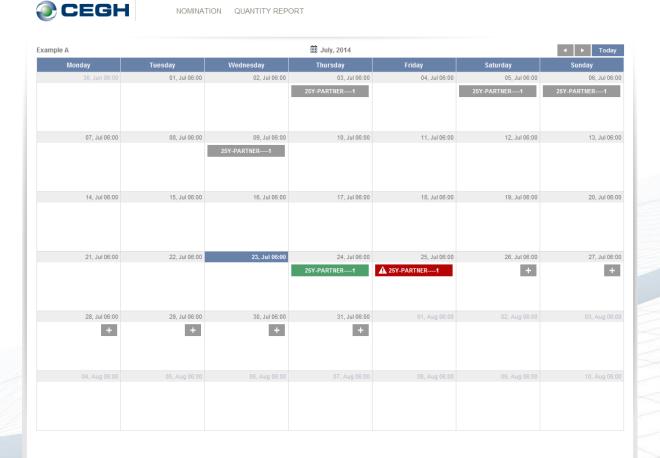


Nomination Platform (Web 2.0)

@CÉGH

With the calendar you have an overview of already submitted nominations. The status of the nomination is indicated by different colors:

- Grey past gasdays (read-only)
- Green matched gasdays
- Red open gasdays (mismatch or missing nomination)



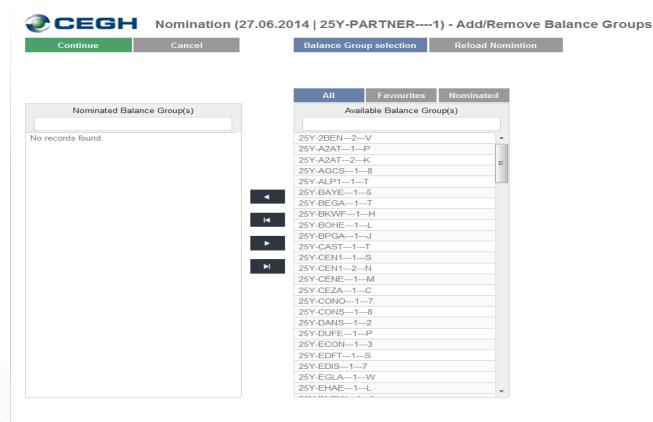
Nomination Interface



Select one or more counterparties from the "Available Balance Group(s)" box

After all counterparties have been selected click "Continue" to proceed with the

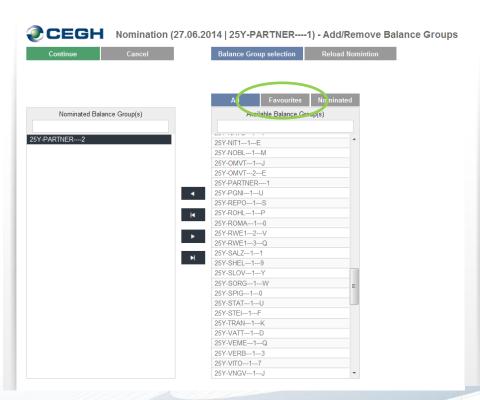
nomination



Favourites



- Create a "Favourites" list for your frequently used counterparties
- Add or remove counterparties from the list to the "Favourites" box and save with "Back"





Edig@s 4.0



```
U:\CEGH\DISPATCHING\One day at CEGH\23X------TPAA_CEGH_VTP_Date_Version.xml - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
 23X----TPAA CEGH VTP Date Version.xml
       <?xml version='1.0' encoding='utf-8'?>
      -Nomination Release="3" Version="EGAS40">
         <Identification v="NOMINT20140109A00084"/>
         <Type v="01G"/>
         <CreationDateTime v="2013-12-31T07:47:10Z"/>
         <ValidityPeriod v="2014-01-01T05:00Z/2014-01-02T05:00Z"/>
         <ContractReference v="Identification Name"/>
  8
         <ContractType v="CT"/>
         <IssuerIdentification codingScheme="305" v="23X-----TPAA"/>
         <IssuerRole v="ZSH"/>
         <RecipientIdentification codingScheme="305" v="21X000000001062J"/>
          <RecipientRole v="ZSO"/>
  13
         <ConnectionPointInformation>
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             <Direction v="Z03"/>
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           <AccountRole v="ZES"/>
  32
             <TimeInterval v="2014-01-01T05:00Z/2014-01-02T05:00Z"/>
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             <Direction v="Z02"/>
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  38
  39
        </Nomination>
  40
```

