Product Supplement for Energy Components Midstream

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Introduction

EC Midstream is a software solution for operators of hydrocarbon liquid terminals and their upstream gathering systems, fossil fuel power stations, Carbon Capture and Storage (CCS) hubs and hydrogen electrolysis facilities. It has a rich set of features and capabilities that are designed to support the physical and commercial operation of such assets, from planning and scheduling to actualization, allocation, invoicing and reporting. EC Midstream is a flexible and commodity agnostic solution that that can be configured to support a wide variety of commercial arrangements and ensure confidence amongst all stakeholders that the asset operates within the boundaries of these.

Software Subscription Options and Metrics

This document defines the Standard Functionality and Add-Ons together with applicable license metrics that are available for Customer's access under mutually agreed Energy Components ("**EC**") Midstream SaaS or Self-Hosted Subscription Order(s). Such Order(s) shall specify the authorized license metric quantity, the selected Add-On(s), and the licensed Operation(s) as defined below.

Vendor may update or revise this Product Supplement from time to time. Updates will be made available within this document including the date of change as well as the changes made. New versions will enter into force immediately, except for any ongoing annual or committed Subscription Term, for which the previous version will apply until the end of such ongoing term, subject to the terms of the Agreement and Order. Customer should review the Product Supplement prior to using the Software to stay informed about the applicable license metrics. Capitalized terms are defined herein or in the Agreement or the Order for the purchase of the Subscription(s).

Definitions

- **By-product(s)** means materials that are not listed as Product(s) but are managed in an EC Midstream implementation as an output from production, processing, storage, transportation, and/or combustion of energy carriers, such as helium, sulfur, ash, and gypsum. Subject to licensing any required Add-On, By-product(s) can be managed in the same EC Midstream solution without impact to the Design Capacity price model metric.
- **Design Capacity** means the maximum designed output rate of Product(s) from production, processing, transportation, and power generation facilities. This is the metric used to determine pricing for the EC Midstream Software Subscription(s) and defines the maximum contracted level for which the Software Subscription(s) can be utilized. The Design Capacity metric is calculated using a formula that aggregates the outputs from (i) licensed Operations operated by Customer and its Affiliates, and/or (ii) Customer's share of outputs from their licensed non-operated Operations.
- **EC Midstream Software** means the EC Midstream Standard Functionality and Add-On(s) selected in an Order.
- **Entitlements** means ownership or commercial rights associated with a certain portion of the Inventory in storage.
- **Inventory** means physical quantities of Product(s), By-product(s) and/or Reagent(s) in storage at operated locations/facilities.
- **Operation** means a physical facility or infrastructure (ultimately as determined by Vendor in case of uncertainties) where there is a need to store or register data related to production, processing, storage, transportation, and/or power generation involving one or more Product(s), and ultimately as granted in the Order.
- **Product(s)** means materials that are the output of production, processing, storage, transportation, and/or combustion of energy carriers managed in an EC Midstream implementation in one of the following categories:
  - Oil, condensates, and derived base oil and fuel oil products

- o Natural gas and derived fuel products such as NGL, LPG, and LNG
- o Hydrogen and derived energy carrier products such as ammonia and methylcyclohexane
- o Electricity (generation only)
- o Carbon dioxide (CO_2)
- **Reagent(s)** means materials that are not listed as Product(s) and are not By-Product(s) but are managed in an EC Midstream implementation as an input for production, processing, storage, transportation, and/or combustion of energy carriers, such as water, steam, electricity (consumption), coal, limestone, and urea. Subject to licensing any required Add-On, Reagent(s) can be managed in the same EC Midstream solution without impact to the Design Capacity price model metric.

Product(s), By-product(s) and Reagent(s) can be managed in an EC Midstream solution in solid, liquid and/or gaseous state where applicable.

EC Midstream Standard Functionality & Add-Ons Description

The EC Midstream Software consists of the Standard Functionality and related optional Add-Ons.

