



GO MARKET

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h u p x

HUPX Organized Guarantees of Origin Market

The Hungarian GO Market
with the multiple seller model

2022.09.06.



GO (Guarantees of Origin)

- ▶ Tradeable energy certificate in Europe
- ▶ Claim to the environmental benefits associated with renewable power, gas and high efficiency cogeneration

As a **full member of AIB** the Hungarian **MEKH** (Hungarian Energy and Public Utility Regulatory Authority - HEA) **joined EECS** in February 2022.

Trading through the **AIB Hub** possible since March 2022.

Why AIB?

- + Standardized cross-border GO trading
- + Faster GO issue and transfer
- + PR in green markets
- + Higher liquidity with international market participants

Access of GOs in Hungary

- + Via GO account or via import/export from/to other AIB domain
- + CMO.Grexel registry system with G-REX upgrade possibility
- + Monthly production data and increasing share of renewables



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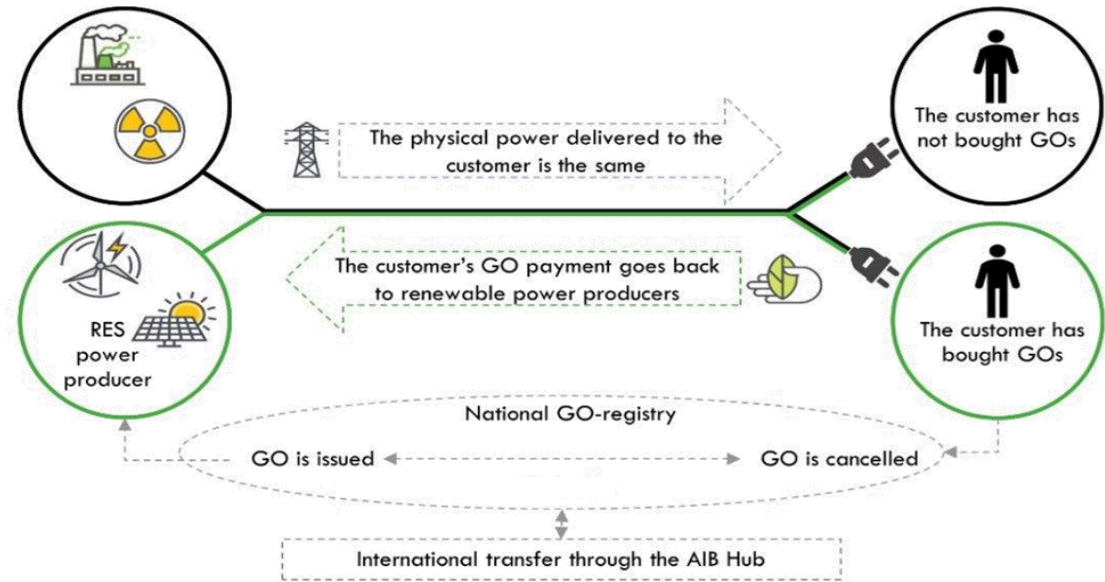
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GO specifications based on RED II:

- ▶ Identity, location, country, technology, fuel, installed capacity and commission date of the power plant
- ▶ Support type
- ▶ Start and end dates of production
- ▶ Volume (1 GO = 1 MWh)
- ▶ Unique identification number



Production of 1 month

Issue GOs after production

Latest cancellation 12 months
after the end of production

GO Timeline



Phase I: Single Seller model

Auction for Primary Feed-in-Tariff Gos

The HUPX GO Market started with the single seller model. The Hungarian TSO (MAVIR), as the nominated buyer of Hungarian FiT production is the sole seller of the related GOs, while buy side is open to energy traders, end-users and other market participants.