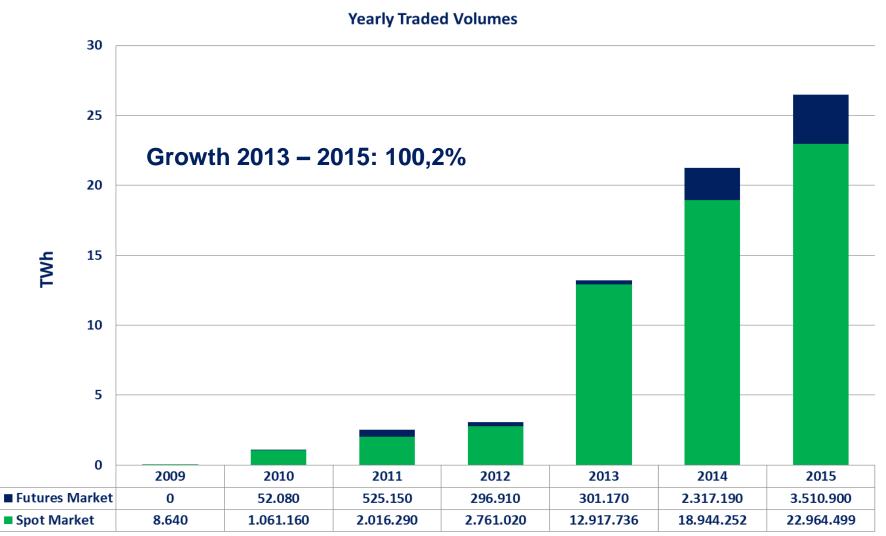


CEGH Gas Exchange of Wiener Boerse (Austria)

CEGH Czech Gas Exchange Market

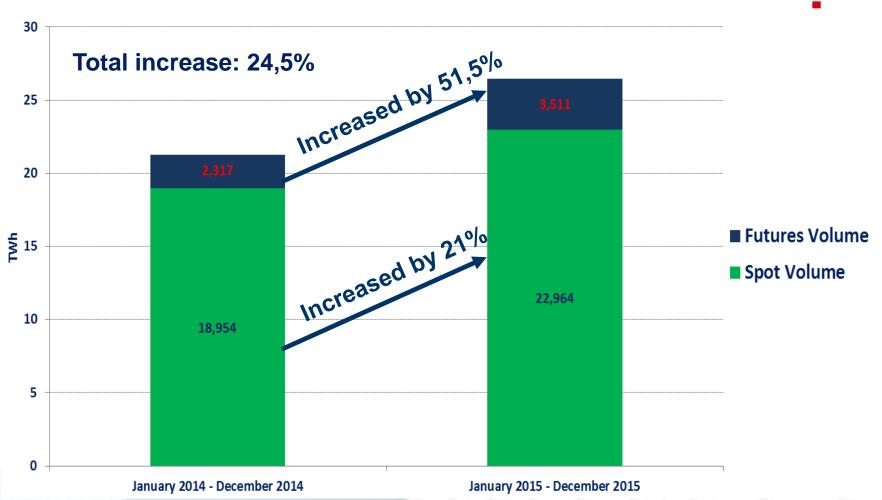
CEGH Gas Exchange: Yearly Trading Volume since 2010



