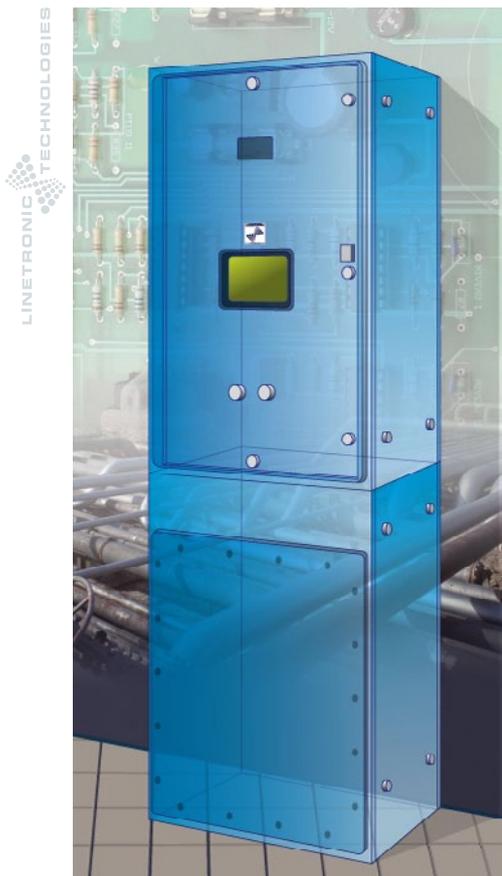


## Online Range:

## New-on-Line 100, New-on-Line 300, New-on-Line 700



## New-on-Line 100, Cloud Point:

ASTM D2500 - D5771 - D5772 - D5773  
DIN 51597  
IP 219 - IP 444 - IP 445 - IP 446  
ISO 3015

## New-on-Line 100, Pour Point:

ASTM D97 - ASTM D5853 - ASTM D5950  
IP 15 - IP 441  
ISO 3016

## New-on-Line 700, ASVP:

ASTM D5191

Automatic process analysers - CE marked

## Subject

Determination of Cloud Point of hydrocarbon products, diesel, gasoil, completely on line, full automatically, extremely accurately and fast with the New-on-Line 100.

Determination of Pour Point of petroleum products, diesel, gasoil, motor and engine oils, additives, lubricating oils, completely on line, full automatically, extremely accurately and fast with the New-on-Line 300.

Determination of Air Saturated Vapour Pressure on gasolines, completely on line, full automatically, extremely accurately and fast with the New-on-Line 700.

The New-on-Line making part of the new generation of on-line process analysers, determines Cloud Point (New-on-Line 100), Pour Point (New-on-Line 300), Air Saturated

Vapour Pressure (New-on-Line 700) in correlation to the norms, while guaranteeing:

- Perennity: conceived in order to have a raised longevity thanks to the good quality of the mechanical, electric and electronic components used for its manufacturing.
- Simplicity: a modular architecture of design.
- Supervision: accessible by Ethernet network on site or by safe remotely connection made by Internet
- Access for user and/or manufacturer.
- Conviviality: with a clear and didactic graphic interface.

This design brings a maintainability never reached on these analysers and don't require a particular maintenance.

The analysers New-on-Line determine the Cloud Point, the Cloud Point and the ASVP in correlation to the ASTM, IP, ISO, DIN standards by using technologies of on-line processes.

With a reduced time of analysis (lower than 10 minutes - Cloud Point; 10 - 40 minutes - Pour Point; 3 - 6 minutes - ASVP) it allows a constant control in real time of the lines of production. The management of the analyser is completely automatic thanks to the dedicated software which allows the user to supervise and visualize all the parameters referred to the analysis in progress.

## Determination of Cloud Point

is made by detection of light pulsed emission, on I.R. spectrum through a coaxial fiber optic. The dispersion of the light is caused by the crystallization of paraffins. These last, in phase of cooling of the sample, disperse and absorb the light.

## Determination of Pour Point

is made by a precision pressure sensor that measure constantly the differential value during the test.

## Determination of Air Saturated Vapour Pressure

is made by a precision pressure sensor that measure constantly the absolute value during the test.

The analyser, by means of the Lin-Tech software, observes and manages the phenomenon. As soon as the result is obtained, the cell is emptied automatically and a new cycle of analysis starts.

