part of eex group

European Energy Exchange AG

A Guide to Margining at ECC

November 2026



Agenda

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03 Exposure for IMSM calculation

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Margining Spot Market - Requirements

Risk

Current Exposure

Current Exposure Spot Margin (CESM)

The net value (payment amount) of all concluded transactions on the spot markets during the day that have not been settled.

+

Potential Future Exposure

Initial Margin Spot Market (IMSM)

Expected value of spot transactions for the time between last payment and the potential default of a counterparty (relevant for power and gas products). Acts as a buffer for the time of trading where no payments can be made (during nights and weekends) and helps to reduce intraday margin calls.

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Margining Derivative Market - Requirements

Risk

Current Exposure

Variation Margin

Daily mark-to-market value change of all open positions in futures using the latest market prices received from the markets.
The profit or loss of each future position will be paid-received by the trading participant daily.

Premium Margin

For the Premium Style options (no daily variation) Premium Margin has to be deposited for net short positions. For net long positions, credits are used to offset other margin requirements.

+ Potential Future Exposure

SPAN®[1] Initial Margin

ECC uses a statistical approach to calculate the potential changes in the value of a trading member's portfolio over a time horizon that is needed to liquidate the portfolio.

Delivery Margin

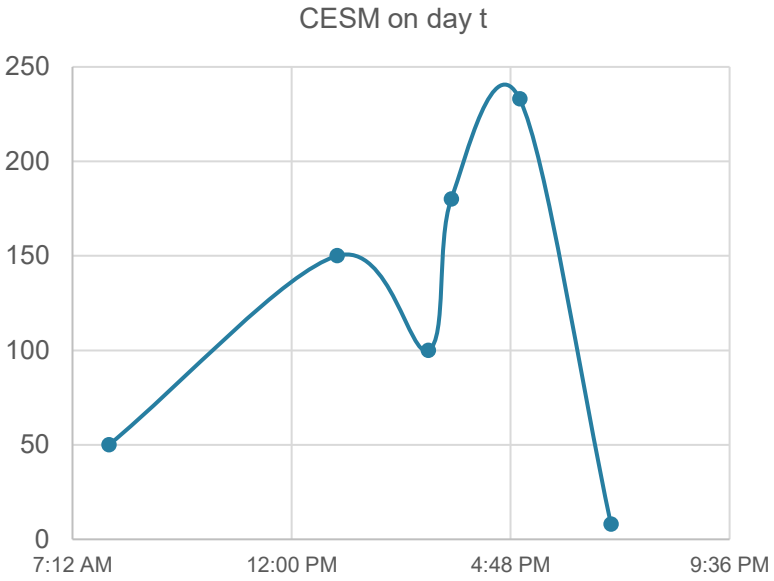
Delivery Margin covers the risk in positions in physically settled futures during the delivery period.

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CESM Calculation

CESM = Maximum (Sum of (Product of Margin Parameters and Current Outstanding Payments); 0)

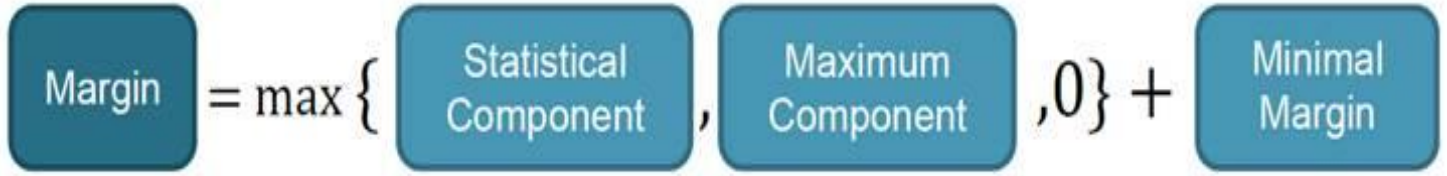
Transaction time	Product Group	Payment Amount[1] in EUR	Accumulated CESM in EUR on day t	Accumulated CESM Calculation
t, 08:00	EPEX_IT_POWER_ELEX	50	50	= MAX(1 x 50; 0)
t, 13:00	EEX_ST_NATGAS_PVB	100	150	= MAX(1 x 50 + 1 x 100; 0)
t, 15:00	EEX_ST_EUA4_DMS	-50	100	= MAX(1 x 50 + 1 x 100 + 1 x (-50); 0)
t, 15:30	EPEX_IT_POWER_ELEX	80	180	= MAX(1 x (50+80) + 1 x 100 + 1 x (-50); 0)
t, 17:00	EEX_ST_EUA4_DMS	60	189	= MAX(1 x 130 + 1 x 100 + 1 x (-50) + 0.15 x 60; 0)
t, 19:00	EPEX_IT_POWER_ELEX	-10	13	= MAX(0.15 x 60 + (-0.4) x (-10); 0)



- **Note:** CESM is reset to 0 (18:00 CET), **EXCEPT** for the EUA trades executed after 16:00 CET and deferred payments due to non-ECC business days (e.g., increased exposure during Christmas or Easter)
- No margin credit is granted to other margin classes;
- CESM is updated every 10 minutes;
- Margin parameters (MPs) = 1 for buy side and = 1 for sell side for power and gas products, **EXCEPT** MPs for the product groups listed in the Risk Parameters file.