EC Midstream Standard Functionality

The EC Midstream Standard Functionality is the foundation of the Energy Components software in the midstream segment and a prerequisite for all currently available EC Midstream Add-Ons. The features included in the Standard Functionality focus on physical plant/terminal operations and includes:

- **Planning & Scheduling**, functionality required to create and maintain marine cargo schedules such as Annual Delivery Programs (ADPs) and Short Delivery Schedules (SDSs) for loading **or** unloading from storage at individual locations/facilities, as well as corresponding forecasts for feed gas **or** send-out of gas from said locations. Note that multi-directional storage, ground transportation or fleet management and tracking of activities that take place at non-operated locations/facilities are not included but require Add-On(s).
- **Inventory Management**, functionality required to perform physical hydrocarbon and/or energy carrier accounting and back-allocation of Product(s) to its sources by volume and/or energy content, including accounting for losses, internal consumption, and boil-off, as well as managing actual and forecasted Inventory related to production, processing, transportation, and storage of Products, By-Products, and Reagents. Note that inventory management for chemicals and calculation and analysis of emissions require Add-On(s).
- **Terminal Operations**, functionality required to generate and store official cargo documents at the loading **or** unloading location of marine cargo, including cargo analysis, bill of lading, certificate of discharge, timesheets, port log, and demurrage. It also covers tracking of quantities related to purging, cooling, and boil-off for Products where this is relevant. Note that multi-directional storage or ground transportation is not included but require Add-On(s).
- **Nomination & Actualization**, functionality required to manage nominations for feed gas **or** send-out of gas. There is typically a three-way interface between the terminal operator, pipeline operator, and customers for nomination submission and confirmation with support for various nomination cycles. Actual metered quantities can also be captured for the nomination points, but complex allocation rules will require the Sales Contract Calculation Add-On. Note that multi-directional storage is not included but requires an Add-On.
- **Business Process Modelling & Automation**, functionality required to design and automate execution of customer business processes (BPMs) in EC Midstream.
- **Mobile Task List**, functionality allowing users to receive notifications and confirm task completion from a mobile device.

- **Reporting**, functionality for configuring canned reports through built-in reporting features based on Microsoft Excel and JasperReports.

EC Midstream Add-Ons

The Software can be enhanced with several Add-Ons, which are available for separate licensing in addition to the EC Midstream Standard Functionality. The following Add-Ons are currently offered:

Operational Scope Add-Ons

- **Upstream Add-On**, which allows utilization of the EC Upstream Standard Functionality and Forecasting Add-On, as defined in the EC Upstream Product Supplement, for operators of LNG liquefaction plant(s) that also operate production well(s) providing feedstock to the liquefaction plant(s) configured in the EC Midstream implementation.
- **Chemical Management Add-On**, which allows utilization of functionality to manage, monitor and report on chemical inventories and demand, chemical usage and performance, sampling and analysis. Chemical data can be combined with production, deferment and operational data to monitor, analyze and report flow assurance and operational integrity.
- **Marine Services Add-On**, which allows utilization of functionality related to marine terminal services such as bunkering, storage and reload, and transshipment, as well as individual cool-down, gassing-up, and heel top-up services not linked to a loading or unloading activity. This Add-On is also required for operations that are handling both import and export of marine cargoes, including marine cargo supply to adjacent small-scale terminals.
- **Mobile Terminal Operations Add-On**, which allows utilization of a mobile application for marine terminal operations on handheld devices, including offline data capture and cargo document generation capabilities.
- **Fleet Management Add-On**, which allows utilization of functionality to create and maintain single- or multi-location/facility marine cargo schedules such as Annual Delivery Programs (ADPs) and Short Delivery Schedules (SDSs) that track activities at both operated and non-operated locations/facilities, in order to manage a fleet of Customer-owned or -chartered carriers that fulfil marine cargo contracts for Incoterms involving multiple locations (e.g., DES Incoterm for a cargo from an export operation and FOB Incoterm for a cargo to an import operation).
- **Ground Transportation Operations Add-On**, which allows utilization of functionality for operational management of truck yards enclosed by gatehouses operated by Customer, including keeping track of location and Product, By-product, and Reagent delivery status for trucks owned or rented by Customer that are temporarily located outside of the truck yard.
- **Ground Transportation Planning & Scheduling Add-On** (not yet released), which allows utilization of functionality for planning and scheduling of truck loading and unloading within the Customer operation perimeter, including truck slot management.
- **Mass Balancing Add-On**, which allows implementation of physical hydrocarbon and/or energy carrier Inventory reconciliation calculations on a mass basis or mass component basis across the whole value chain.
- **Emission Management Add-On**, which allows utilization of functionality for calculating, analyzing, monitoring and reporting of facility and source-level greenhouse gas (GHG) and non-GHG emissions by monthly, sub-daily and daily allocations, current production and forecasted production used in gas processing. Includes a selection of template methods based on common industry- and regulatory guidelines and recommendations. Note that this Add-On does not include functionality for emissions management related to marine transportation of hydrocarbons.

