

INDEX GUIDELINE

SOLACTIVE CRUDE OIL ROLLING FUTURES INDEX
SOLACTIVE NATURAL GAS ROLLING FUTURES INDEX

Version 2.0

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INTRODUCTION

This document (the “**GUIDELINE**”) is to be used as a guideline with regard to the composition, calculation and maintenance of the SOLOIL and SOLGAS (the “**INDEX**”). Any amendments to the rules made to the GUIDELINE are approved by the INDEX COMMITTEE specified in Section 4.5. The INDEX is owned by Solactive AG (“**SOLACTIVE**”) assuming the role as administrator (the “**INDEX ADMINISTRATOR**”) under the Regulation (EU) 2016/1011 (the “**BENCHMARK REGULATION**” or “**BMR**”). The name “Solactive” is trademarked.

The text uses defined terms which are formatted with “SMALL CAPS”. Such Terms shall have the meaning assigned to them as specified in Section 5 (Definitions).

The GUIDELINE and the policies and methodology documents referenced herein contain the underlying principles and rules regarding the structure and operation of the INDEX. SOLACTIVE does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the INDEX nor the level of the INDEX at any certain point in time nor in any other respect. SOLACTIVE strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for SOLACTIVE – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the INDEX. The publication of the INDEX by SOLACTIVE does not constitute a recommendation for capital investment and does not contain any assurance or opinion of SOLACTIVE regarding a possible investment in a financial instrument based on this INDEX.



1. INDEX SPECIFICATIONS

1.1. SCOPE OF THE INDEX

The SOLOIL and SOLGAS indices are signal-based approach that provides exposure to Crude Oil and Natural Gas Futures, respectively. Each Index consists of two rolling future strategies that are based on the SIGNAL DETERMINATION CONTRACT.

Weight adjustments between the two rolling future components are determined by two signals:

- Settlement Signal: triggers shift in exposure between the two rolling future components when the SIGNAL DETERMINATION CONTRACT's settlement price goes below a predefined threshold level, or remains above a predefined threshold level for a predefined number of consecutive days.
- Expiry Signal: defines calculation windows around the SIGNAL DETERMINATION CONTRACT's expiry, determining the eligible period of roll adjustments.

1.2. IDENTIFIERS AND PUBLICATION

The INDEX is published under the following identifiers:

Name	ISIN	Currency	Type	RIC	BBG ticker
Solactive Crude Oil Rolling Futures Index	DE000SL0DHR7	USD	ER*	.SOLOIL	SOLOIL Index
Solactive Natural Gas Rolling Futures Index	DE000SL0DHS5	USD	ER*	.SOLGAS	SOLGAS Index

*ER means that the Index is calculated as excess return

The INDEX is published on the website of the INDEX ADMINISTRATOR (www.solactive.com) and is, in addition, available via the price marketing services of Boerse Stuttgart GmbH and may be distributed to all of its affiliated vendors. Each vendor decides on an individual basis as to whether it will distribute or display the INDEX via its information systems.

Any publication in relation to the INDEX (e.g. notices, amendments to the GUIDELINE) will be available at the website of the INDEX ADMINISTRATOR <https://www.solactive.com/news/announcements/>.

1.3. INITIAL LEVEL OF THE INDEX

The initial level on the 31st of December 2013, the START DATE, is 10000 for SOLOIL and 100000 for SOLGAS. Historical values from the 8th of November 2024, the LIVE DATE, will be recorded in accordance with Article 8 of the BMR. Levels of the INDEX published for a period prior to the LIVE DATE have been back-tested.



1.4. PRICES AND CALCULATION FREQUENCY

The level of the INDEX is calculated on each CALCULATION DAY t and is published at 18:00 New York Time on the CALCULATION DAY t , based on the SETTLEMENT LEVEL on the EXCHANGES on which the INDEX COMPONENTS are listed.

1.5. LICENSING

Licenses to use the INDEX as the underlying value for financial instruments, investment funds and financial contracts may be issued to stock exchanges, banks, financial services providers and investment houses by SOLACTIVE.