Summary of Product List and Specification

- ▶ **Order attributes:** Technology, production month
- ▶ **Available technologies:** Biogas, Biomass, Geothermal, Hydro, Landfill gas, Solar, Waste, Wind
- ▶ **Available countries:** Hungary
- ▶ **Seller side:** Hungarian TSO – MAVIR
- ▶ **Clearing and settlement:** Via HUPX technical GO account and HUPX bank account
- ▶ **Guarantee system:** Guaranteed delivery and payment via Collaterals for buyers and sellers
- ▶ **Auction frequency:** Quarterly Auctions with a possibility to move to monthly
- ▶ **Pricing mechanism:** Pay-as-bid with highest winning bids receiving newer plants

Primary FiT GOs are now included in the GO Product with the introduction of multiple seller model.



Phase II: Multiple Seller model

Auction for Non-Primary Feed-in-Tariff GOs and Secondary GOs together with Primary FiT GOs

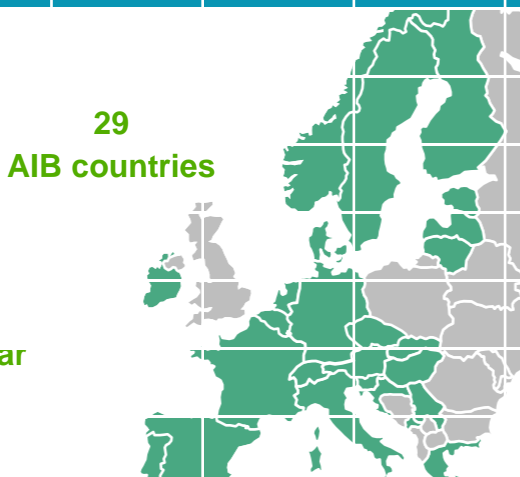
HUPX is launching the multiple seller model on **20th September**, where members can buy and sell on the market under the same GO membership. HUPX plans to *introduce developments with the go-live of Phase II*.

Summary of Product List and Specification

- ▶ 5 Order attributes: *Preference handling via* technology, production month, *commission date, country and support type*
- ▶ Available technologies: Biogas, Biomass, Geothermal, Hydro, Landfill gas, Solar, Waste, Wind *and any other EECS compliant technology*
- ▶ Available countries: Hungary *and other AIB countries*
- ▶ Seller side: *Hungarian and other European power plants and GO traders* besides MAVIR
- ▶ Clearing and settlement: Via HUPX technical GO account and HUPX bank account
- ▶ Guarantee system: Guaranteed delivery via Collaterals for buyers and sellers
- ▶ Auction frequency: *Monthly Auctions*
- ▶ Pricing mechanism: *Single clearing price set by last winning buy Order*



Single Auction and streamlined Order insert with a complex Order Book

Technology	Biogas	Biomass	Geothermal	Hydro	Landfill gas	Solar	Waste	Wind	Other EECS technologies
Commission year	 <p>29 AIB countries</p>					<p>8+ technologies</p> <p>2 support type</p> <p>Every valid production month</p>			Support type
1903									Supported
1904									Supported
...									Supported
...									Supported
2020									Supported
2021									Supported
2022	Production months	Month T-11	Month T-10	Month T-3	Month T-2	Month T-1	

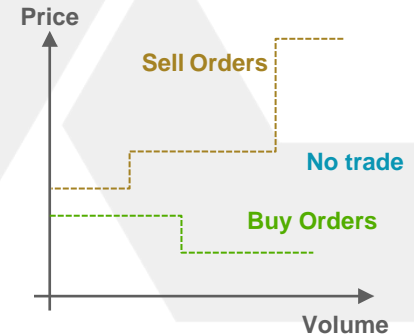
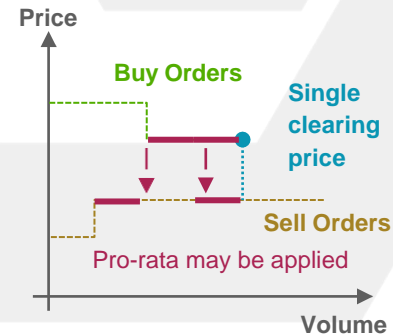
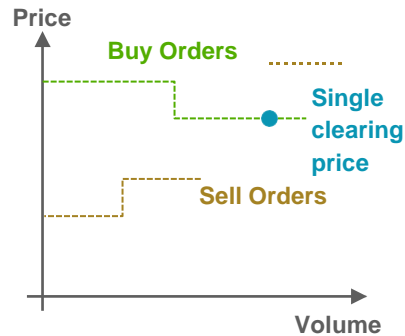
Every
commission year