[1]Payment Amount is the net value of all concluded transactions on the spot market during the day

IMSM Calculation



- the statistical component is the mean + alpha x standard deviation[1] of financial exposures of the past year
- financial exposures for IMSM calculation are split into T0 exposure and total exposure (see next slide)
- the maximum component is the multiple of beta of the maximum financial exposure of the last 30 ECC business days
- the minimal margin is a fixed value and can be found as an “Absolute additional minimum for IMSM in €” in the Risk Parameters file.
- Further parameters and values (e.g. alpha, beta) can be found in the Risk Parameters file.
- Note: IMSM calculation is amended to cover the risk during specific holidays such as Easter or Christmas, when the exposure can increase up to five days (more information in the Margining file)

[1]Exponentially weighted

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Exposure Calculation Example 1-2

	Transaction Time	Settlement Member	ProductGroup	BuySell	Paymentday	Payment Amount
t - 1 →	02Sep2026 20:30:00	XXXXX	EEX_ST_NATGAS_OTE	B	04Sep2026	50
Current day t →	03Sep2026 12:30:00	XXXXX	EEX_ST_NATGAS_TTF	B	04Sep2026	100
	03Sep2026 14:45:00	XXXXX	EEX_ST_NATGAS_OTE	S	04Sep2026	-70
	03Sep2026 17:00:00	XXXXX	EEX_ST_NATGAS_TTF	S	07Sep2026	-100
	03Sep2026 19:45:00	XXXXX	EPEX_IT_POWER_TNTG	B	07Sep2026	100
	03Sep2026 23:35:00	XXXXX	EPEX_IT_POWER_TNTG	S	07Sep2026	-50
t + 1 →	04Sep2026 10:45:00	XXXXX	EPEX_IT_POWER_TNTG	B	07Sep2026	30

Exposure Calculation Example 2-2

Two types of Exposures relevant for the IMSM calculation:

Exposure Current Day (T0) = „incomplete“ exposure on the current calculation day, sum of payment amounts x margin parameters per product group and payment day from 16:00 CET t-1 to 14:00 CET t (relevant only on current day)

Products group	Payment Day	Margin Parameter x Sum of Payment Amounts per Payment Day	
EEX_ST_NATGAS_OTE	04.09.2026	= 1 x 50 = 50	
EEX_ST_NATGAS_TTF	04.09.2026	= 1 x 100 = 100	
Exposure T0	04.09.2026	=100 + 50 = 150	**= max(0,150) = 150**

Exposure t = sum of payment amounts x margin parameters per product group and payment day from 16:00 CET t-1 to 12:00 CET t+1

Products group	Payment Day	Margin Parameter x Sum of Payment Amounts per Payment Day	
EEX_ST_NATGAS_OTE	04.09.2026	= -0.2 x (50 - 70) = -0.2 x (-20) = 4	
EEX_ST_NATGAS_TTF	04.09.2026 07.09.2026	= 1 x 100 = 100 = 1 x (-100) = -100	
EPEX_IT_POWER_TNTG	07.09.2026	= 1 x (100 + (-50) + 30) = 1 x 80 = 80	
Exposure t	04.09.2026 07.09.2026	= 4 + 100 = 104 = (-100) + 80 = -20	**= max(0,104) - 20 = 84**

Note:

- t = ECC business day except ECC holidays
- The Margin Parameters (MPs) for the calculation of the Exposure = 1 for Buy side and = 1 for Sell side. Exceptions can be found in the Risk Parameters file. (For example, for the product group EEX_ST_NATGAS_OTE: MP = 1 for Buy side and MP = -0.2 for Sell side).
- Payment amounts in foreign currencies will be first converted into EUR at the prevailing exchange rates.

