ISO 9001:2008 certified company

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LIQUID/FUEL BLENDING SYSTEMS USB

USB 100/5 (100m³/h)

USB 18/3 (18m³/h)

***GlobeCore* (Liquid/Fuel Blending Systems USB** are designed to blend up to five separate liquid components at rates ranging from 18 m³ to 200 m³ per hour, particularly low-octane gasoline with high-oxygene additives, to prepare multicomponent motor fuel blends. These can include biodiesel blends, bioethanol and other fuels blends.

Modern hydrodynamic stream fuel blending plants have proven themselves to be an economic, accurate and steady solution for high-quality motor fuel blend production with optimal prime cost. In comparison with existing technology of fuel blending in blending vessels, the ***economy and increase of production profit margin*** can result in return on investment of ***60 % a year.***

Liquid blending process occurs in the hydraulic blender. This process involves supplying of all components simultaneously according to the recipe. Finished product is delivered to storage tanks. The ***advantages*** of such blending technology are ***easy and accurate*** component dosage control, substantial ***reduction of fuel blending process time***, ***no need of batching tanks*** for finished product homogenization. In the course of the fuel blending process in the stream mixer the consumption of each component is continuously controlled to provide finished product with steady quality parameters, according to the blending recipe. The fuel blend, obtained from the stream mixer, is homogenic and its component composition is in ***exact match with the recipe***.

USB-25/5 in use on petroleum storage depot

USB Blending systems are intended for:

- fuel saving;
- octane number increasing;
- cetane number improvement;
- blended fuels production;
- blended bio-gasoline (straight-run + bioethanol) production;
- production of winter diesel fuel and arctic gasolines (decreasing of a haze point and point of congelation);
- activation of heavy fuel (black) oil (processing and averaging of watered heavy fuel oil);
- low-viscous ship fuel improvement;
- production of watered heavy fuel oil emulsions;
- production of furnace oil;
- crude oil and oily mixtures processing;
- petroslimes processing;

The Unit can be applied on: oil tank farms, petroleum refineries, mini-refineries, refuel stations, ships, by bunkering companies, experimental departments and labs of different factories and institutes.

Advantages:

- economical efficiency increase
- inventory volume reduction
- tank battery maintenance decrease
- production efficiency (profitability) improvement due to optimum employment of components
- working hours and service personnel decrease;
- finish products output capacity increase;
- efficient and optimal machinery working;
- simplicity of mixing processes (by request, full automation is possible);
- minimizing of effect of variations in processing of raw materials on technological units of refinery on quality of the finished product gained from mixers;
- minimizing of the transportation delays during finished product shipment;
- opportunity to produce finished products with direct loading into gasolene tankers;
- mixing operations planning improvement;
- reduction of labour costs.

USB-60/3 in use on petroleum storage depot

Specifications

Parameters	USB 5/5	USB 18/3	USB 18/5	USB 40/3	USB 60/3	USB 60/5	USB 100/3	USB 200/5
Capacity, m³/h	*5*	*18*	*18*	*40*	*60*	*60*	*100*	*200*
Number of additives	*2-5*	*2-3*	*2-5*	*2-3*	*2-3*	*2-5*	*2-3*	*2-5*
Main component consumption, m³/h	*3.5*	*11*	*11.5*	*30 (37)*	*50 (57)*	*50*	*100*	*200*
Additive volume, m³/h								
*Flowmeter 1**	*0.1-1.0*	*0.25–2.5*	*2-7*	*0.5–3.5*	*0.5 – 3.5*	*0.1–1.0*	*0.4 – 4*	*1.6- 16*
*Flowmeter 2**	*0.5–3.5*	*0.1–1.0*	*0.5–3.5*	*0.1–1.0*	*0.1 – 1.0*	*0.01–0.02*	*0.4 - 4*	*0.6- 6*
*Flowmeter 3**	*0.5–3.5*	*-*	*0.5–3.5*	*-*	*-*	*0.25–2.5*	*-*	*1.0 – 10*
*Flowmeter 4**	*0.15–0.65*	*-*	*0.15–0.65*	*-*	*-*	*0.5–6.3*	*-*	*2.5 - 25*
Fuel Inlet Pressure, MPa	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*
Power Consumption, kW	*2.7*	*15*	*18*	*36*	*45*	*45*	*55*	*100*
Delivery head, m, max	*10*	*10*	*10*	*10*	*10*	*10*	*10*	*10*
Dimensions, mm								
*Length***	*500*	*500*	*500*	*700*	*700*	*1000*	*2000*	*2500*
*Width***	*300*	*500*	*600*	*1200*	*1200*	*1500*	*1400*	*1800*
*Height***	*1300*	*1500*	*1500*	*1550*	*1550*	*1850*	*2200*	*2500*
Weight, kg	*130*	*330*	*370*	*450*	*550*	*750*	*1450*	*2200*