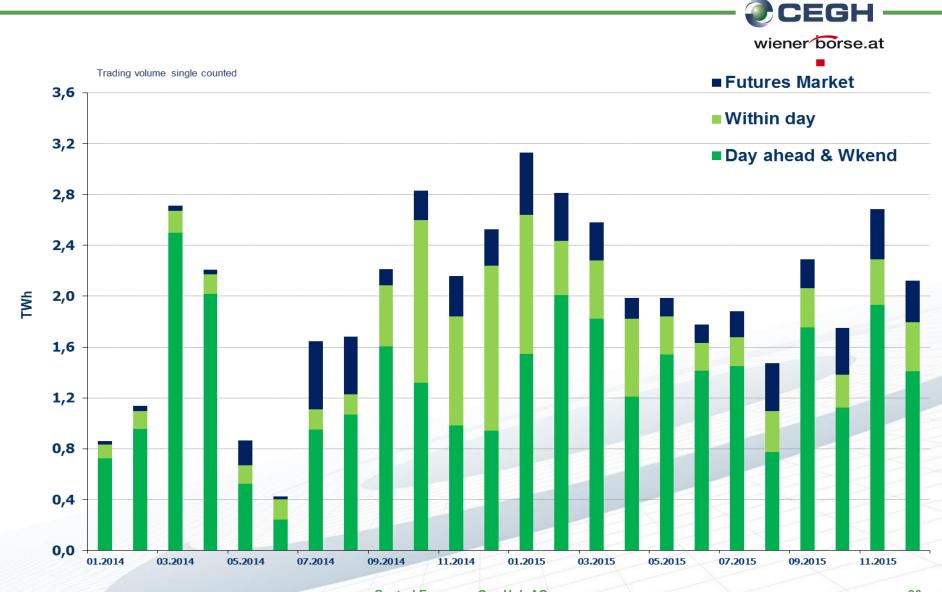


CEGH Gas Exchange Volume Growth 2014 vs. 2015

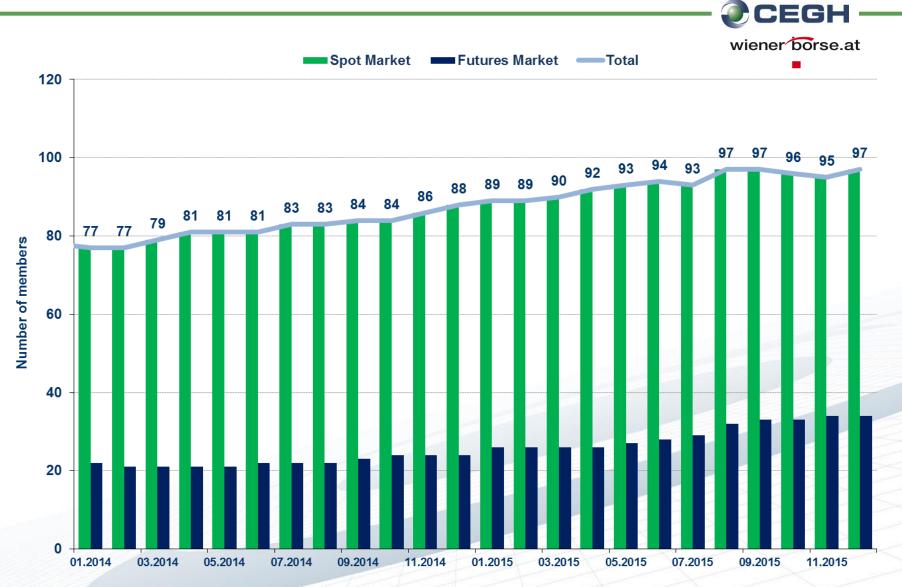




CEGH Gas Exchange of Wiener Boerse: Monthly Trading Volume since January 2014



CEGH Gas Exchange: Total Members and per Market



Registered Members CEGH Gas Exchange



Registered Members CEGH Gas Exchange



CEGH Czech Gas Exchange Market: Start 9 December 2013





Launch: Futures Market: 9 December 2013

Spot Market: 4 May 2015

Members: 19 members registered

■ **Traded Volume:** 3,177 GWh (1 – 12 / 2015)

Fee Holidays: Existing CEGH members or PXE participants:

- → No one time registration fee
- → No monthly participation fee
- until further notice

