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ASN-15DU MEASURING SYSTEM (ADDITIVATION SKID)

ASN-15DU measuring system is designed for additive automatic injection into the main product according to the previously set percentage ratio of the additive relative to the main product. This system can be used as regards to the different types of additives and is provided with a feature of data transfer to the upper automation level. A positive displacement flow meter is used as an additive measuring unit.

ASN-15DU configuration consists of two components:

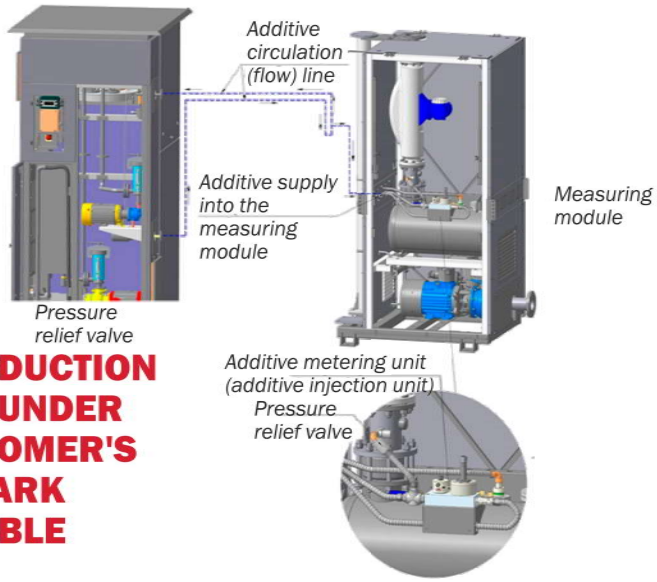
1) Metered additive supply system, containing in its design: additive storage tank with bottom and top level sensors, additive heating device and additive level remote control/display device; transporting tank → storage tank additive unloading skid; additive pressure supply unit.

2) Additive metering unit.

The measurement error of additive dispensed amount is ±0.5%. Additive metering accuracy is verified by a special program simulating the main product dispensing by dose and the required percentage value of injected additive (in relation to the main product) setting, calculated in such way that the amount of measured and dispensed additive would be 2000 cmi. By means of the switching valves, the additive is supplied into a 2000 cmi standard measurement tank. Based on the dispensing process results (dispensed additive amount) and the standard measurement tank readouts, the additive metering error is determined. This error should be determined taking into account the current per cent additive value in main product.

Additivation skid design versions:

Design version №1 According to this construction embodiment, the additive should be injected into a single loading arm with the metered additive supply system positioned directly at the post (at the loading site).

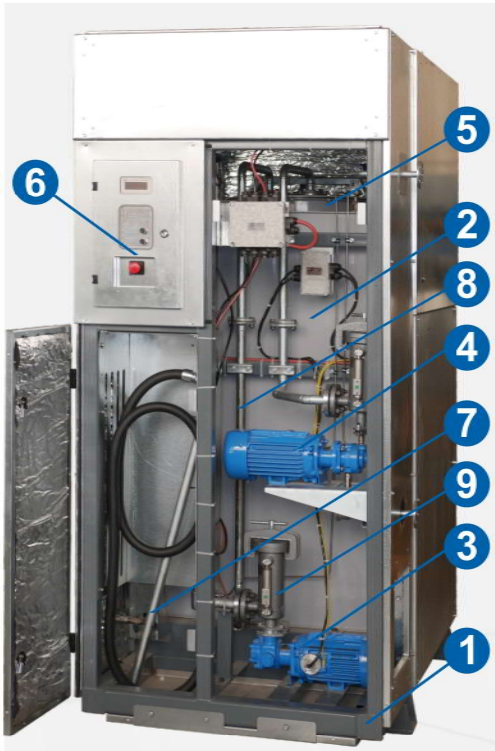


OEM PRODUCTION FEATURE UNDER THE CUSTOMER'S TRADE MARK IS AVAILABLE

Additivation skid design version 1 configuration:

- Metered additive supply system: (0.5÷1)m³ additive storage tank, fitted with top and bottom level sensors and with temperature maintenance and additive level display device; additive discharge unit from the container into the storage tank; additive supply unit;

- additive metering unit - 1 piece.



Metered additive supply system's primary components
(In order to provide the internal construction convenient representation, the outer cladding panels have been removed).
1 - frame with the protective panels (shields);
2 - tank;
3 - electric pump;
4 - electric pump assembly;
5 - cover;
6 - control cabinet;
7 – additive delivery tube;
8 - level control unit;
9 - filter.

Additive metering unit with regard to the three additive types:
1 – cabinet;
2 – flow meter unit;
3 – automation system panel;
4 – additive dispensing branch pipe;
5 – additive supply (feed) branch pipe.