**** - flow meters range to be advised depending on finish product recipe***

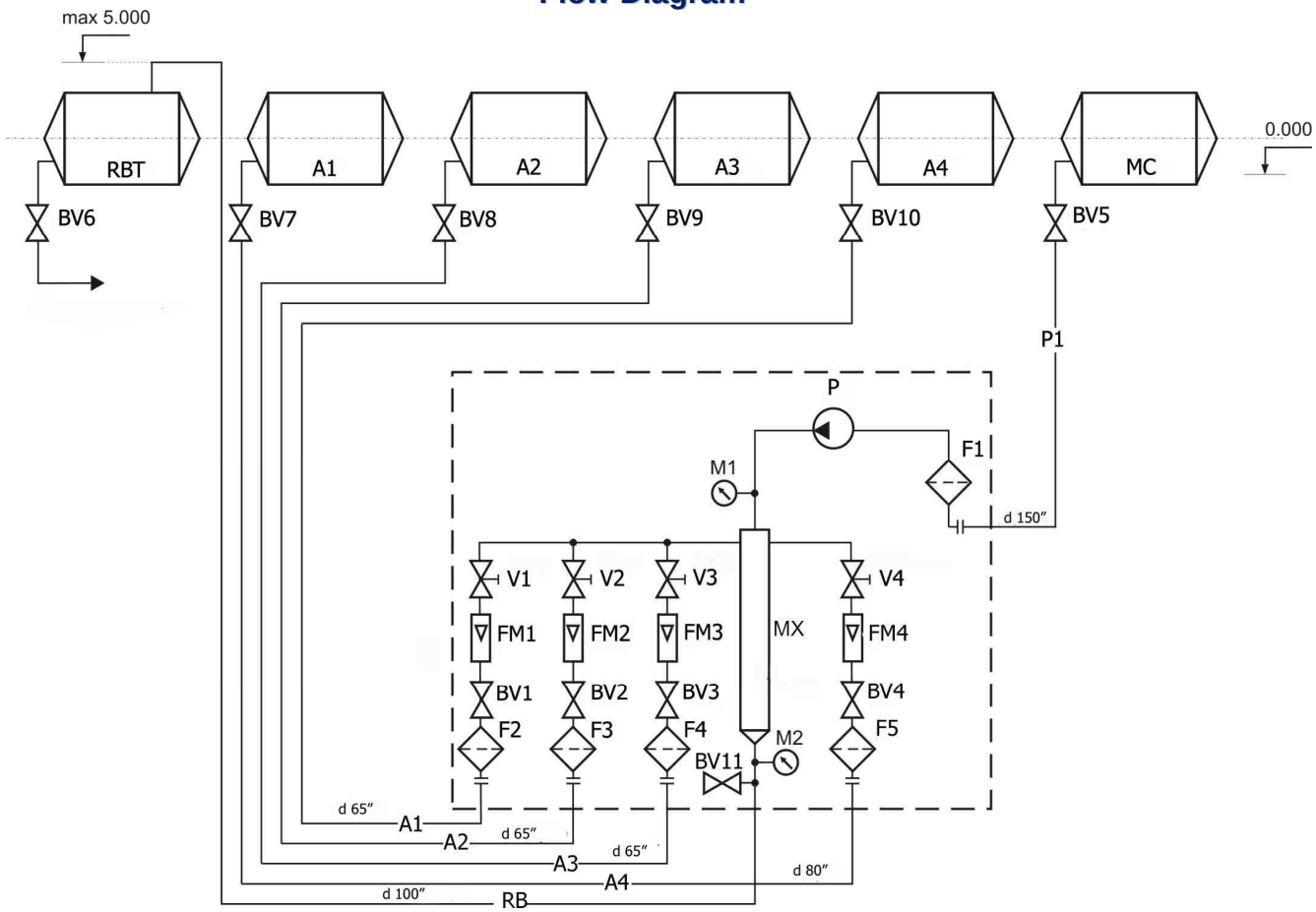
***** - dimensions can vary depending on customized components (please fill in our questionnaire before ordering)***