CEGH Czech Gas Exchange: Monthly Trading Volume





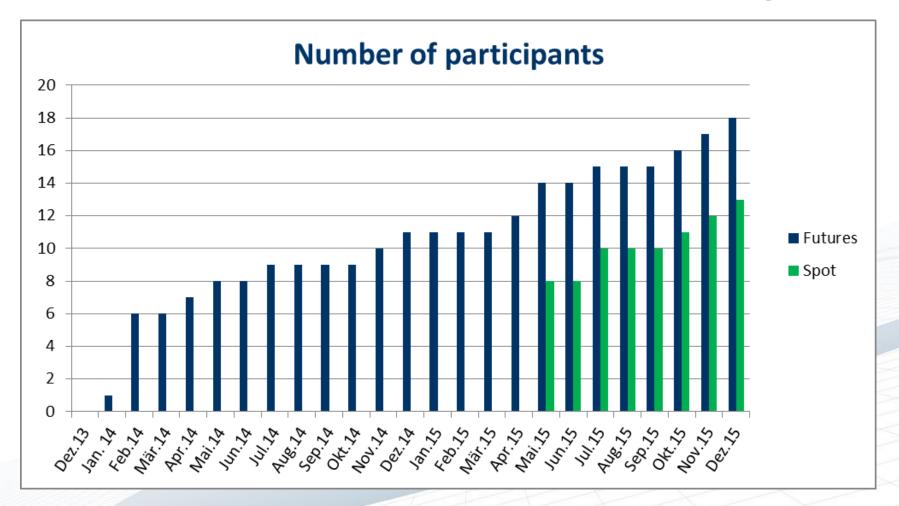
Traded Volume on Spot & Futures Market



CEGH Czech Gas Exchange: Participants



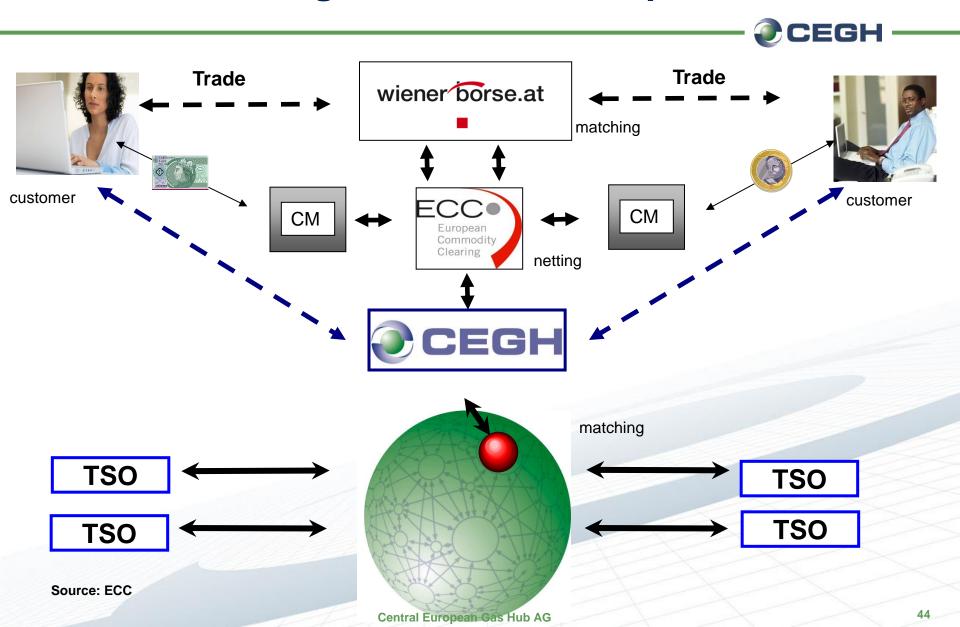




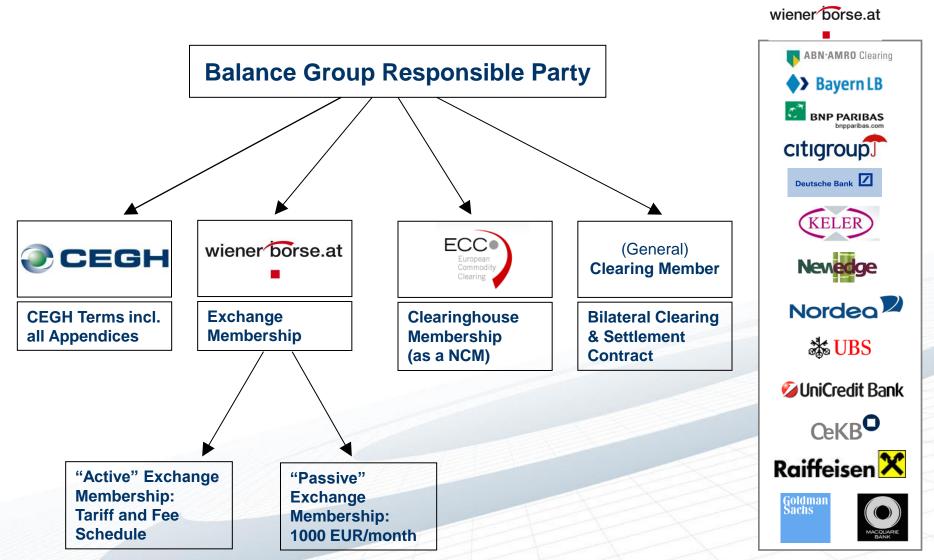


Setup of CEGH Gas Exchange of Wiener Boerse (Austria)

Exchange and Settlement process



Necessary Memberships to be active as a BGRP in the Austrian Market Model



CEGH

Contract specification



	Next Hour Contract	Within-Day Contract	Day Ahead Contract			
Gas product type	Base load	Base load	Base load			
Delivery point	VTP Austria	VTP Austria	VTP Austria			
Settlement	Next hour with a lead time of 3 hours based on the next full hour	Rest of day with a lead time of 3 hours based on the next full hour to 06:00 am (d or d+1)	Physical delivery from 06:00 am (d+1) to 06:00 am (d+2)			
Trading hours	24/7	24/7	From 09:00 am to 05:30 pm			
Price units	EUR/MWh	EUR/MWh	EUR/MWh			
Minimum price change	0.025 EUR/MWh	0.025 EUR/MWh	0.025 EUR/MWh			
Minimum trade size	1 MWh	1 MWh	1 MWh			
Single sided nomination	BY ECC, counter party nomination done by CEGH on behalf of exchange member	BY ECC, counter party nomination done by CEGH on behalf of exchange member	BY ECC, counter party nomination done by CEGH on behalf of exchange member			