IMSM Calculation Example with 6 datapoints

Calculation of the Exponentially Weighted Standard Deviation

① Compute lambda factors for each datapoint (raise lambda = 0.99 of the number of datapoints = t)

③ Compute squared differences to mean

④ Multiply squared differences to mean with each lambda factor divided by the number of data

Date	t	Exposure > 0 EUR	T0 Exposure > 0 EUR	Lambda^t (λ^t)	$\lambda^t \times x(t)$	$(\mu - x(t))^2$	$\frac{\lambda^t}{m} \times (\mu - x(t))^2$
2025-11-13							
2025-11-12	0	187	150	1			
2025-11-11	1		1893	0.99	0	0	0
2025-11-10	2	1939		0.9801	1,900.41	697716.46	170957.98
2025-11-07	3	1694	455	0.970299	1,643.69	348447.29	84524.51
2025-11-06	4	455		0.96059601	437.07	420819.17	101059.30
2025-11-05	5	456		0.95099005	433.65	419522.76	99740.49
					$\text{Mean}(\mu) = 1{,}103.71$		$\sum = 456{,}282.28$

② Calculate the mean of given weighted exposures (the current day, t=0, is not considered)

⑤ Compute the sum of the weighted differences

*__Parameters:__ lambda = 0.99, alpha = 3.8, beta = 1.6, minimum Margin = 50,000 (Current parameters can be found: the Risk Parameters file)

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IMSM Calculation Example with 6 datapoints

IMSM calculation for 2025-11-13

Date	Standard Deviation	Mean + alpha x SD	Statistical component	beta x Max Exposure (T-30 to T)	Maximum rounded to the next 10,000	**IMSM Requirement**
2025-11-13	675.49	3,670.56	3,670.56	3,102.4	10,000	**60,000**

(6) Calculate the standard deviation by taking square root of (5)

(7) Compute: Mean + alpha x SD

(9) Since x(1)=0 Statistical component = min value of (7) and (8)

(10) Compute the maximum component = Beta x Maximum Exposure (t-30 to t)

(11) Take the maximum from (9) and (10) and round it up to the next 10,000

(12) Add the minimum amount of 50,000 to (11)

Date	Mean + alpha x SD
2025-11-12	3,692.57

(8) Compute statistical component of the previous day

Use the Initial Margin Spot Market Calculator on our website to compute IMSM Requirements.

*__Parameters:__ lambda = 0.99, alpha = 3.8, beta = 1.6, minimum Margin = 50,000 (Current parameters can be found: the Risk Parameters file)

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Variation Margin Calculation Example

$$VM\ for\ a\ specific\ member = \sum Round[(Current\ Settlement\ Price - Last\ Settlement\ Price)\ x\ Contract\ Size;\ 2]\ x\ Net\ Quantity$$

VM > 0 is credited to the account, VM < 0 is debited from the account

Settlement Member	Product	Expiry Month	Expiry Year	Net Quantity	Current Settlement Price	Last Settlement Price	Contract size	Variation Margin
XXXXX	FEUA	12	2019	-4851	20.42	19.50	1000	(20.42 – 19.5) x (-4851) x 1000 = -4,462,920
XXXXX	FEUA	3	2020	2750	19.61	21.23	1000	-4,455,000
XXXXX	FEUA	11	2019	1071	20.77	19.87	1000	963,900
XXXXX	FEUA	12	2020	-900	21.37	20.38	1000	-891,000
XXXXX	G0BM	10	2019	250	14.455	14.342	745	21,047.5
								Sum = -8,823,972.50

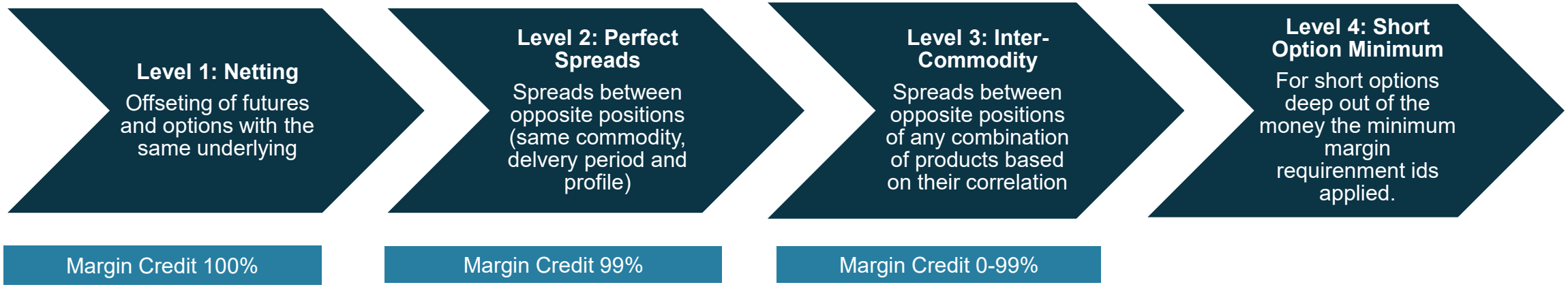
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SPAN® Initial Margin

SPAN Margin methodology allows ECC to optimally align margin requirements with risk, thereby realizing efficient margining. The SPAN® is calculated as follows:

1. Calculation of the overall scan risk for each combined commodity[1]. Scan risk is the worst-case loss multiplied by the net position, using a configurable range of price and volatility movements.