USB system *is an ideal solution for* ***biodiesel blending****, as well as* ***bioethanol blending*** *applications. The composite fuel produced with this fuel blending system remains stable for long periods of time, due to the highly intensive blending process. The liquids in the blender interact on a molecular level, which results in a stable and homogeneous mix. USB blenders make the process of blending ASTM compliant biodiesel to superior biofuel a lot simpler and a lot more efficient.*

MAJOR ADVANTAGES

- *Increase of biodiesel blending and composite fuel blending operations capacity*
- *Efficient and optimal usage of equipment*
- *Fuel blending process automation*
- *Reduction of the impact the input material change has on the finished product*
- *Significant reduction of transportation delays for shipments of the finished product*
- *Control of the finished product levels in tanks maximizes tank efficiency*
- *Easy planning of fuel blending operations*
- *Reduction of labor costs*

Flow Diagram



Operating Principle

Main component ***(MC)*** *is pumped with Pump* ***(P)*** *through the pipeline* ***(P1)****, Ball Valve* ***(BV5)*** *and mesh filter* ***(F1)*** *to the Mixer* ***(MX)****. Additives* ***A1, A2, A3*** *and* ***A4*** *flow through mesh filters (****F2, F3, F4*** *and* ***F5)****, Ball Valves (****BV1, BV2, BV3*** *and* ***BV4****) to the system's Mixer* ***(MX)****. Additives consumption is adjusted according to Flowmeters (****FM1, FM2, FM3*** *and* ***FM4)*** *readings and blend recipes by Valves (****V1, V2, V3*** *and* ***V4****). An area of low pressure is created when main component enters Mixer's Injector. The pressure gradient between this region and pressure in additives pipelines makes additives to flow in. Partially mixed liquid enters Mixer's Chamber where blending process is finalized. Ready blend is pumped through pipeline (****RB)*** *to Storage Tank (****RBT****).*

Gasoline/diesel fuel blending system USB-18/3

This unit is able to mix simultaneously up to 2-3 components that in turn is reasonable both for producing of high octane gasolines on the basis of bioethanol and for producing of winter and arctic fuels by introduction of pour-point depressants and antigel additives.

The present unit has perfectly proved both in conditions of the Far North and of Central Asia.

Fuel blending machine is actual for application at the small capacity enterprises, the Unit capacity on end-product is from 13 till 18 m^3/hour. The Unit can be applied as for fuel processing during storage and for manufacture of the new fuels on refineries or petroleum storage depots.

Gasoline/diesel fuel blending system USB-18/5

This fuel blending system is able to mix simultaneously 2-5 components. The main purpose and application of the Unit - producing of compound multicomponent fuels (the more components have been mixed - the better is quality of the end-product). Unit capacity on the main component is 18 m^3/hour.

This unit type is equipped with the vertical multistage pump unit made by "Grundfos".

This type units are the most demanded on the market, the maximum number of the produced models were this type ones.

Gasoline/diesel fuel blending system USB-2/20/4

This blending system can be applied for mixing simultaneously of two main components and four types of additives. This Unit can be applied both for producing of blended gasolines and for producing of winter and arctic fuels by introduction of pour-point depressants and antigel additives.

Unit capacity on the main components is 20 m^3/hour, accordingly depending on percentage batching of additives final Unit capacity can make from 22 till 30 m^3/hour. Adjustment of the main components can also be made.

Convenience of this system is in its versatility in its application due to use of two main components simultaneously, thus every component can be dosed out in the ratio one to another.