Contract Specification – Within Day products



			Lead time / Delivery period														
Trading period	Delivery hours	3 AM - 4 AM	4 AM - 5 AM	5 AM - 6 AM	6 AM - 7 AM		10 AM - 11 AM	11 AM - 12 PM	12 PM - 1 PM	1 PM - 2 PM		1 AM - 2 AM	2 AM - 3 AM	3 AM - 4 AM	4 AM - 5 AM	5 AM - 6 AM	6 AM - 7 AM
2 AM - 3 AM	24	ı	ı														
3 AM - 4 AM	23																
4 AM - 9 AM	22 - 8																
9 AM -10 AM	17																
10 AM - 11 AM	16							į	ı								
12 PM – 12 AM	15									•							
12 AM -1 AM	2									I							
1 AM - 2 AM	1																
						Lead t	time			Delivery pe	riod			-		-	

Contract Specification for Spot Market Products



- Exchange trading days are congruent with those of Wiener Boerse AG (usually Monday to Friday)
- Each delivery day is an independent tradable contract
- Examples...

Trading Day	Monday	Tuesday	Wednesday	Thursday	Friday			
Tradable Delivery Days	Tuesday	Wednesday	Thursday	Friday		Weekend		
Tradable Delivery Days					Saturday	Sunday	Monday	

Market Maker Obligation – Spot Market



- Minimum size: 10 MW for each side (i.e. bid and ask)
- Maximum spread:
 - Day Ahead 0,300 [€/MWh]
 - Weekend 0,350 [€/MWh]
- Minimum performance level: 40%

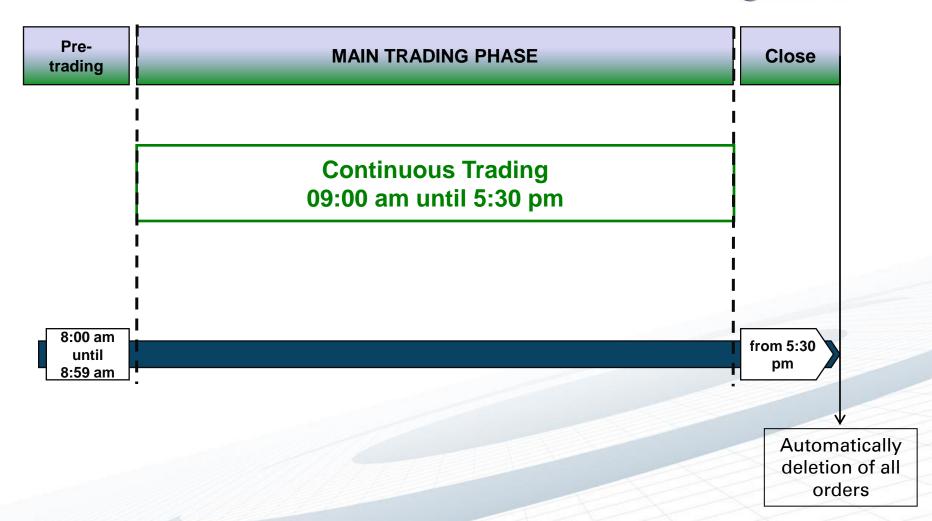
Contract specification



	Futures Market												
	Front Month			Fro	ont (Quai	ter	Fror	nt Sea	ason	son Front Y		
	1.	2.	3.	1.	2.	3.	4.	1.	2.	3.	1.	2.	
Gas product type	Base load												
Delivery point		VTP Austria											
Settlement	Physical Delivery (Gas Day 06:00 a.m. to 06:00 a.m.)												
Trading hours	From 09:00 a.m. to 05:30 p.m.												
Price units	EUR/MWh												
Minimum price change	0.025 EUR/MWh												
Minimum trade size	10 MW												
Single sided nomination	BY ECC, counter party nomination done by CEGH on behalf of exchange member												

Trading phases





Trading phases – Time schedule (CET)

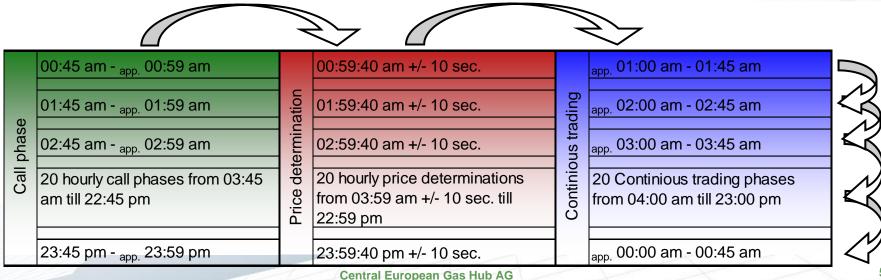


CET time	trading phase	description
08.00 am – 08.59 am	pre-trading	closed order bookno matchingindividual order management
09.00 am – 05.30 pm	continuous trading	open order bookcontinuous matching
05.31 pm – 23.59 pm	close	closed order bookno matchingindividual order management