## Generality

- This analyser consists a pressurised enclosure, EEx p for zone 1 and 2, with a CENELEC, ATEX certification and different accessories fixed on both sides of the enclosure.
- The protecting system and some EEx d boxes are fixed on the left side, and the analytical part fixed on the right side.
- In the upper part of the enclosure accessible with a door supporting a flat screen, are enclosed, the PC, the electronic, the interfaces and the interlock with the terminals.

- This analyser is supplied with some components for the sample conditioning procedure. In option, a complete sampling conditioning system dedicated to a user application can be supplied.
- This analyser has been designed to follow the reference standards methods.
- The analytical cell is cooled down with Peltier elements.
- This type of analyser has a main application in production unit where the sample composition does not change rapidly in a short period of time.

## Principle of Detection - Cloud Point

- The detection consists of an emission of a pulsed light signal, sent through a coaxial fiber optic.
- The position of the fiber optic allows the system to look to the appearance of the crystals into the test tube.
- The internal diameter of the test tube is 4 mm.
- A signal is collected on the other side of the test tube and send back to the receptor via the fiber optic.
- The signal is recorded and after mathematical treatment, the value of the temperature of the Cloud Point is displayed. Due to the dynamical calculation, the colour of the sample has no effect on the detection.

## Principle of Detection - Pour Point

- The detection consists in a constant reading of differential value of a precision pressure sensor.
- The position of the sensor allows the system to observe the reducing flow inside the test tube.
- The signal is recorded and after mathematical treatment, the value of the temperature of the Pour Point is displayed. Due to the dynamical calculation, the main features of the sample has no effect on the detection.

## Principle of Detection - ASVP

- A chamber of 15 ml is maintained at 0.1 kPa and 37.8°C. A quantity of 3 ml of sample, with a temperature of 0 °C, after the air saturation procedure, is automatically injected by means of a pneumatic injector inside the cell of 15 ml.
- Due to the temperature a certain volume of sample changes from the liquid phase to the gas phase. This mutation modifies the absolute pressure inside the chamber.
- When the stabilisation of the pressure is reached, the volume of the absolute pressure obtained will be considered as the total vapour pressure.

## Procedure of Analysis

- The application software proceeds to the draining first, by flushing the sample to the drain.
- This operation takes a few seconds. The second step is to fill the test tube on a time basis.
- When the time of filling is elapsed, a seconde draining procedure can be done if necessary.

- Then the analysis is started.
- All this procedure of draining and filling takes 5 to 20 seconds depending on the selection made in the set-up software.
- The analysis time will takes:
  - 4 to 6 minutes (Cloud Point);
  - lower than 10 minutes up to 40 minutes (Pour Point);
  - 3 minutes up to 6 minutes (ASVP).
- The user can select the mode of analysis and also can do alternatively both methods.
- The analyser can select a reference sample from one external drum to proceed to the validation of the analyser himself, before to start the analysis on the product line.
- This type of analyser is specially designed for production unit where the results have to has close as possible of the ASTM reference result from the laboratory.

#### Measuring Parameter

- Cloud Point, Pour Point on petroleum products and Air Saturated Vapour Pressure on gasolines according to the standards reference methods
- Temperature in degree Celsius
- Measuring span  $-60^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  (Cloud Point, Pour Point)
- Measuring span 0,15 mBar to 1200 mBar, ABS (ASVP)

#### Sample Characteristic

- Input analyser
  - flow 10 to 20 l/h (in drain status)
  - consumption 2 ... 4 l/h (according number of analysis)
  - pressure 0,3 – 0,6 bar
  - temperature maximum  $+ 40^{\circ}\text{C}$
  - contamination without solid particle  $> 10$  microns
  - without presence of acid or solvent
  - maximum 100 ppm water
  - without traces of residue

#### Sampling conditioning items

- 1 ball valve stainless steel 316L sample input
- 1 filter 10 micron
- 1 rotameter stainless steel/glass 0-40 l/h with low flow alarm (contact NO/NC on terminal of the analyser)
- 1 three ways solenoid valve
- 1 ball valve stainless steel 316L reference sample input

#### Output analyser

- As to be connected to a purge collector supplied by user.