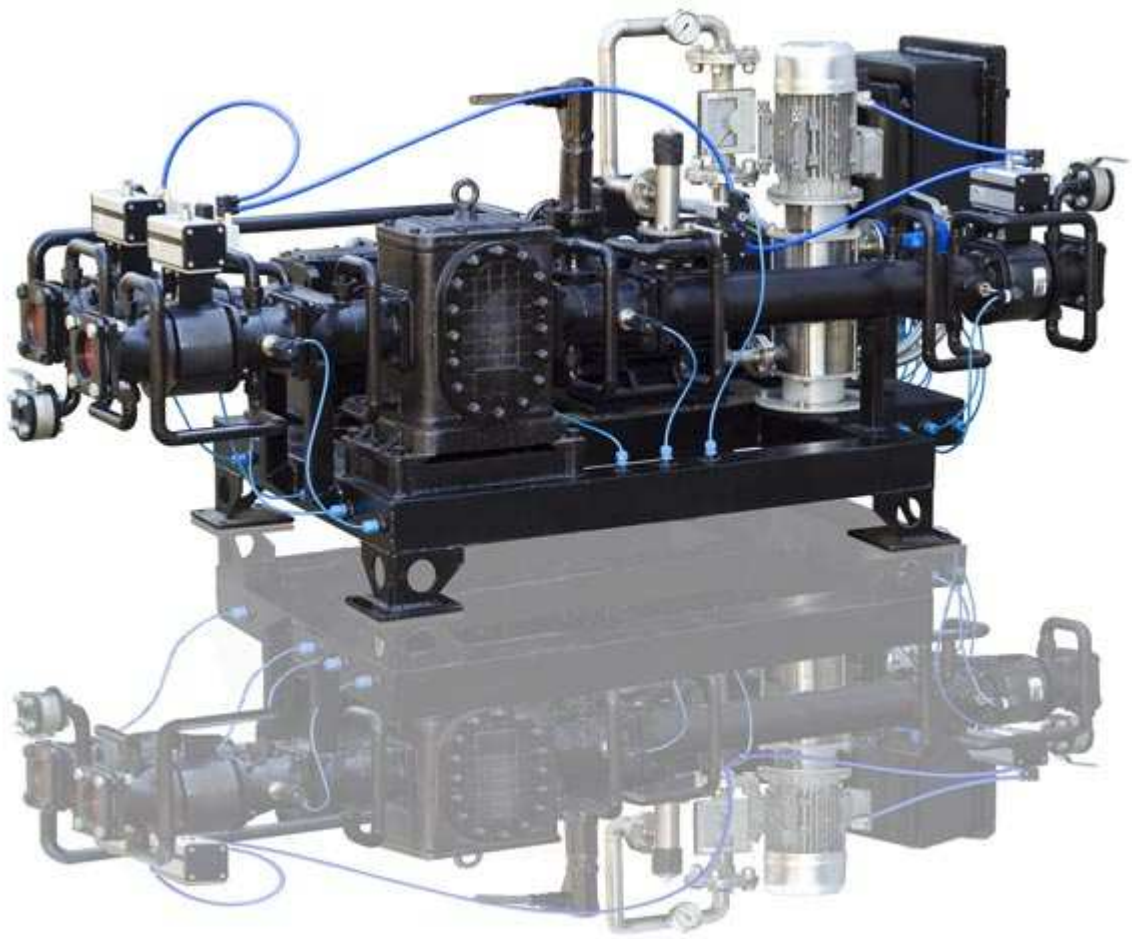
Gasoline/diesel fuel blending system USB-2/60/5

This blending system can be applied for mixing simultaneously of two main components and four types of additives. This Unit can be applied both for producing of blended gasolines and for producing of winter and arctic fuels by introduction of pour-point depressants and antigel additives.

Unit capacity on the main components is 20 m^3/hour, accordingly depending on percentage batching of additives final Unit capacity can make from 50 till 80 m^3/hour. Adjustment of the main components can also be made simultaneously with additives fine adjustment. The flow meters as well as regulating valves are provided for exact component dosing.

Convenience of this system is in its versatility in its application due to use of two main components simultaneously, thus every component can be dosed out in the ratio one to another.

Low-viscous, viscous and high-viscous fuel/low-viscous residual oil blending system USB-12/3



This system is a monoblock unit with a remote control system. The Unit is recommended to apply mainly at the thermal power stations as it has been installed the remote control system supported by controller - this system can be easily adapted in common factory control system. The system of automatic batching of components is realized in this unit.