Trading phases Within-Day & Next Hour

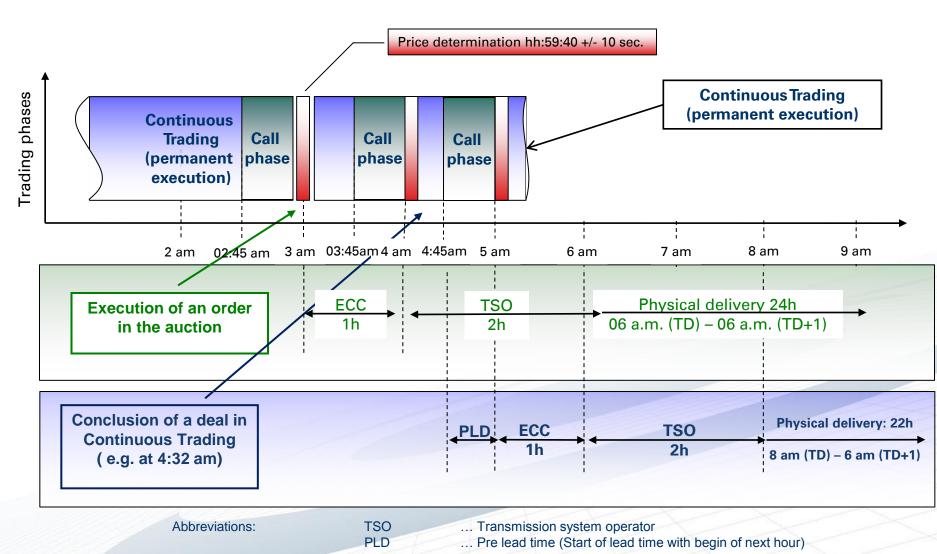


- Trading Mode: Combination of continuous trading and auctioning (one after another)
- ➤ After each Continuous trading phase which lasts approx. 45 minutes there will be a call phase which lasts approx. 15 minutes ending with a price determination at hh:59:40 +/- 10 seconds
- After price determination the next continuous trading phase starts and lasts until the next auction begins
- Orders not executed in the current phase will be transferred to the next trading phase