#### Specification 's purge collector

- atmospheric drain
  - without back pressure
- The purge collector has to be always below the level of the output of the analyser (gravity flow)

#### Options: sampling conditioning system

- 4 ball valves
- filter in line
- water heat exchanger
- 2 rotameters
- 1 solenoid three ways valve for sample reference input
- pressure reducer

#### Utilities

- Air supply (shut-off valve supply by the user)
  - without oil and dust
  - dew point max  $-20^{\circ}\text{C}$
  - pressure 4 to 7 bars
  - consumption about 30 Nm<sup>3</sup>/h

#### Water (shut-off valve supply by the user)

- clean without sludge or particles
- input pressure min 1 bars, max 3 bars
- differential pressure input/output min 1 bars
- temperature max  $+15^{\circ}\text{C}$
- consumption max 300 l/h

#### Power supply

- 220V / 5% / 50Hz / 2 KVA
- 380V / 5% / 50Hz / 1,5 KVA three-phase

#### Control Unit

The control unit assembly is mounted internally into the pressurised enclosure.

This assembly include:

- Panel PC working on Window<sup>®</sup> based application
- Interface boards, input/output digital and analogic
- Power supply DC
- Light boards IR

#### Interface

- Input/output modules, with galvanic separation

#### Local Display

- Flat screen (15"/17") touch screen and/or 4 buttons for control functions connected by the panel PC.

#### Informations Displayed

- Record of all the critical parameter's display of the last 30 results from the application software
- Alarm with description of the default
- Access to all the function's
- No programation required
- All results stored on hard disk

#### Software

- Used with the 4 push buttons front door mounted
- Cloud Point application
- Pour Point application
- ASVP application
- Set up software (purge time, drain time, 4 to 20 mA range, record span etc.)
- Calibration software
- Maintenance software

#### Analytical Cell

- The analytical cell is mounted externally on the pressurised enclosure
- The cell is cooled by Peltier element
- Analysis cycle time is 4 to 6 minutes

#### Repeatability

- $0.5^{\circ}\text{C}$  (Pour Point, Cloud Point)
- 5 mBa (ASVP)

#### Resolution

- 1 mBa (ASVP)

#### Internal Security

- Watch-dog
- By PC or interlock watch-dog default, the watch dog turn off the electrical power of all the components except the PC

#### Alarm Output

- Default analyser: 1 contact
- Low sample flow: 1 contact
- Low water flow: 1 contact

#### Input Signal

- 1 Contact, stand by, analysis cycle interrupted
- 1 Contact, start analysis, restart of an analysis cycle

#### Output Signal

- 4 to 20 mA accessible from the set-up linear module, galvanic separation, max load 600 Ohms

#### Cooling Devices

- The analytical cell is cooled by Peltier element
- Water cooled of the hot side of the Peltier element
- Lowest cell temperature  $-35^{\circ}\text{C}$  (with cooling water at  $+10^{\circ}\text{C}$ )

#### Ambient Conditions

- Temperature  $+ 5^{\circ}\text{C}$  to  $+ 40^{\circ}\text{C}$
- HR 80% maximum
- No excess of dust or corrosive atmosphere
- Installation: analyser house or shelter

#### Radio Electric Perturbation

- For all the standard frequencies don't use radio at less than one meter of the analyser

#### Classification

- Classification EEx p II B T 6 / according CENELEC 50016
- Option : EE x P II C T 6

#### Fittings

- Input/output sampling tubing 4/6 mm
- Air supply  $\frac{1}{4}$  and  $\frac{3}{4}$ " NPT female
- Gland PG 13 or PG 16

#### Enclosure

- Class IP 65

#### Special Options

- Serial line RS 422 Modbus protocol
- Calibration decade box, ISO 9002 for PT 100 (supplied with connectors)
- Reference sample for validation of the analyser
- Sampling conditioning system, according application

#### Procedure of Control Before Dispatch

- Electronic calibration
- Analytical calibration on reference certified samples
- Control of functionality on certified sample in sample loop with about 100 results
- Certificate supplied on the status of calibration and tests done