2. The scan risk is then reduced by the intercommodity credits to reflect the reduced risk in portfolios with opposing positions. Spreading takes place in several steps (levels).



3. The resulting amount per portfolio is called SPAN® initial margin.

[1]Combined commodity represents products with the same underlying, load profile, delivery period and maturity

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SPAN® Initial Margin

$$SPAN\ Initial\ Margin\ for\ a\ futures\ contract$$
$$= Price\ Scanning\ Range\ (see\ \underline{Scan\ Ranges\ File})\ x\ Number\ of\ Lots$$

Example 1: Position = Long 5 Lots in DEBM 01-2026

SPAN Initial Margin = 6919.20 (Price Scanning Range for DEBM 01-2026 as of 25.11.2025) x 5 = 34,596 Euro

Product_[1]	Expiry_Year	Expiry_Month	ClearingCu	PriceScanRa	Volscanrange
DEB1	2026	1	EUR	5.580,96	0,20
DEB2	2026	1	EUR	5.580,96	0,20
DEB3	2026	1	EUR	5.580,96	0,20
DEB4	2026	1	EUR	5.580,96	0,20
DEBM	2026	1	EUR	6.919,20	0,20

[1]Combined commodity represents products with the same underlying, load profile, delivery period and maturity

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SPAN® Initial Margin

$$SPAN\ Initial\ Margin\ for\ a\ portfolio\ =\ Mx + M_y - 2\ \times\ IC\ \times\ \min(Mx\,;M_y)$$

where M_x = Price Scan Risk$_x$; M_y = Price Scan Risk$_y$; IC = Intercommodity Credit (all updated parameters are available on the ECC website)

Example 2:

SpreadID	CombinedC	ExpiryYear	ExpiryMon	CombinedC	ExpiryYear	ExpiryMo	TierNumbe	TierNumber	RatioA	RatioB	Credit
88675	DEBM	2026	1	G3BM	2026	1			3	9	0.66

Product	Expiry Year	Expiry Month	Lots	Scanning Range
DEBM	2026	1	5	6919.20
G3BM	2026	1	-5	2328.72

Intercommodity Credit = 0.66

$$Price\ Scan\ Range\ M_i = |Lots| \times Scanning\ Range$$
$$M_{DEBM} = |\ 5\ | \times 6919.20 = 34{,}596$$
$$M_{G3BM} = |-5\ | \times 2328.72 = 11{,}643.6$$

$$SPAN\ Initial\ Margin = 34{,}596 + 11{,}643.6 - 2 \times 0.66 \times \min\ (34{,}596;\ 11{,}643.6) = 30{,}870.05$$

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SPAN® Initial Margin

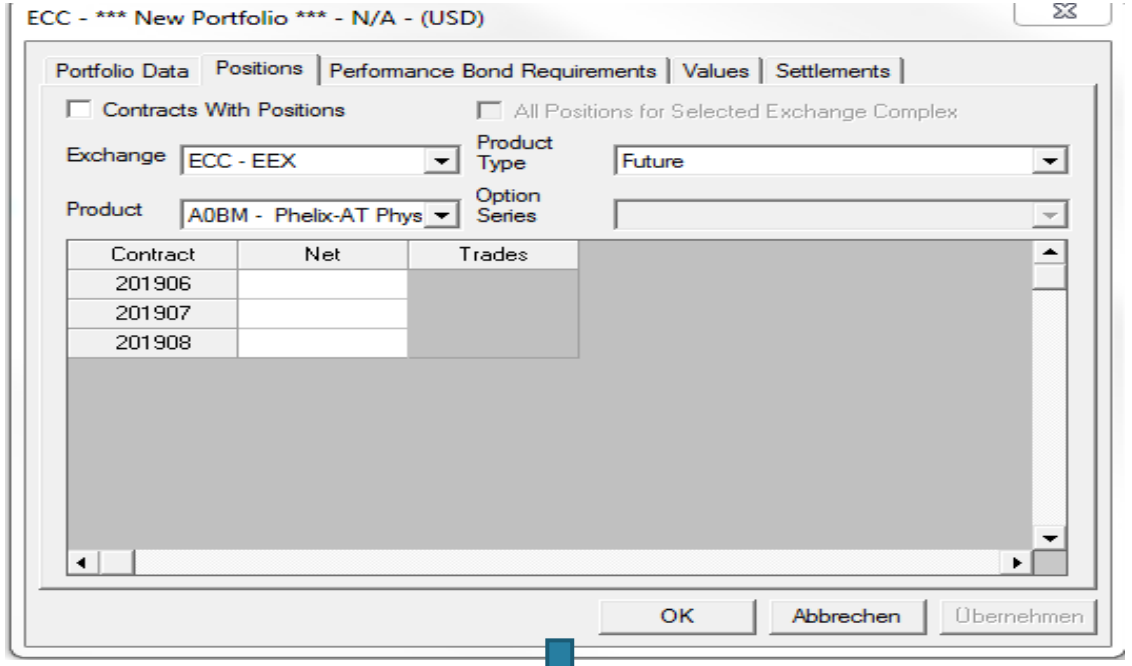
To estimate the SPAN-Margin for your portfolio, the PC-SPAN® tool is used. You can download single copies of PC-SPAN® directly from CME Group Website for free. The instructions for the download, prerequisite files, precise formulas and steps for the calculation can be found in the margining document.

