Additive is injected in small batch proportional to the main flow. Max 1” injection pipe, higher rate is a blending on line.
Additive

Glossary

Additive: Substance added to another in small quantity to modify properties.

Component: Two or more substances present in a compound in similar quantities.

Additivation: To inject additives in a main flow.

Blending: To mix two or more components.

Denaturation: Process that causes any alteration of natural structure of a substance. Typically change colour for recognise the product

Skid: Pre-assembled unit

Batch: Delivery operation based on transferring of specific and fixed quantity.
Additive

Why?

- To obtain special features (Marketing) - Shell V-Power
- To enhance safety - LPG Odorization
- To identify a fuel - Colouring / Denaturation
- To prevent pollution - Bio fuels
- To prevent freezing - Jet fuel
Additive

- Diesel - fuel
- Gasoline / Petrol
- Jet fuel
- LPG
- Ethanol
- BioDiesel
- Chemicals
- Liquid soaps
- Cosmetics
- ....................
Additive ON LINE METERED
Additive ON LINE PACING
Additive OFF LINE BATCH
Additive

Points of injections OUTLET

On-line metered or pacing

On-line metered
Additive

Points of injections INLET

On-line pacing or metered

On-line pacing or metered

Off-line batch controller
Additive

How can we measure the quantity of additive injected?

- Dosing cylinder
- Metered
Additive

Piston is an old system, used also by Isoil in the past
FlexiMix is an additivation modular system. It is composed by an electronic controller and an injection block.
IC-M

(Injection Controller – Main)

- up to 2 additives stand alone
- up to 6 additives with extension IC-E
- up to 2 extensions IC-E
- handle 1 or 2 main products
IC-E

(Injection Controller – Extension)

- control up to 4 additives and for each:
  - Solenoid injection valve
  - Counting pulse from injection meter
  - Relay start and stop additive pump
Fleximix

Injection Block

Includes:
- Gear meter with pulse emitter
- Solenoid on-off valve
- Strainer
- Non return valve
- Needle valve in and out
Fleximix
Pre-wired

Includes:
- ICM or OCE
- Injection blocks
- Wiring
- Mounting stainless steel plate
- Labels
- Full test
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Fleximix

FlexiMix1-M1
1 additive

FlexiMix2-M2
2 additives
Fleximix

FlexiMix3-M2-E1

FlexiMix4-M2-E2
Fleximix

FlexiMix5-M2-E3

FlexiMix6-M2-E4
Fleximix

- Automatic injection volume adjustment
- Full signal alarm control
- Signal for pump start and stop
- “washing” handling
- Interlock handling (low level alarms, pressure switches ect. )
- Auto calibration feature
- Serial port communication with Vegall and VegaT
- Mod-bus communication
- Display of 2 additives in one screen
- Window operators screen
- Full English menu
- Diagnostic feature
- PC software tools (parameters download, firmware upgrading)
- 3 operating mode, Self pacing, Signals handling, Smart communication
Fleximix Display

UNITA 1
ADD. A 476 cc
API

UNITA 1
ADD. A 0 cc

UNITA 1
ADD. B 0 cc

UNITA 1
CONSENSO 1
NON POSIZIONATO

UNIT 1
ADD. A 0 cc
UNIT 2
ADD. B 0 cc

UNITA 1
ADD. A 1000 cc

UNITA 1
ADD. A 1000 cc

UNITA 1
ADD. A 1000 cc

ALLARME A05
FUORI TOLLERANZA

MENU
IMPOSTAZIONI
CALIBRAZIONE
DIAGNOSTICA
APPLICATIVI
INFORMAZIONI

1 IMPOSTAZIONI
1 CONFIGURAZIONE
2 INJ. BLOCK
3 RICETTE
4 UNITA'
5 ALLARMI

1.3.1.0.0
MODO
ATTUALE:
SMART
Fleximix

Easy-calibration
PC Tools

- FLEXIMIX FLASHER:
  - Upgrade seriale firmware

- FLEXIMIX PARAMETER:
  - Download ed upload seriale parametri
  - Modifica parametri
  - Stampa, esportazione PDF ed archiviazione parametri
  - Confronto configurazioni parametri
Vegall additive

INJECTION BLOCK
METERED BASED

INJECTION BLOCK
PISTON BASED

SUPERVISION SYSTEM

FLEXIMIX
PROTOCOL
MANAGEMENT
In this case VEGA II can control all the operation of additivation through the serial communication protocols.

VEGA II
• can register and print the additivation data
• can send the additivation data through serial communication protocols (ModBus or Proprietary)
INTEGRATED INJECTION BLOCK MANAGEMENT (metered based)

When this option is used the VEGA II:
• commands the pump to pressurize the additives
• controls the additive valves of the injection blocks
• counts the pulses of the additive meters
• totalizes and controls the amount of additives
• transmits the additivation data to a supervision system
INTEGRATED INJECTION BLOCK MANAGEMENT (piston based)
When this option is used the VEGAII:
• commands the piston to inject the additive
• monitors the feedback switch
• totalizes additive volume based on feedback signal and programmable volume per cycle.

One meter versions

RS422

I/O
With INTEGRATED INJECTION BLOCKS management VEGALL is able:

• to drive directly two injectors without external SMART ADDITIVES

• to inject two additives simultaneously

• to totalize volumes and weights of the additives

• to measure directly the additives delivered

• to manage ppm relationship in weight or volume
By parameters it is also possible to define:

- the number of available recipes (max. 4)
- the number of additives for recipe (max. 4)
- the recipe name
- the additive quantity “ppm”
- the quantity of additive in volume or weight
- the density of additives to calculate the weight
- the quantity of cleaning line
Vegall additive

Additivation in LOCAL mode
Additivation in REMOTE mode

In REMOTE mode the supervision system can:
- define if the delivery has to be additivated or not
- use one of the recipes already programmed or can decide directly:
  - the percentage of additive A
  - the percentage of additive B
  - the percentage of additive C
  - the percentage of additive D
The data of the additivation are available:

- on display
- through communication protocol
- on print report
General alarms:

• no additive

• under treatment

• over treatment

• unauthorized additive flow

• final control of tolerance between additive delivered and required

• control interlocks
Size additivation

Check list

- Get main flow rates max and min
- Get % or p.p.m. of additives
- Get line pressure (max)
- Calculate additive flow rate max and min
- Choose the right injection block
- Calculate pump pressure
Size additivation

Isoil Injection block

IB S : 0.25 ÷ 10 l/min.
IB L : 0.03 ÷ 1.66 l/min.
Max pressure 3000 kPa
On-off system, max duty cycle 50%.
Injection block needs meters at least 2 times flow rate injected.
Pump needs to have at least 300 kPa more pressure than line pressure + piping pressure loss.
Additive solutions

Complete pre-assembled skid solutions

To see later on

“engineering solutions”