2. INDEX SELECTION

2.1. SELECTION OF THE INDEX COMPONENTS

SOLOIL and SOLGAS Indices are each composed of the **FUTURE ROLL STRATEGY** RF_t^{12} and RF_t^{34} , where $RF_t^{i,j}$ denotes the i^{th} and j^{th} SIGNAL DETERMINATION CONTRACT as of CALCULATION DAY t .

The INDEX SPECIFIC PARAMETERS, section 6.3 GENERIC UNDERLYING PARAMETERS, defines the meaning of each ACTIVE CONTRACT respectively per calendar month of CALCULATION DAY t

2.2. WEIGHTING OF THE INDEX COMPONENTS

In relation to CALCULATION DAY t , the WEIGHT W_t^{12} is calculated as follows:

$$W_t^{12} = \begin{cases} 0 & \text{if } Px_{t-2}^{signal} \leq ThresholdLevel \\ \frac{1}{RollDays} + W_{t-1}^{12} & \text{if } SettlementSignal_{t-2} \geq LookbackThreshold \text{ and } W_{t-1}^{12} < 1 \text{ and } (ExpirySignal_{t-2} \text{ is True or } 0 < W_{t-1}^{12} < 1) \\ W_{t-1}^{12} & \text{if otherwise} \end{cases}$$

And

$$W_t^{34} = 1 - W_t^{12}$$

Where:

- *ThresholdLevel*: means THRESHOLD LEVEL
- *LookbackThreshold*: means LOOKBACK THRESHOLD
- *RollDays*: means ROLL DAYS
- Px_t^{signal} : is the level of the SIGNAL DETERMINATION CONTRACT as of CALCULATION DAY t , set to its SETTLEMENT LEVEL provided by the EXCHANGE:

$$Px_t^{signal} = Settlement_t^{signal}$$

- $SettlementSignal_t$: is defined as the count during the last 10 CALCULATION DAYS before and including CALCULATION DAY t , where the SETTLEMENT LEVEL of the SIGNAL DETERMINATION CONTRACT is above the defined threshold, calculated as follow:

$$SettlementSignal_t = \sum_{k=t-9}^t I(Px_k^{signal} > ThresholdLevel)$$

Where the indicator function $I(Px_k^{signal} > ThresholdLevel)$ is defined as:

$$I(Px_k^{signal} > ThresholdLevel) = \begin{cases} 1 & \text{if } Px_k^{signal} > ThresholdLevel \\ 0 & \text{if otherwise} \end{cases}$$



- $ExpirySignal_t$: determines a signal of the eligible roll window as follows:

$$ExpirySignal_t = \begin{cases} False & \text{if } LowerBound_t < t < UpperBound_t \\ True & \text{if } otherwise \end{cases}$$

Where:

- $LowerBound_t$: Is the lower boundary CALCULATION DAY t , defined as:

$$LowerBound_t = LastExpiry_t + LowerRollDays$$

- $UpperBound_t$: Is the upper boundary CALCULATION DAY t , defined as:

$$UpperBound_t = LastExpiry_t + UpperRollDays$$

Where:

- $LowerRollDays$ and $UpperRollDays$: LOWER ROLL DAYS AND UPPER ROLL DAYS, refer to APPENDIX, section GENERIC TOP-LEVEL PARAMETERS for specific.
- $LastExpiry_t$: is the previous SIGNAL DETERMINATION CONTRACT'S expiration date, as of CALCULATION DAY t .



3. CALCULATION OF THE INDEX

3.1. INDEX FORMULA

On START DATE t_0 each INDEX is defined as:

$$Index_{t_0} = StartLevel$$

Where *StartLevel* represents the START LEVEL of each INDEX, refer to APPENDIX, section GENERIC TOP-LEVEL PARAMETERS for specific.