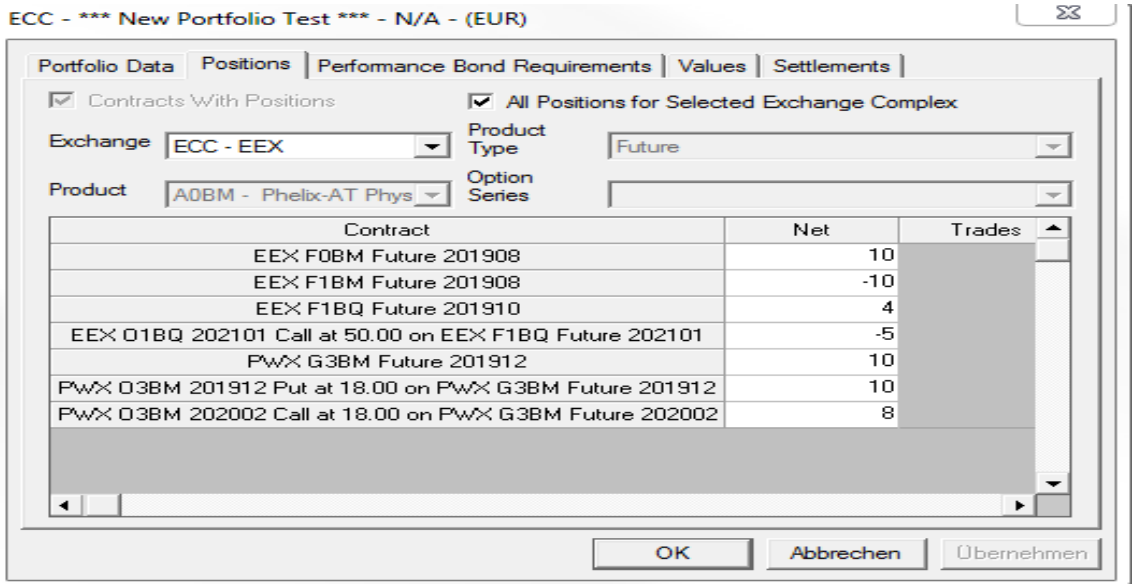
Steps:

1. Load the Parameter File into the tool via “File > Load File (s)”

2. Load your portfolio. There are two options:

2.1 Load your portfolio manually via “File > New Portfolio” by choosing products from the available exchanges. After selecting positions in the Positions Tab > place checkmarks for “Contracts with Positions” and “All Positions for Selected Exchange Complex” for the summary of your portfolio





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SPAN® Initial Margin

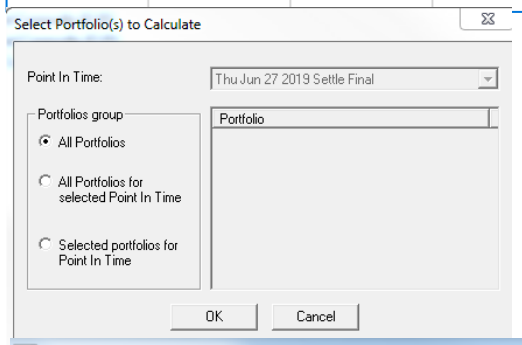
Steps cont.:

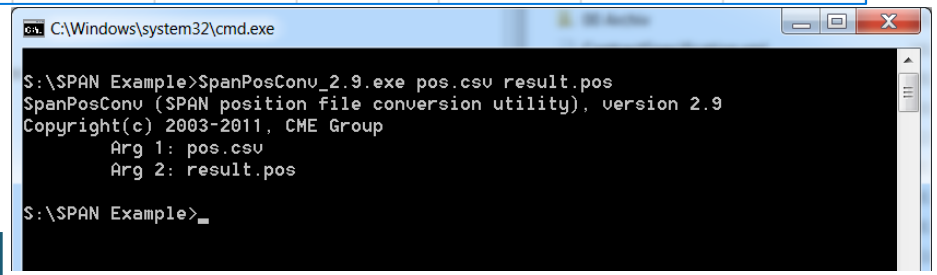
2.2 Import your .pos file via “File > Open Portfolio” You can enter your portfolio positions manually into the SPAN Tool or build a portfolio as a simple Excel file and convert it to the .pos file via SPANPosConv Tool. The User Manual for it can be found here. Excel sample portfolio:

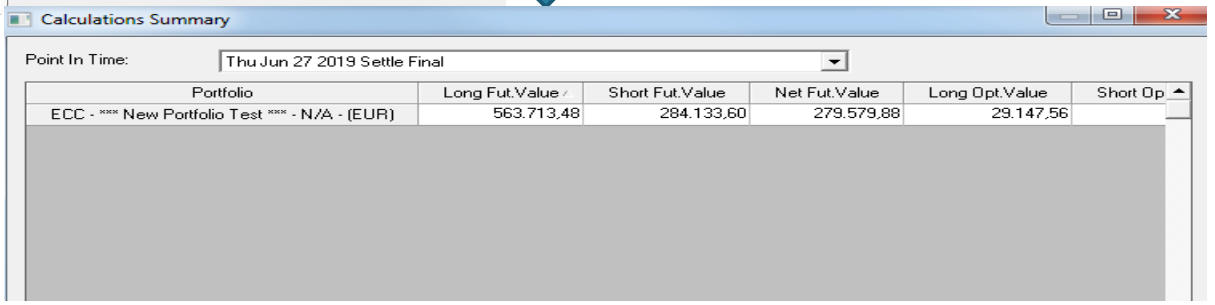
3. Calculate positions requirement via “File > Calculate Portfolio(s) Requirement” either for all portfolios or for a selected portfolio > Pop-Up Window shows the calculated requirements

A	B	C	D	E	F	G	H	I
date	isSetl	firm	acctID	acctType	isCust	seg	currency	ec
20190701	1	XXXXX	Test	M	1	N/A	EUR	ECC
20190701	1	XXXXX	Test	M	1	N/A	EUR	ECC
20190701	1	XXXXX	Test	M	1	N/A	EUR	ECC
20190701	1	XXXXX	Test	M	1	N/A	EUR	ECC
20190701	1	XXXXX	Test	M	1	N/A	EUR	ECC
20190701	1	XXXXX	Test	M	1	N/A	EUR	ECC

J	K	L	M	N	O	P	Q	R	S
cc	exch	pfCode	pfType	pe	undPe	o	k	net	
F1BM	EEX	F0BM	FUT	201908				10	
F1BM	EEX	F1BM	FUT	201908				-10	
F1BQ	EEX	F1BQ	FUT	201910				4	
F1BQ	EEX	O1BQ	OPT	201910	201910	C	50	-5	
G3BM	PWX	G3BM	FUT	201912				10	
G3BM	PWX	O3BM	OPT	201912	201912	P	18	10	