Trading phases Within-Day

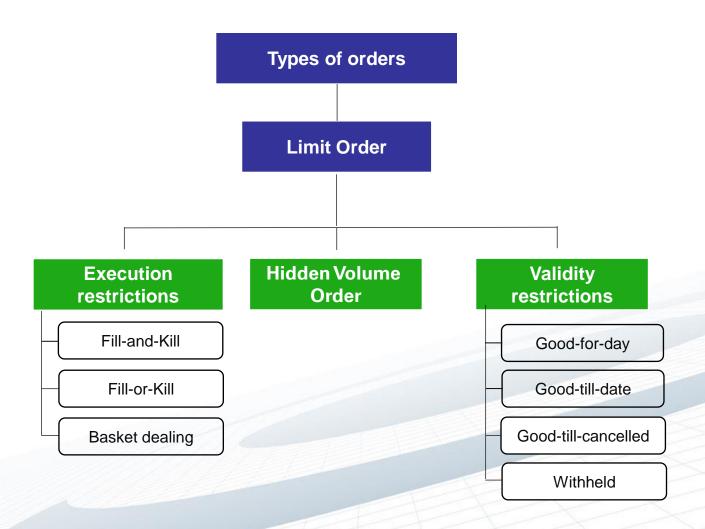




Central European Gas Hub AG

Types of Orders





Protection & Safeguarding Mechanisms

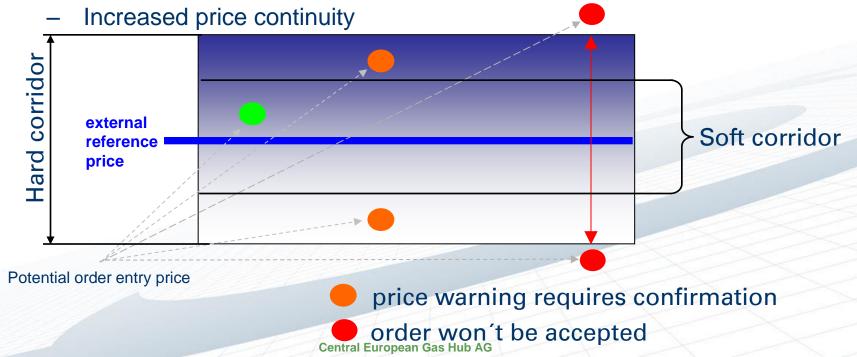


- safeguards
 - help to increase price continuity
- following safeguard mechanisms are supported
 - price reasonability checks
 - price corridor for order entry
- Price corridors
 - Soft corridor price warning when you want to insert the order, the warning can be confirmed and the order is valid
 - Hard corridor it is not possible to enter the order, the price is to low (buy order) or to high (sell order)
 - The corridors will be defined by the gas exchange operator

Protection & Safeguarding Mechanisms



- Entering of orders only between the reference price band-width
- Trades only within the reference price band-width possible
- Price ranges are set by the exchange
- Not applicable for Within-day contracts
 - Prevention of extraordinary price jumps or declines



Mistrade

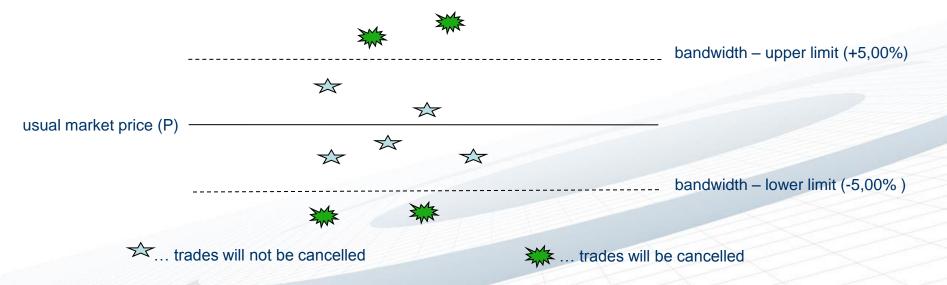


- trading participant shall report the assertion of a mistrade immediately but not later than ten minutes after determination of the execution price
- the mistrade may only be reported by the parties involved in the relevant transaction
- The price of the transaction has to be an unusual market price
- The exchange calculates a usual fair price, ...
 - as arithmetic average of the last three exchange prices determined
 - if not possible, then five exchange members not involved in the trade are requested for a market price at the time of execution. The fair market price is the mean of the prices whereas the highest and lowest prices are not taken into consideration. (Chief-Trader-Rule)

Mistrade



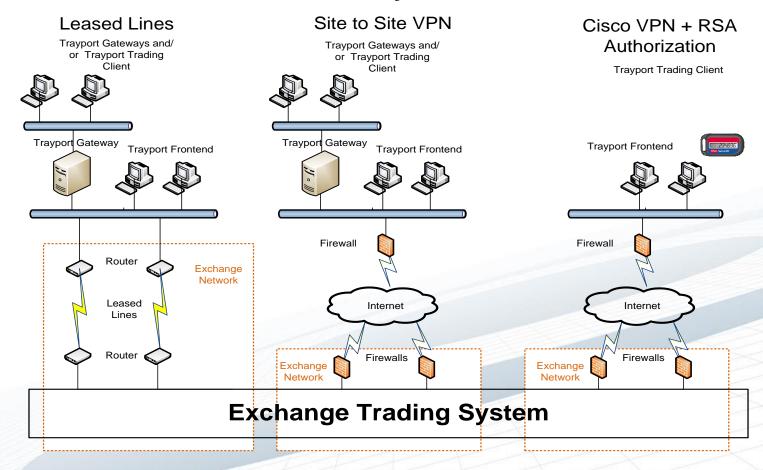
- usual market price is basis for calculating the mistrade bandwidth
- if transaction price in question is outside bandwidth
 - trade will be cancelled (=deletion in the trading system)
- if transaction price in question is inside bandwidth
 - trade will not be cancelled