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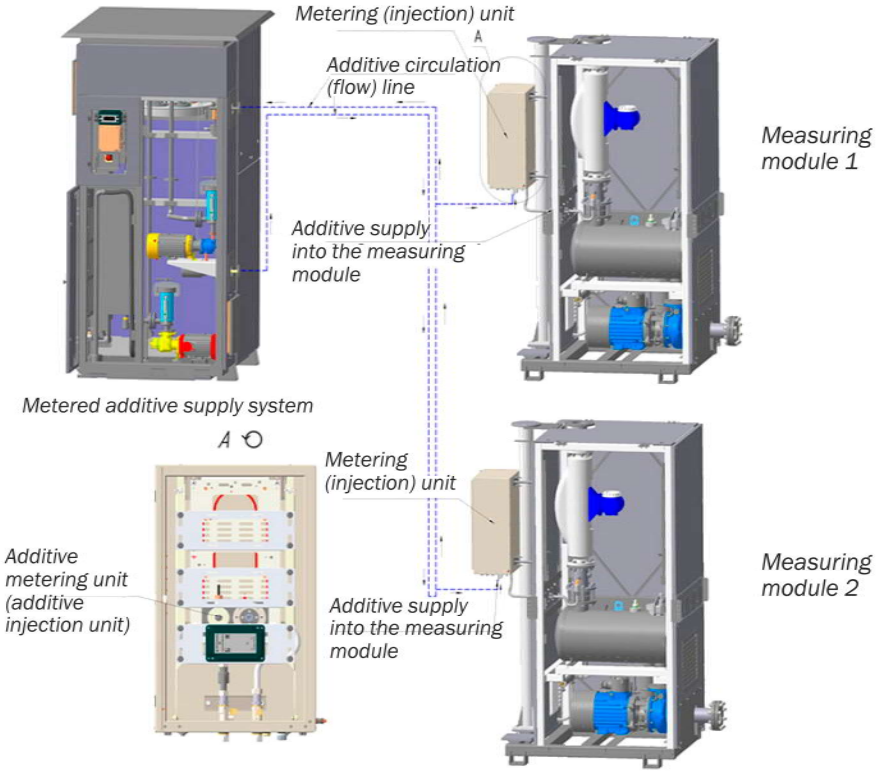
ASN-15DU MEASURING SYSTEM (ADDITIVATION SKID)

Design version №2 According to this construction embodiment, the additive should be injected into two or more loading arms, positioned at different loading posts (i.e. referred to the various loading sites).

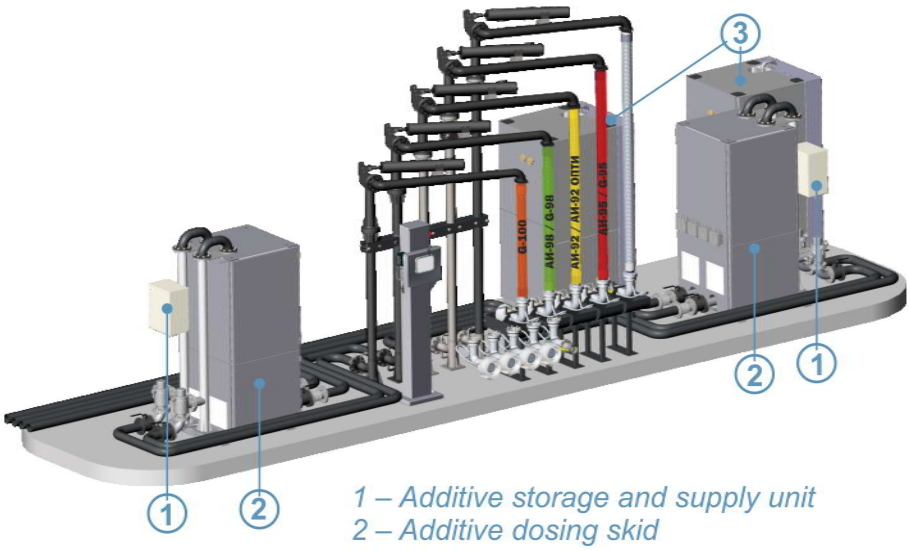


Additivation skid design version 2 configuration:

- **Metered additive supply system: (2÷3)m³ additive storage tank**, fitted with top and bottom level sensors and with temperature regulation device and additive level remote control device (with the level gauge); transporting container → storage tank additive discharge unit; additive supply unit;

- **additive dosing skids with a single metering unit with respect to each loading arm** with dosing skids installed at each loading arm, additive supply and circulation line routing from additive supply unit to the dosing skids with the feature of thermal protection and with pressure regulation device, and provided with the capability of additive circulation between the dosing skids, additive supply unit and the storage tank.

Design version №3 According to this construction embodiment, it's required to inject several types of additives into every loading arm at all loading sites of the loading terminal.



1 – Additive storage and supply unit
2 – Additive dosing skid
3 – Metering unit

Additivation skid design version 3 configuration:

- **Metered additive supply system: (2÷3)m³ additive storage tank**, fitted with top and bottom level sensors and with temperature regulation device and additive level remote control device (with the level gauge); additive discharge unit from transporting container into the appropriate storage tank, provided with regard to each additive; individual supply unit in relation to each type of additive.

- **additive dosing skids with several additive metering units** with respect to each additive type with dosing skids installed at each loading arm, additive supply and circulation lines routing from additive supply unit to the dosing skids with regard to each type of additive, provided with the pressure regulation device and with the feature of additive circulation between the dosing skids, additive supply unit and the storage tanks.