On any CALCULATION DAY t after START DATE the INDEX is calculated as follows:

$$Index_t = Index_{t-1} \times (W_t^{12} \times UnderlyingRet_t^{12} + W_t^{34} \times UnderlyingRet_t^{34})$$

Where:

$Index_{t-1}$: is the INDEX on the CALCULATION DAY immediately preceding CALCULATION DAY t .

W_t^{12} : is the WEIGHT of $UnderlyingRet_{12}$ on CALCULATION DAY t as defined in section 2.2

$UnderlyingRet_t^{12}$: is the 1-day return of the underlying FUTURE ROLL STRATEGY RF_t^{12} as of CALCULATION DAY t as defined in section 3.2

W_t^{34} : is the WEIGHT of the $UnderlyingRet_{34}$ on CALCULATION DAY t as defined in section 2.2

$UnderlyingRet_t^{34}$: is the 1-day return of the underlying FUTURE ROLL STRATEGY RF_t^{34} as of CALCULATION DAY t as defined in section 3.2

3.2. UNDERLYING RETURN

The daily return, as of CALCULATION DAY t , for each INDEX COMPONENT is calculated as:

$$UnderlyingRet_t^{12} = \frac{StrategyLevel_t^{12}}{StrategyLevel_{t-1}^{12}}$$

$$UnderlyingRet_t^{34} = \frac{StrategyLevel_t^{34}}{StrategyLevel_{t-1}^{34}}$$

$StrategyLevel_t^{12}$ is calculated following the FUTURE ROLL GUIDELINE "[Guideline](#)", and referred to the APPENDIX, section GENERIC UNDERLYING PARAMETERS for specific.

$StrategyLevel_t^{34}$ is calculated following the FUTURE ROLL GUIDELINE "[Guideline](#)", and referred to the APPENDIX, section GENERIC UNDERLYING PARAMETERS for specific.



3.3. ACCURACY

The level of both indices, SOLOIL and SOLGAS, will be rounded to 2 decimals.

3.4. RECALCULATION

SOLACTIVE makes the greatest possible efforts to accurately calculate and maintain its indices. However, errors in the determination process may occur from time to time for variety reasons (internal or external) and therefore, cannot be completely ruled out. SOLACTIVE endeavors to correct all errors that have been identified within a reasonable period of time. The understanding of “a reasonable period of time” as well as the general measures to be taken are generally depending on the underlying and is specified in the Solactive Correction Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/correction-policy/>.

3.5. MARKET DISRUPTION

In periods of market stress SOLACTIVE calculates its indices following predefined and exhaustive arrangements as described in the Solactive Disruption Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/disruption-policy/>. Such market stress can arise due to a variety of reasons, but generally results in inaccurate or delayed prices for one or more INDEX COMPONENTS. The determination of the INDEX may be limited or impaired at times of illiquid or fragmented markets and market stress.



4. MISCELLANEOUS

4.1. DISCRETION

Any discretion which may need to be exercised in relation to the determination of the INDEX (for example the determination of the INDEX UNIVERSE (if applicable), the selection of the INDEX COMPONENTS (if applicable) or any other relevant decisions in relation to the INDEX) shall be made in accordance with strict rules regarding the exercise of discretion or expert judgement.

4.2. METHODOLOGY REVIEW

The methodology of the INDEX is subject to regular review, at least annually. In case a need of a change of the methodology has been identified within such review (e.g. if the underlying market or economic reality has changed since the launch of the INDEX, i.e. if the present methodology is based on obsolete assumptions and factors and no longer reflects the reality as accurately, reliably and appropriately as before), such change will be made in accordance with the Solactive Methodology Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/methodology-policy/>.

Such change in the methodology will be announced on the SOLACTIVE website under the Section “[Announcement](https://www.solactive.com/news/announcements/)”, which is available at <https://www.solactive.com/news/announcements/>. The date of the last amendment of this INDEX is contained in this GUIDELINE.