GlobalVision Exchange Trading System Connectivity Overview



GlobalVision Exchange Trading System Connectivity overview





Thank you very much for your attention





wiener borse.at

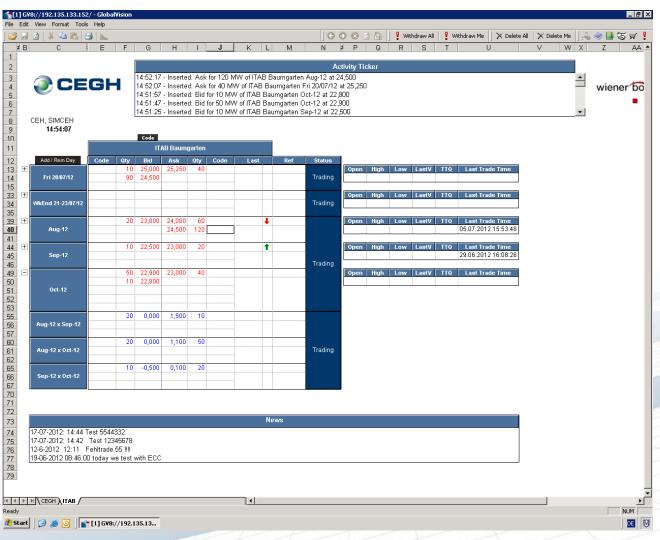
<<< OTC MARKET

SE

E C T

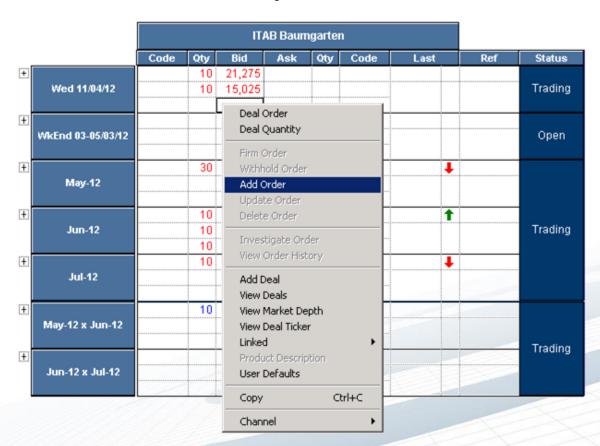
GAS EXCHANGE >>>





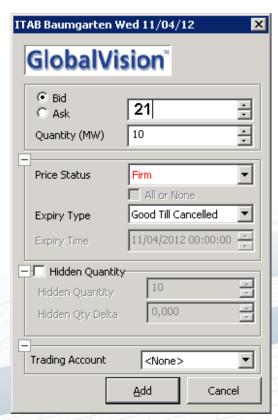


Right-click on the tradable day and select "Add Order"



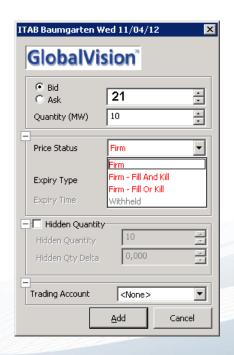


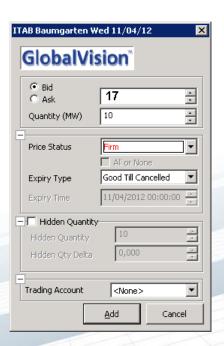
- In the Order Entry Dialog you have to fill in necessary :
 - Price
 - Quantity (10 MWh/h or a multiple) and
 - Trading Account





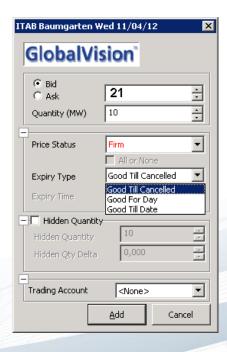
- Available order restrictions:
 - Fill or Kill
 - Fill and Kill
 - Withheld







- Available order restrictions:
 - Good Till Cancelled
 - Good For Day
 - Good Till Date





- Delete an order
 - Right-click on the order entered and select "Delete Order"
 - Highlight the order and press DEL
- If you want to delete all of your own orders in the market
 - Click on the button "X Delete Me" in the menu bar.



- To delete all orders across your company
 - Click the button "X Delete All" in the menu bar



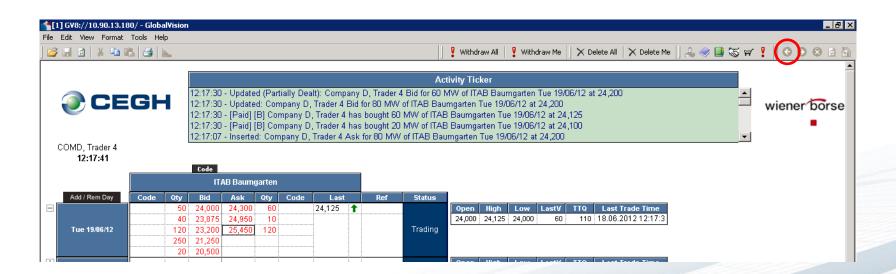


- Open the "Order Management" window
 - Click with the right mouse on the order
 - Now can change or delete the orders





Open the Trayport system and click "F9" or click on "View Deals" which is marked red





The "Deals" window opens. Please click on "Current deals" and choose the time period for the information you want to export.