Commercial Management Add-Ons

- **Entitlement Calculations Add-On**, which allows implementation of commercial terms and conditions of Terminal Use Agreements (TUA), Intercompany Agreements (ICA), and Sales and Purchase Agreements (SPA) that have impact on Entitlement calculations of products in storage and/or calculation of shares of losses and internal consumption, including support for agreements about In-Tank Transfer (ITT) and Borrowing and Lending Transactions. This Add-On also allows for calculation of Port Use Fees and Throughput Fees based on the aforementioned contract types.
- **Customer Portal Add-On**, which allows implementation of a web-based portal enabling bi-directional communication between the terminal operator and its customers, facilitated in such a way that such customers can submit change-requests (for change of vessel, delivery window, or nominated quantity), submit nominations and re-nominations within nomination cycles, receive notifications, view cargo information (marine and ground transportation), review their own Inventory and Entitlements, and upload and download reports.
- **Sales Contract Calculations Add-On**, which allows implementation of commercial terms and conditions of contracts concerning custody transfer of Product(s), such as Gas Sale Agreements (GSA) and Gas Purchase Agreements (GPA), including terms and conditions concerning contract quantities (Annual and Daily Contractual Quantity / ACQ & DCQ), Take or Pay, Make-Up, Shortfalls, and Over Deliveries.
- **Price Calculations Add-On**, which allows implementation of Product price calculations and/or sales contract price calculations in multiple currencies according to published reference prices, consumer price indexes, and applicable contractual terms.
- **Optimization Add-On**, which allows using the highly advanced analytics framework to implement optimization algorithms related to production and storage capacity planning, cargo planning and scheduling, and fleet management.
- **Ownership Allocation Add-On**, which allows implementation of calculations for allocation of quantities between different owners or entities.
- **Inventory Valuation Add-On**, which allows calculation of value of unsold Inventory stock of Product(s), By-product(s), and Reagent(s) at the time of preparation of financial statements.
- **Invoicing Add-On**, which allows utilization of functionality for generation of financial statements such as invoices and payment statements, including control of any data relevant for revenue recognition related to sale and purchase of Inventory covered by the solution, including functionality for accrual and actual financial statements, preliminary and final financial statements, prior period adjustments, tracking of payments, and calculation of interest for late payments. Similarly, the Invoicing Add-On also allows utilization of functionality for generation of financial statements related to tariff revenue related to processing, transportation, and storage of Inventory.

Generic Add-Ons

- **Business Intelligence Add-On** (not yet released), which allows utilization of the integrated Business Intelligence framework.
- **Product Customization Add-On**, which allows customers to extend the Software by adding custom elements such as domain model definitions, screens, calculations not configurable from the Software front-end, icons/logos, and integrations, Quality Assurance (QA)/test automation. All extensions must adhere to the EC extension coding standard. This Add-On is also mandatory if the EC Midstream implementation covers functional scope beyond what is available as Standard Functionality or Add-Ons. Note that in some cases the final assessment about whether a customer require this Add-On can only be completed during the Detailed Design phase.

General EC Midstream Licensing Terms

The EC Midstream Software is licensed separately for the Standard Functionality and each Add-On according to the licensing scheme described in the Agreement and the Order (including this Product Supplement) for usage by the Customer's and its Affiliates authorized operated Operations. A pre-requisite for licensing Add-Ons is that the EC Midstream Standard Functionality is licensed.