4.3. CHANGES IN CALCULATION METHOD

The application by the INDEX ADMINISTRATOR of the method described in this document is final and binding. The INDEX ADMINISTRATOR shall apply the method described above for the composition and calculation of the INDEX. However, it cannot be excluded that the market environment, supervisory, legal and financial or tax reasons may require changes to be made to this method. The INDEX ADMINISTRATOR may also make changes to the terms and conditions of the INDEX and the method applied to calculate the INDEX that it deems to be necessary and desirable in order to prevent obvious or demonstrable error or to remedy, correct or supplement incorrect terms and conditions. The INDEX ADMINISTRATOR is not obliged to provide information on any such modifications or changes. Despite the modifications and changes, the INDEX ADMINISTRATOR will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.

4.4. TERMINATION

SOLACTIVE makes the greatest possible efforts to ensure the resilience and continued integrity of its indices over time. Where necessary, SOLACTIVE follows a clearly defined and transparent procedure to adapt Index methodologies to changing underlying markets (see Section 4.2 “Methodology Review”) in order to maintain continued reliability and comparability of the indices. Nevertheless,



if no other options are available the orderly cessation of the INDEX may be indicated. This is usually the case when the underlying market or economic reality, which an index is set to measure or to reflect, changes substantially and in a way not foreseeable at the time of inception of the index, the index rules, and particularly the selection criteria, can no longer be applied coherently or the index is no longer used as the underlying value for financial instruments, investment funds and financial contracts.

SOLACTIVE has established and maintains clear guidelines on how to identify situations in which the cessation of an index is unavoidable, how stakeholders are to be informed and consulted and the procedures to be followed for a termination or the transition to an alternative index. Details are specified in the Solactive Termination Policy, which is incorporated by reference and available on the SOLACTIVE website: <https://www.solactive.com/documents/termination-policy/>.

4.5. INDEX COMMITTEE

An index committee composed of staff from SOLACTIVE and its subsidiaries (the “**INDEX COMMITTEE**”) is responsible for decisions regarding any amendments to the rules of the INDEX. Any such amendment, which may result in an amendment of the GUIDELINE, must be submitted to the INDEX COMMITTEE for prior approval and will be made in compliance with the Methodology Policy, which is available on the SOLACTIVE website: <https://www.solactive.com/documents/methodology-policy/>.



5. DEFINITIONS

“BENCHMARK REGULATION” shall have the meaning as defined in Section “Introduction”.

“BMR” shall have the meaning as defined in Section “Introduction”.

“CALCULATION DAY” is any weekday where the exchange XNYM “NEW YORK MERCANTILE EXCHANGE” identified by its MIC is open for business.

“GUIDELINE” shall have the meaning as defined in Section “Introduction”.

“INDEX” shall have the meaning as defined in Section “Introduction”.

“INDEX ADMINISTRATOR” shall have the meaning as defined in Section “Introduction”.

“INDEX COMPONENT” is each FUTURE ROLL STRATEGY reflected in the INDEX.

“INDEX CURRENCY” is the currency specified in the column “Currency” in the table in Section 1.2.

“INDEX UNIVERSE REQUIREMENTS” shall have the meaning as defined in Section 2.1.

“LIVE DATE” shall have the meaning as defined in Section 1.3.

“INDEX COMMITTEE” shall have the meaning as defined in Section 4.5.

“SOLACTIVE” shall have the meaning as defined in Section “Introduction”.

“START DATE” shall have the meaning as defined in Section 1.3.

“BBG Ticker” has the meaning given to it in Section 1.2.

“FUTURE ROLL STRATEGY”: shall have the meaning following the FUTURE ROLL GUIDELINE [“Guideline”](#)

“SIGNAL DETERMINATION CONTRACT”: in relation to CALCULATION DAY t , refers to the futures contract with settlement as of t and has the nearest last trading day strictly after t .

“ACTIVE CONTRACT”: shall have the meaning in Section 2.1 of the FUTURE ROLL GUIDELINE [“Guideline”](#)

“WEIGHT” in relation to the Underlying FUTURE ROLL STRATEGY RF_t^{12} or RF_t^{34} and a CALCULATION DAY shall have the meaning as defined in Section 2.2.