5 Order attributes via preference handling



Auction algorithm

1. List all the possible Contracts (subproducts based on Order attributes)
2. Select the one with the highest traded volume (liquidity)
3. If multiple Contracts would result the same liquidity, select the one with the highest social welfare
4. Run **single clearing price** Auction algorithm, *examples:*

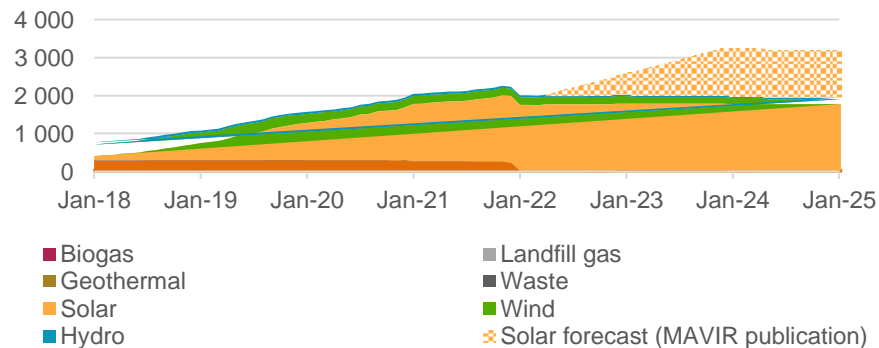


5. Refresh Order Book based on Auction algorithm results and Trades
6. Repeat 1-5. and run until there is buy or sell volume to be matched

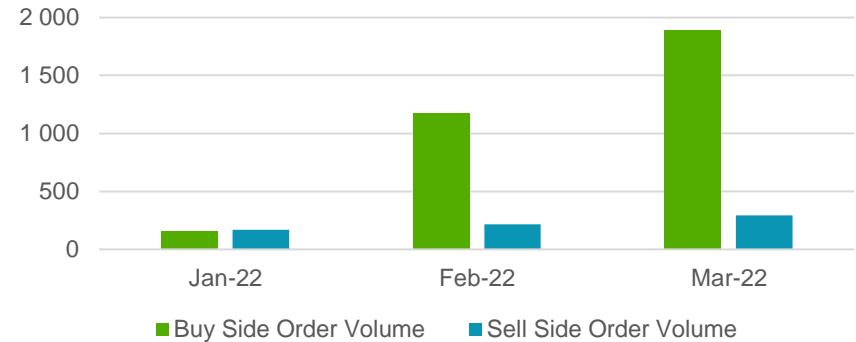
First Auction experiences

- ▶ 4 TWh/year Primary FiT GO
- ▶ 100% of AIB GOs sold
- ▶ Huge overdemand for AIB GOs
- ▶ Possibility to sell non-AIB GOs too

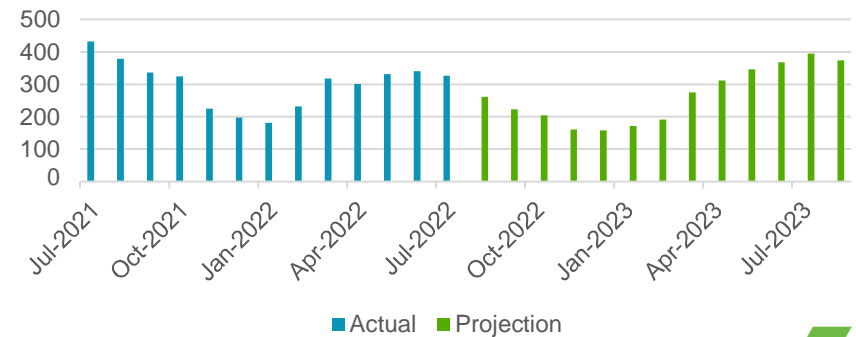
Hungarian FiT installed capacity (MW)