Subject to the terms of the Order, an EC Midstream Software Subscription entitles the Customer to receive access to the Standard Functionality and selected EC Midstream Add-On(s) for the term of the Order in connection with and for the benefit of the authorized Operation(s) and Design Capacity ("License Metrics") as applicable and identified in the Order.

The Standard Functionality and Add-Ons are licensed under a scheme where the Design Capacity of the Customer's licensed Operation(s) is used to determine the annual Subscription Fee. Design Capacity is based on a formula that allows for calculation of multiple Products into one single value through nondimensionalization (i.e. by multiplying with Product factors that results in unitless numbers), hence it does not have a unit:

$$Design\ Capacity = \sum_{i=1}^{n}(Product\ Design\ Capacity_i * Factor_i)$$

Only Product(s) will be considered when calculating the Design Capacity. By-products and Reagent(s) can be managed in the same EC Midstream solution without being included in the Design Capacity. The unit of measurement of the Product capacities, and the corresponding Factor used to calculate Design Capacity, will vary depending on the type of Operation and Product:

Design Capacity			
Operation Type	**Product**	**Unit**	**Factor**
Liquefaction	LNG	MTPA	1.00
	Condensate	kbbl/d	0.0465
	LPG	MTPA	1.00
		kbbl/d	0.0314
	Hydrogen	MTPA	Available at request
Regasification	LNG	MTPA	1.00
		bcm/y (gas)	0.750
	Hydrogen	MTPA	Available at request
Gas Processing	Condensate	kbbl/d	0.0465
	LPG	MTPA	1.00
		kbbl/d	0.0314
Crude Processing	Base Oil	kbbl/d	0.0498
Fuel Management	Electricity	GW	1.50
Water Electrolysis	Hydrogen	MTPA	Available at request
Steam Methane Reforming	Hydrogen	MTPA	Available at request
CCUS	CO_2	MTPA	Available at request

The selected Standard Functionality, Add-On(s) and the authorized License Metrics are identified in the Order together with any special terms agreed between the Parties.

Changes to Metrics

Renewal Terms: Before each renewal term, the Vendor is permitted to access and review Customer's usage information (to verify that usage remains within the License Metrics) for the previous twelve months to determine the Fees for the next renewal term.

Exceeding License Metrics: The Licensed Materials may be used for no more than the License Metrics. Additional entitlements must be paid in the event usage exceeds the License Metrics, at the pricing in effect at the time the additional entitlement is added.

Increasing License Metrics During a Subscription Term: When increasing the License Metrics level during an ongoing Subscription Term, the difference in Subscription Fee(s) is calculated at the year of the increase and an additional Subscription Fee will apply as of the triggering event until the remainder of the ongoing 12-months period unless otherwise agreed and will be invoiced in full the month after setting the higher License Metrics level. Thereafter, the applicable Subscription Fee(s) are again invoiced annually in advance for each annually recurring 12-months during the committed Subscription Term.

No Decreases to License Metrics During a Subscription Term: Customer may not decrease the Licensed Metrics during the initial, committed and/or an ongoing Subscription Term.

Delivery of the Software

The Software Subscription(s) will be delivered to the Customer on or before the License start date specified in the Order. Delivery shall be deemed to occur upon the Software being made available to the Customer, including but not limited to the physical delivery of media, provision of a download link, provision of login credentials, the issuance of license keys or any other means by which the Software is made available to the Customer. If access to the Software includes access to Module(s) or Add-On(s) of the product suite for which Customer has not procured a Subscription, Customer is not entitled to extend the use of the Software to such additional Module(s) or Add-On(s) without procurement of additional Subscription(s). Any hardware and software needed for Customer to access the Software shall be Customer's responsibility to acquire, install, and maintain.

An Order for the relevant Software Subscription must be in place before starting any design, configuration, and/or implementation activities in the Software.

Change Log

Date of Change	Details of Changes
December 23rd, 2022	Initial Release
August 11th, 2023	Merged Marine Services and Small-Scale Satellite Add-Ons into one single Add-On, in addition to minor structure and grammar updates.
October 15th 2024	Updated the Add-On list, made the document generic across SaaS and Self-Hosted Subscription Order(s), and structurally aligned to Product Supplements for other Quorum products.