**Usefulness Cloud Point and Pour Point**

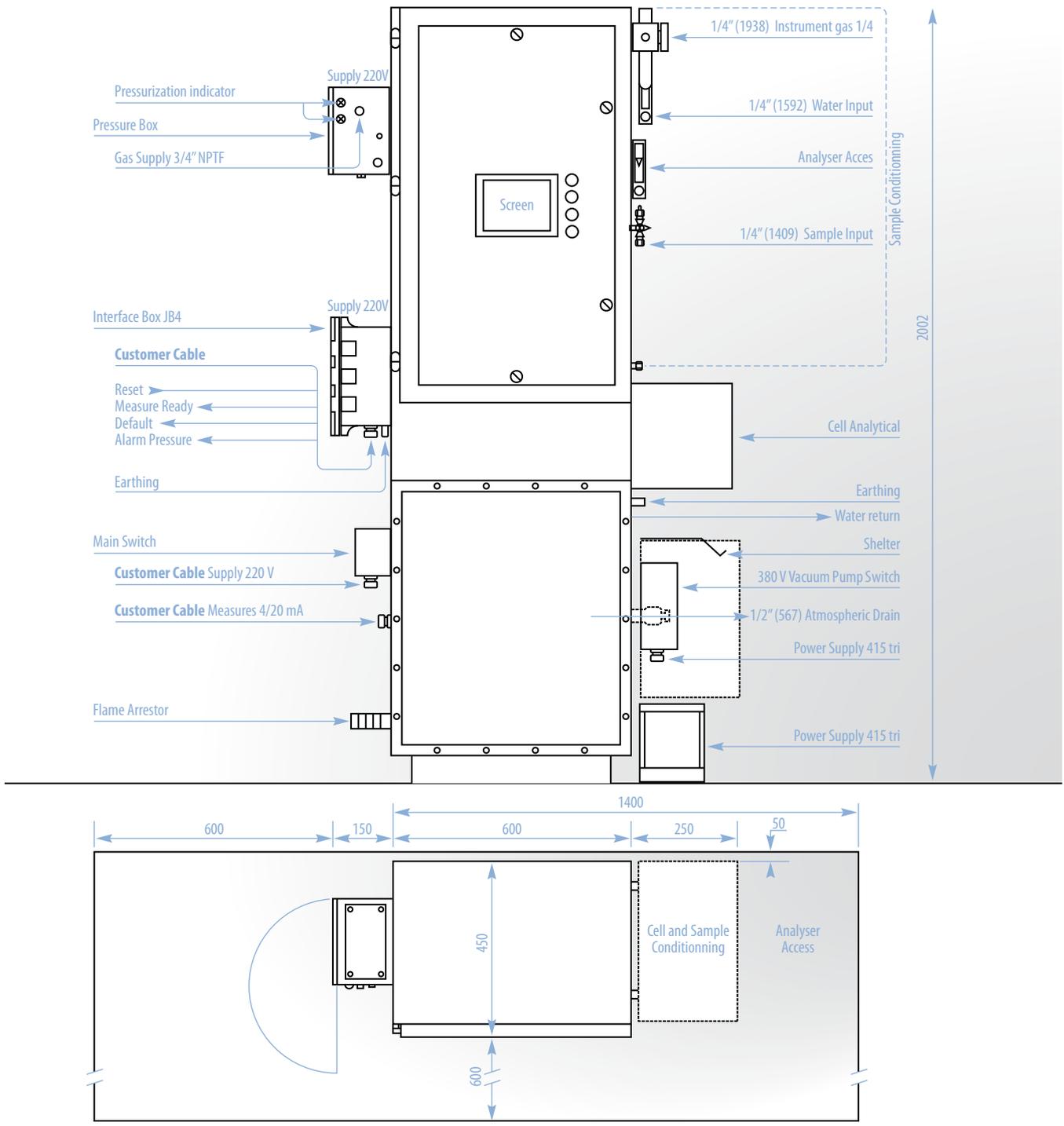
- The instrument is equipped with Peltier elements. Cooling water can be supplied by an already existing water line or by external chillers, option available upon request.
- Cooling liquid - water: +10°C ... 15 °C
- Measuring range: +40°C ... -30°C
- Cooling liquid - Cold water: + 5°C ... 0°C
- Measuring range: +40°C ... -40°C
- Cooling liquid - medium: (water + glycol) -10°C ... -20°C
- Measuring range: +40°C ... -50°C
- Purity: clean, free of dirt and particles
- Flow: 2 ... 60 l/m
- Max pressure: 3 bars
- Min pressure: 1 bars