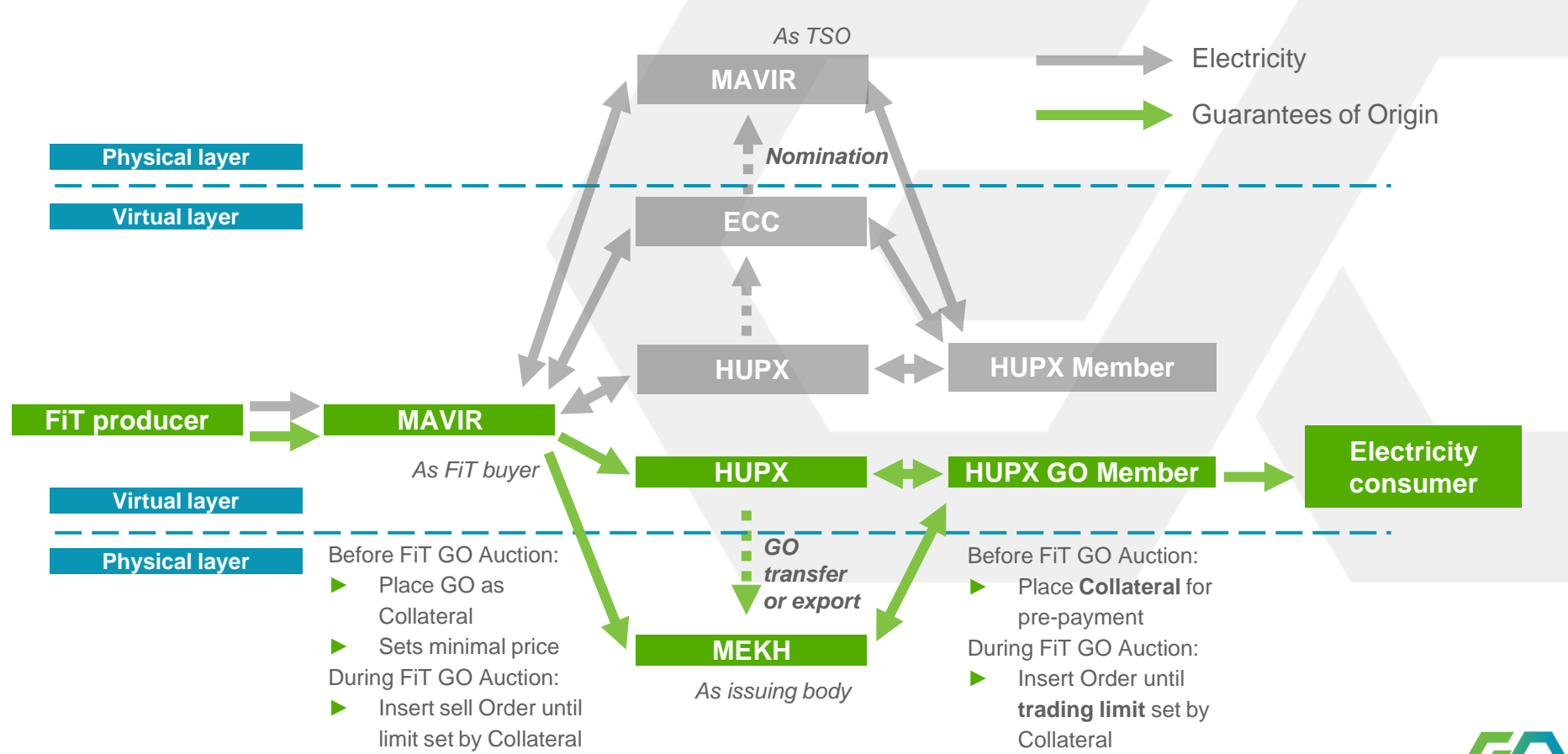
First Auction Order volumes (GWh)