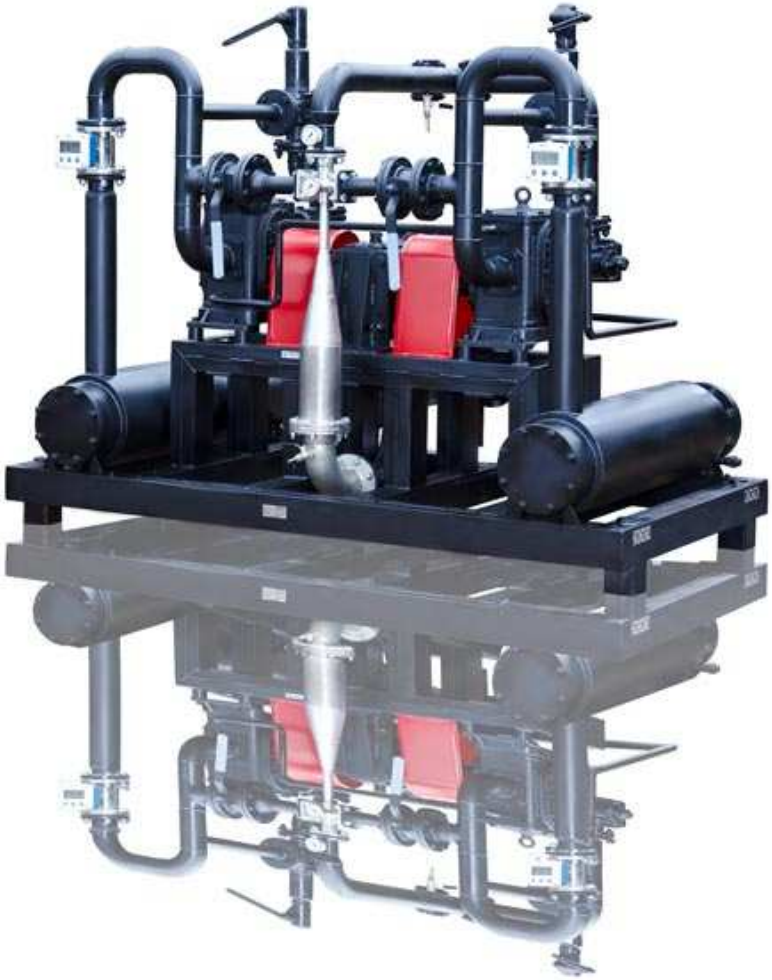
Main purpose of the USB system is its application for nonchemical fuel treatment and liquid fuels economizing.

Features:

- **BLACK OIL, DIESEL FURNACE OIL, GASOLINE SAVING;**
- **WATER-FUEL EMULSIONS PRODUCTION;**
- **BURNING OF BLACK OIL WITH WATER;**
- **BURNING OF CHEMICAL RECOVERY BLACK OIL;**
- **MIXING OF MULTICOMPONENT FUELS;**
- **MIXING OF BIODIESEL WITH OTHER FUEL COMPONENTS;**
- **PRELIMINARY OIL PROCESSING IN ORDER TO REDUCE THE TRANS-PORTTATION COSTS;**
- **INCREASING OF OUTPUT FLUIDITY OF THE LIGHT PETROCHEMICALS DURING OIL REFINING;**

Unit is equipped with a heating system and ultra precise components batching system allowing to change dosage of components continuously «ONLINE».

Low-viscous, viscous and high-viscous fuel/low-viscous residual oil blending system USB-60/2



This system is intended mainly for treatment of high-viscous medium of black oil and crude oil as well.

The Unit is equipped with the high-tolerance additives batching electronic system with digital display, allowing to set the additives dosing extremely accurate.

Besides the Unit is able to treat the fuels both without any additives to achieve the fuel stability and using water (for producing of water-oil emulsions) or other components and additives. It can be also applied both for emulsification additives blending and for demulsification reagents introduction (e.g. for water removing from crude oil).