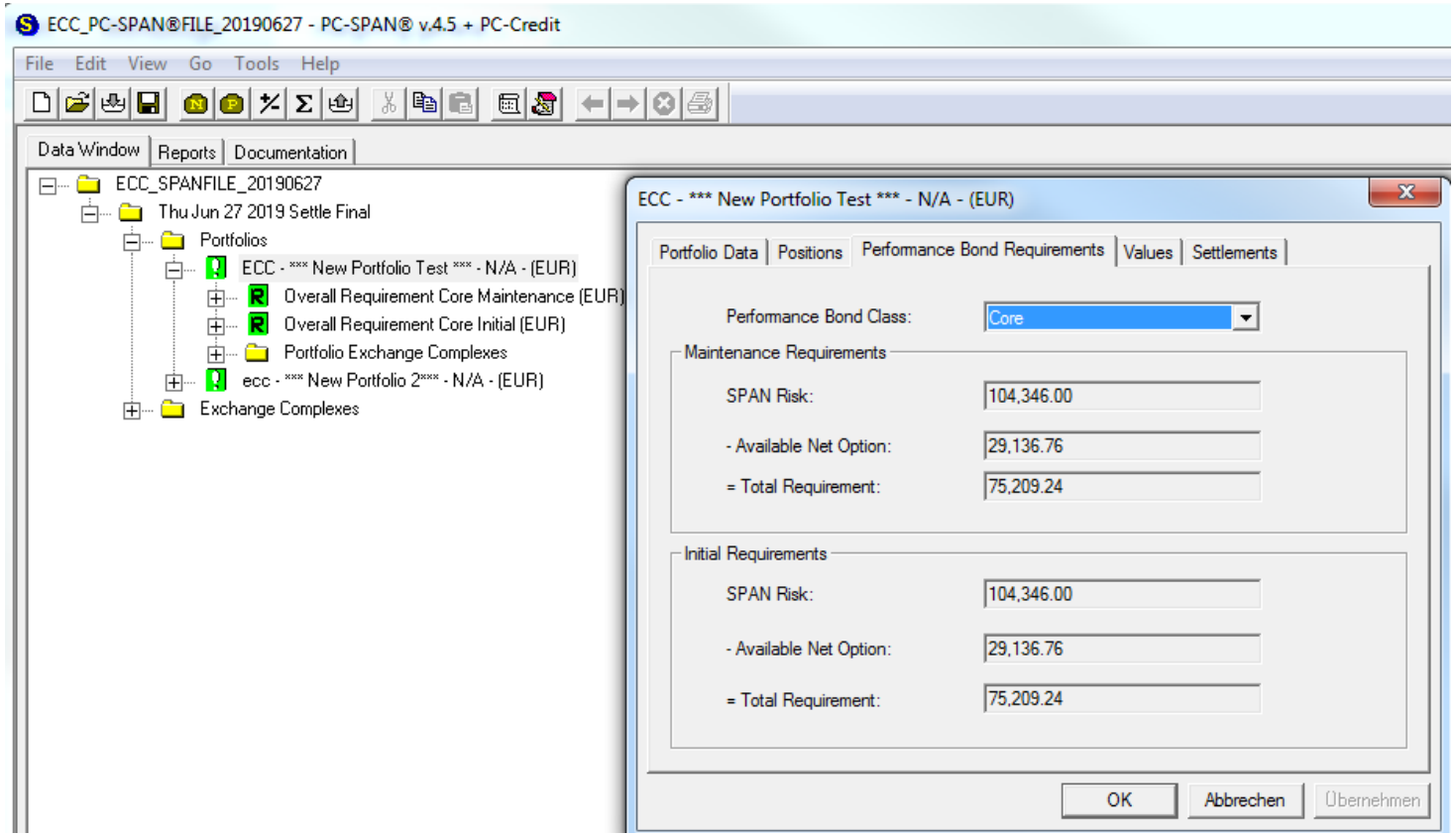
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SPAN® Initial Margin

Steps cont.:

The calculated requirements can also be accessed by double-clicking on the portfolio and selecting the “Performance Bond Requirement” tab. SPAN Risk corresponds to ECC SPAN Margin. The Net Option value is not used.