Monthly FiT production volume (GWh)

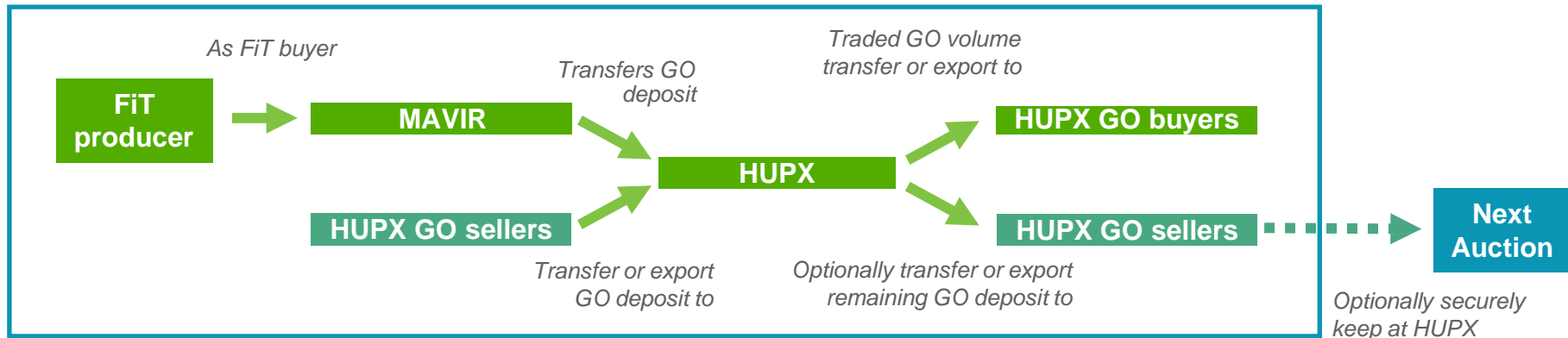


Clearing and Settlement of Primary FiT GOs

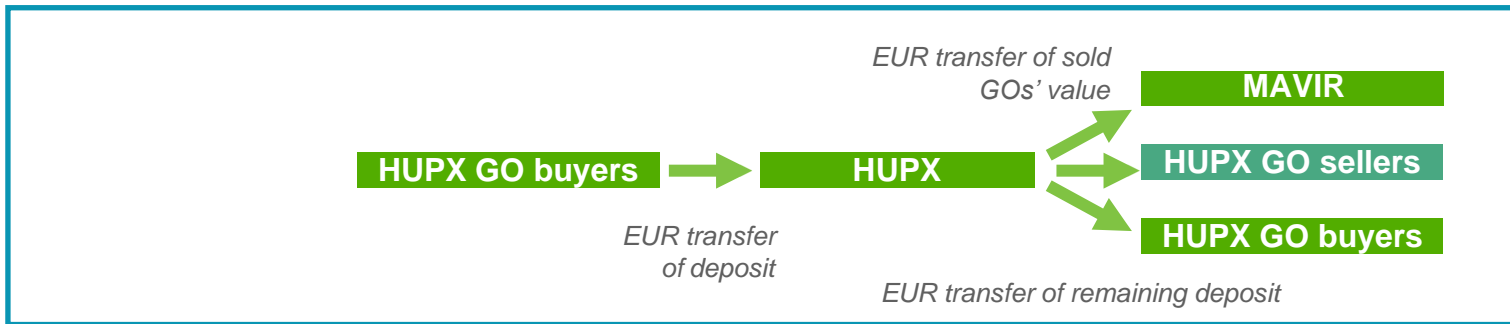


Physical settlement

Existing New



Financial settlement



**T-5* 8:00 a.m.
(CET)**

Start of Collateral
reception timeframe

**T-2* 4:00 p.m.
(CET)**

End of Collateral
reception timeframe

T: Trading Day

Order Book is open
on the day of Auction:
10:00 - 14:00

**T 4:00 p.m.
(CET)**

Publication of market
results

T+1*

Settlement and
invoicing of
GOs and payments

** Working days
based on
Trading
Calendar*

Dates of the first HUPX GO Auction with multiple sellers

12th September 2022

16th September 2022

20th September 2022

20th September 2022

21st September 2022

Principles

- ▶ **Several days for Collateral reception** to allow international transactions (e.g. SEPA and other foreign exchange currency transactions)
- ▶ **One day for Auction**, where Order can be inserted into the Order Book to avoid GO price volatility and concentrate liquidity
- ▶ **Quick Settlement** of GOs via CMO.Grexel and AIB Hub (transfer or export) and EUR payments
- ▶ **Invoicing for buyers** is done during Settlement, **sellers receive an invoice annex**



Add Order

Company Name *

Field required
Order Side *

Buy

Technology

Biogas Biomass LandfillGas Geothermal Waste Solar Wind Hydro Technology

Production month

Field required

Country

Country

Commission Year From *

2022

Commission Year To *

2038

GO Quantity *

5

Price [EUR/GO] *

10

Subsidy: Supported Non-supported

Action: Only preference Fill the remaining

Web based Trading System

- ▶ Will be renewed
- ▶ Exportable reports
- ▶ Secure authentication
- ▶ Interfaces towards GO registry and the Settlement Bank
- ▶ HUPX Market Operation support

Join member testing in September!

HUPX Guarantees of Origin
Limit report

Reporting Period
Generation Time

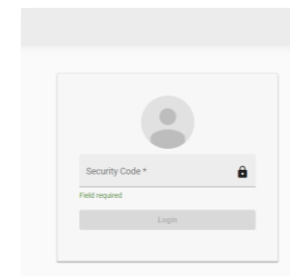
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Company: Trading Company A

Daily position