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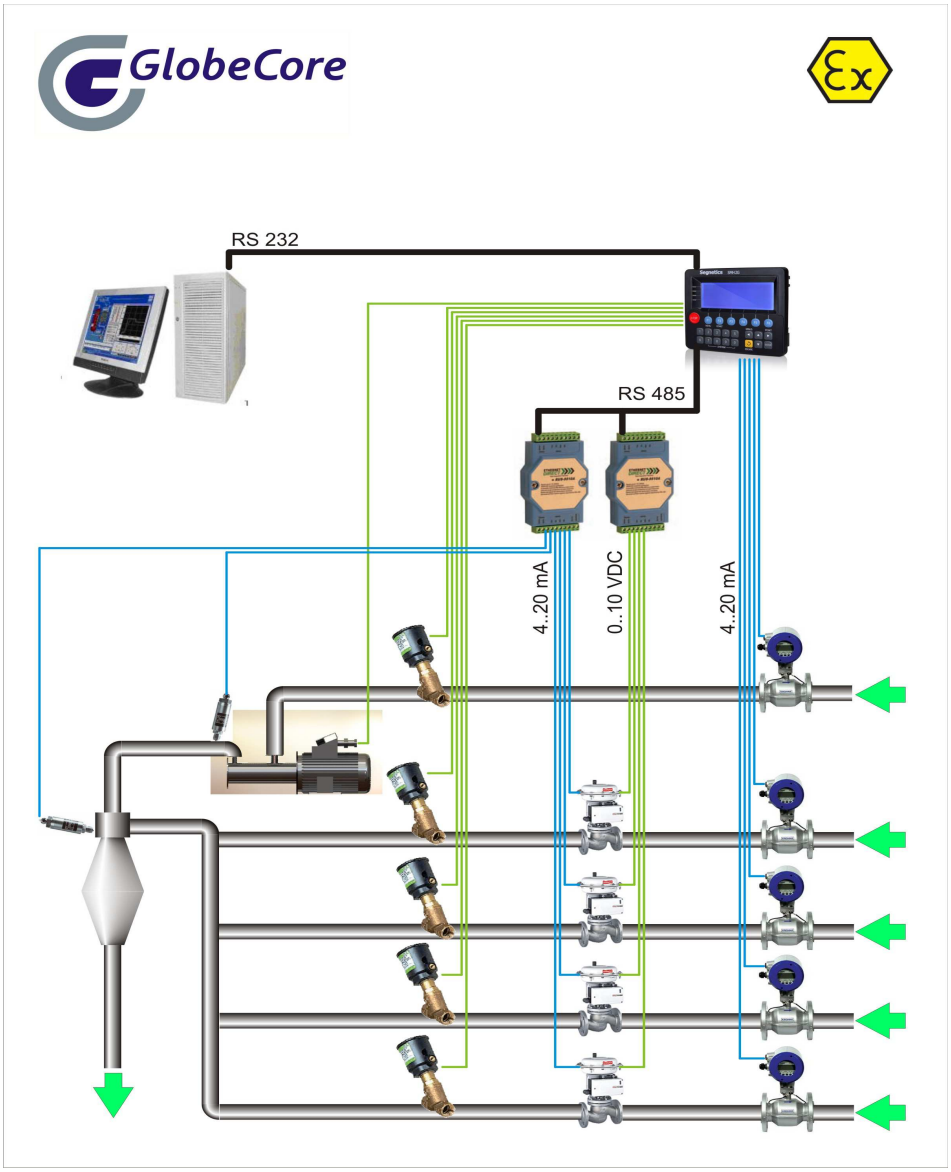
Process Automation of USB Systems

The management system consists of the digital sensing transducers of the actual instant consumption of each additive, digital manifold pressure gauges, additives position regulating valves with feedback coupling of actual cut-off plates angle, reserving shut-off valves, operated by pneumodrives, main component feeding pump.



Automation is developed on the basis of logical operating control unit Segnetics, control modules and eliminated data collection, SCADA-system Trace Mode. The given solution ensures pinpoint accuracy of the regulating, full blending process monitoring, additives register, observation and automatic control of main parameters within required limits ratio, visual clarity, data archiving and backup, storage of blending recipes, etc.

24-bit high-speed analog-digital converters of the control unit secures measurement accuracy of input values. The program PID-regulator allows to reduce transient response of magnitude exit of the consumption on the set level, to counteract the overcorrection, to remove a static error and considerably reduce variability of operational factor.

Electrodrive mechanisms with precise regulation and reserving feedback coupling of actual cut-off plates angle secure the required stream flow.

The automation system controls completely all the parameters influencing blending process, ensuring safety and occurrence register.

User-friendly interface makes the control process visually clear and simultaneously very functional. It is carried on permanent logging, additives availability control, consumption control, operator's authorization, introspection of actuating and measuring system units functionality.