4. In order to access a detailed margin calculation select “Reports” Tab instead of the “Data Window” Tab.

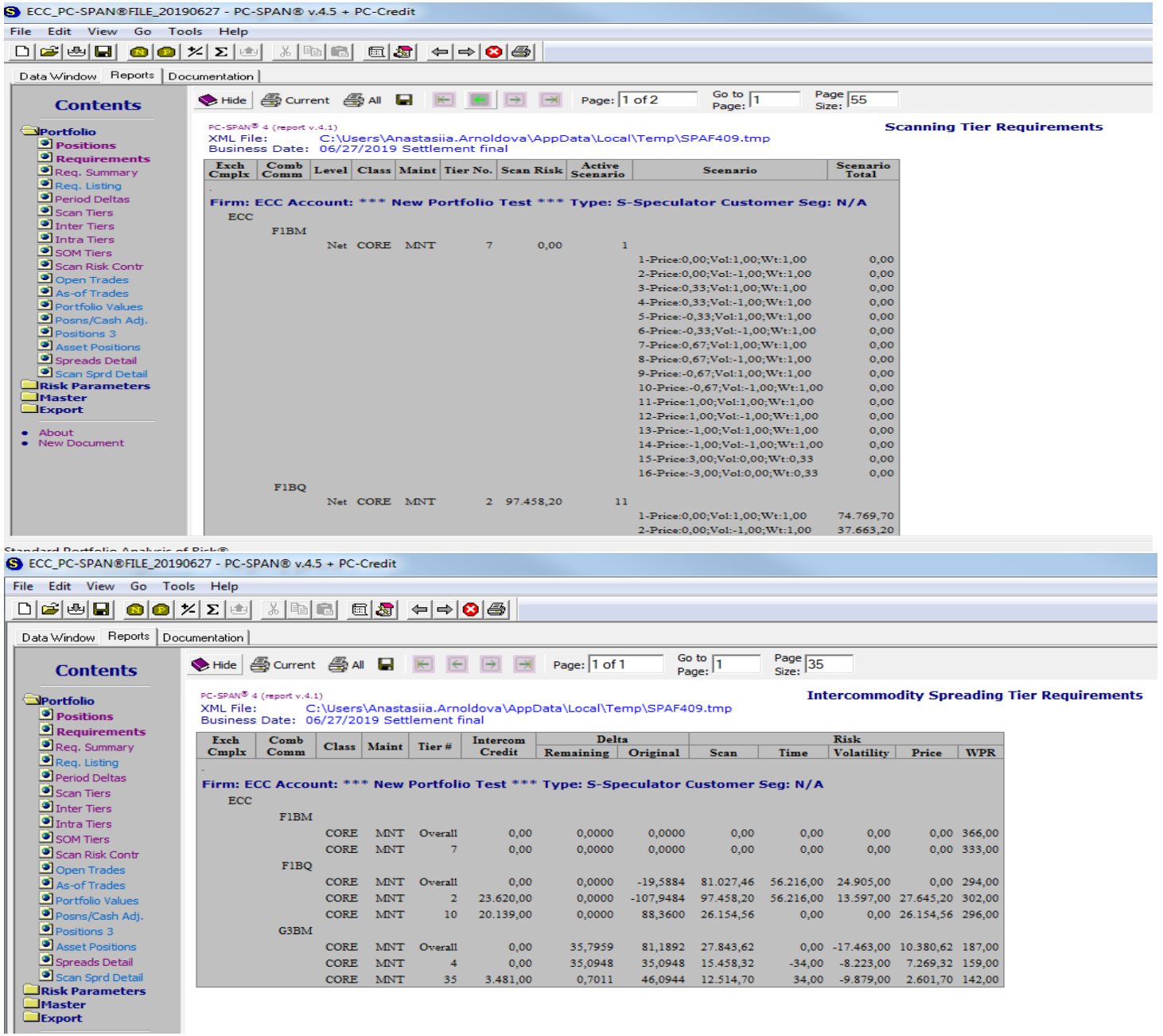


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SPAN® Initial Margin

Steps cont.:

For example, a more detailed SPAN Risk calculation can be found under “Reports > Scan Tiers”. In order to access inter-commodity credits per combined commodity go to “Reports > Inter Tiers” etc.



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Premium Margin for Options

ECC Options are not subject to the Variation Margin, but instead to a premium margin. For short options, the premium margin is called daily: for long options, the premium is credited to the member's account but not paid out.

$$Premium\ Margin = \sum Net\ Position \times Contract\ Size^{1} \times Current\ Option\ Settlement\ Price$$

Clearing Member	Non-Clearing Member	Product	Expiry Month	Expiry Year	Exercise Price	Option Type	Current Settlement Price	Net Quantity	Contract Size	Premium Margin
XXXXX	YYYYY	O1BY	1	2020	28.00	C	24.26	100	8784	= 24.26 x 100 x 8784 = 21,309,984.00
XXXXX	YYYYY	O1BY	10	2019	50.00	P	3.71	-30	8760	= - 974,988.00
XXXXX	YYYYY	O2BY	1	2020	32.00	C	0.45	50	8784	= 197,640.00
XXXXX	YYYYY	OEUA	12	2019	14.00	P	14.92	-20	1000	= - 298,400.00
									Premium Margin	**= 20,234,236.00**

[1]Contract size can be found in the ECC Clearing Specification file.

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Delivery Margin

Delivery Margin (DM) is called for positions in physically-settled natural gas futures and for net short positions in storable commodities during the delivery period on the day after the expiry of the contract. The Delivery Margin for natural gas futures is included in the SPAN® Margin Requirement. Expiry Month Factor and Haircut can be found in the Risk Parameters File. The Expiry Month Factor (EMF) is required for the adjustment of the single margin parameter in the case of delivery risk for physical futures, which results only in areas where ECC's nomination has no priority and therefore ECC could be imbalanced in the default of a trading participant.
The Scan Range for the Front month can be found in the Scan Range File.

$$Delivery\ Margin_{\ Gas} = |Net\ Position| \times Scan\ Range_{Front\ Month} \times Expiry\ Month\ Factor$$

$$Delivery\ Margin_{Storable\ Commodities} = |Uncovered\ Net\ Short\ Position| \times Last\ Spot\ Price\ \times (1 + \text{Haircut}) \times \text{Volume}$$

Note: The formula above is a simplified estimate. The actual Delivery Margin is calculated by SPAN (PC-SPAN) using the Risk Parameters File.

For example (illustrative estimate only), as of March 2022 the Delivery Margin for a member with the expected balance of -10,000 units of FEUA (net position x contract size) equals:

Product	Last Spot Price	Net Short Position	Contract Size	1 + Haircut	Delivery Margin
FEUA	76.02	-10	1000	1.35	$= \|-10\| \times 1000 \times 76.02 \times (1 + 0.35) = 1{,}026{,}270.00$

Further questions?

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