Auction date		Production month	Technology	Country	Commission year	Support	EECS®	Limit value	Quantity
2022.09.20	Base Limit	Feb-22	Solar	Hungary	2020	Supported	AIB	1 000	MWh
2022.09.20	Current Limit	Feb-22	Solar	Hungary	2020	Supported	AIB	800	MWh
2022.09.20	Base Limit	Mar-22	Hydro	France	2020	Unsupported	AIB	1 000	MWh
2022.09.20	Current Limit	Mar-22	Hydro	France	2020	Unsupported	AIB	700	MWh



What can we offer?

Simple admission process

Except for the GO Registry Account at MEKH or in another AIB country, there is no other admission requirement. No clearing house membership is needed as HUPX manages Clearing and Settlement based on Collaterals. HUPX GO Market is available via the web-based HUPX GO DTS (Digital Trading System).

Summary of Fee Schedule

- ▶ **Competitive fees charged quarterly**
 - ▶ Entrance fee: 0 EUR
 - ▶ Membership fee: 250 EUR/quarter, **which remains the same with the upgrade from quarterly Auctions to monthly Auction frequency**
 - ▶ Transaction fee: 0.03 EUR/MWh
 - ▶ Export fee: 0.0135 EUR/MWh (5 HUF/MWh pass through to MEKH) only to foreign AIB registries
 - ▶ Import fee: 0.027 EUR/MWh (10 HUF/MWh pass through to MEKH) only from foreign AIB registries



For admission and sell side participation

- ▶ **Signature HUPX GO Membership Agreement:** documents available www.hupx.hu
- ▶ **Proof of GO Registry Account:** either via MEKH or other AIB country
- ▶ **For existing HUPX GO Members:** optional signature of the changing forms
- ▶ *No entrance fees*
- ▶ *No need for clearing house contract*
- ▶ *No need for special license in Hungary*



5-7 September 2022

Member testing

12-16 September 2022

Collateral reception
timeframe

20 September 2022

Order Book is open:
9:00 - 14:00

21 September 2022

Settlement and
invoicing

2022 Q4 then from 2023

Further monthly
Auctions

Contact us

- ▶ **Sales:** membership@hupx.hu
- ▶ **Average duration of admission:** 3 days – 2 weeks



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Thank you for your attention!



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