The **“SETTLEMENT LEVEL”** in respect of a FUTURE CONTRACT and a CALCULATION DAY is a security's final regular-hours price at which the FUTURE CONTRACT will reference at the end of each CALCULATION DAY and upon its expiration published by the EXCHANGE and determined in accordance with the EXCHANGE regulations.

“FUTURE CONTRACT” means a contract that confers an obligation to trade the underlying asset at a pre-defined price on a pre-defined date in the future.

“ROLL DAYS”: shall have the meaning given to it in INDEX SPECIFIC PARAMETERS, section GENERIC TOP-LEVEL PARAMETERS, field “Roll Days”.

“THRESHOLD LEVEL” shall have the meaning given to it in INDEX SPECIFIC PARAMETERS, section GENERIC TOP-LEVEL PARAMETERS, field “Threshold Level”.

“LOOKBACK THRESHOLD” shall have the meaning given to it in INDEX SPECIFIC PARAMETERS, section GENERIC TOP-LEVEL PARAMETERS, field “Lookback Threshold”.



6. APPENDIX

6.1. INDEX SPECIFIC PARAMETERS

This section details the set up and layout of INDEX SPECIFIC PARAMETERS. It includes specification for the head indices, namely SOLOIL and SOLGAS, and the Underlying **FUTURE ROLL STRATEGIES**.

6.2. GENERIC TOP-LEVEL PARAMETERS

Field	SOLOIL Definition	SOLGAS Definition
Start Date	2013-12-31	2013-12-31
Start Level	10000	100000
Threshold Level	20	1.25
Lookback Threshold	10	10
Roll Days	3	3
Lower Roll Days	6	4
Upper Roll Days	10	8

6.3. GENERIC UNDERLYING PARAMETERS

Each INDEX, SOLOIL and SOLGAS provides exposure to the Crude Oil and Natural Gas futures respectively.

- On a regular basis, the **FUTURE ROLL STRATEGY** RF_t^{12} and RF_t^{34} reduces its exposure to the future contract it currently holds and increases its exposure to a future contract with a later expiration date. The below table specifies the generic parameters

Field	Crude Oil Futures Definition	Natural Gas Futures Definition
Adjustment Day Count	N/A	N/A
Adjustment Factor	N/A	N/A
Exchange MIC	XCME	XCME
Future Chain RIC	0#CL:	0#NG:
Future Currency	USD	USD
Index Currency	USD	USD
Price Definition	Settlement	Settlement
Portfolio	False	False
Roll Anchor	Expiry	Expiry
Roll Days	3	3
Roll Offset	9	7



Field	Crude Oil Futures Definition	Natural Gas Futures Definition
Start Date	2013-12-31	2013-12-31
Start Level	100.00	100.00

- Below table specifies the Contract Month of the Active and Next Active Contract for the “Crude Oil Futures” and “Natural Gas Futures” per Calendar Month, a “+” or indicates a contract in a subsequent year.

RF_t^{12} Future Roll Table:

Calendar Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Active Contract	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan+
Next Active Contract	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan+	Feb+

RF_t^{34} Future Roll Table:

Calendar Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Active Contract	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan+	Feb+	Mar+
Next Active Contract	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan+	Feb+	Mar+	Apr+



7.HISTORY OF INDEX CHANGES

Version	Date	Description
1.0	07 November 2024	Index Guideline creation (<i>initial version</i>)
2.0	14 November 2024	The rounding for SOLOIL and SOLGAS has been adjusted from 4 decimals to 2 decimals. This change has been implemented in section 3.3 “Accuracy”

CONTACT

Solactive AG
German Index Engineering
Platz der Einheit 1
60327 Frankfurt am Main
Germany

Tel.: +49 (0) 69 719 160 00

Fax: +49 (0) 69 719 160 25

Email: info@solactive.com

Website: www.solactive.com

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