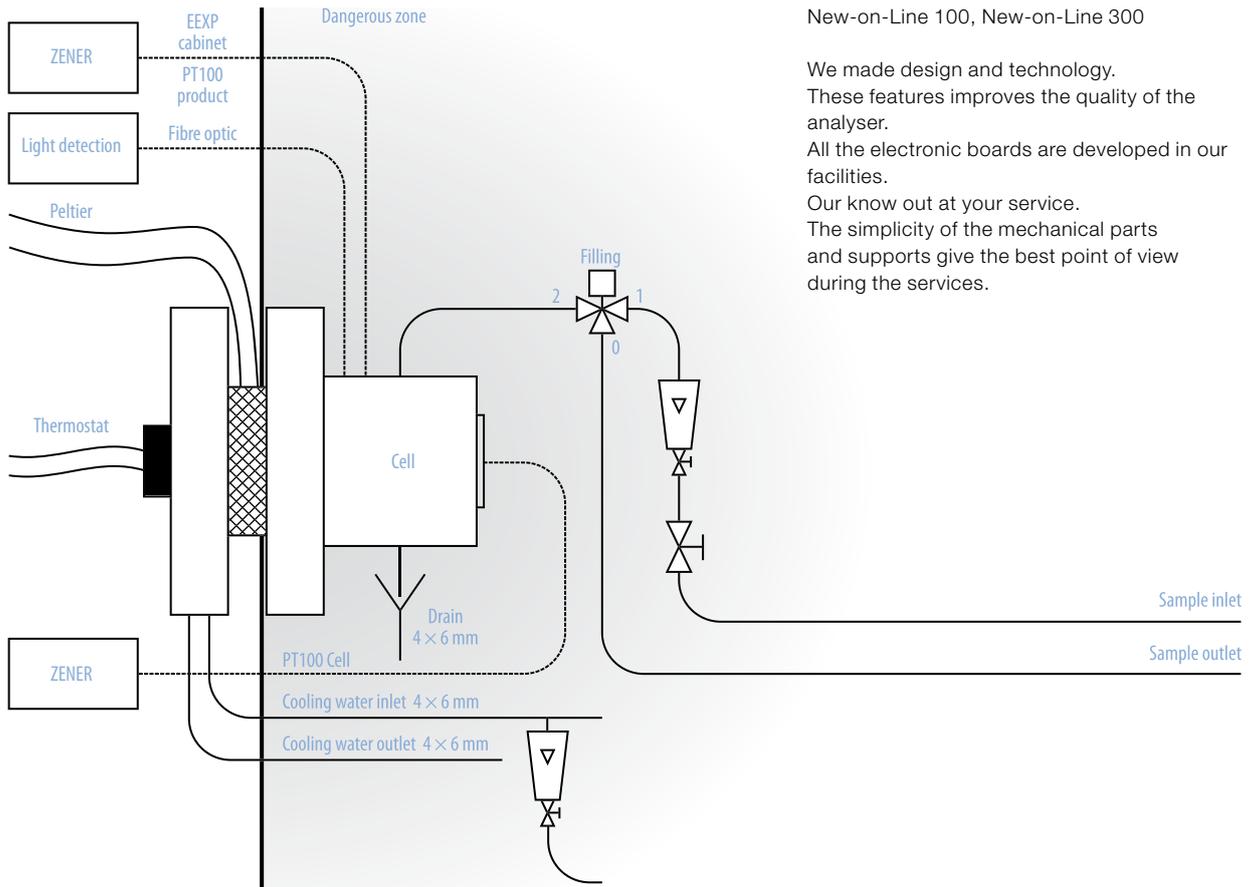
**Usefulness ASVP**

- The instrument is equipped with Peltier elements.
- The cooling water can be supplied by an already existing water line or by external chillers (option available upon request)
- Sample conditioning at 0°C
- Pneumatic injector of 3 ml sample quantity
- Measuring cell at 37.8 °C with pressure sensor
- Loading valve, draining valve and sample depressurization in bottle
- Vacuum pump
- Control system for pneumatic valves and pressure regulator
- PT100 temperature probe for conditioning and measuring cell

**Characteristics of the Sample**

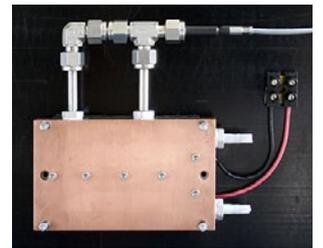
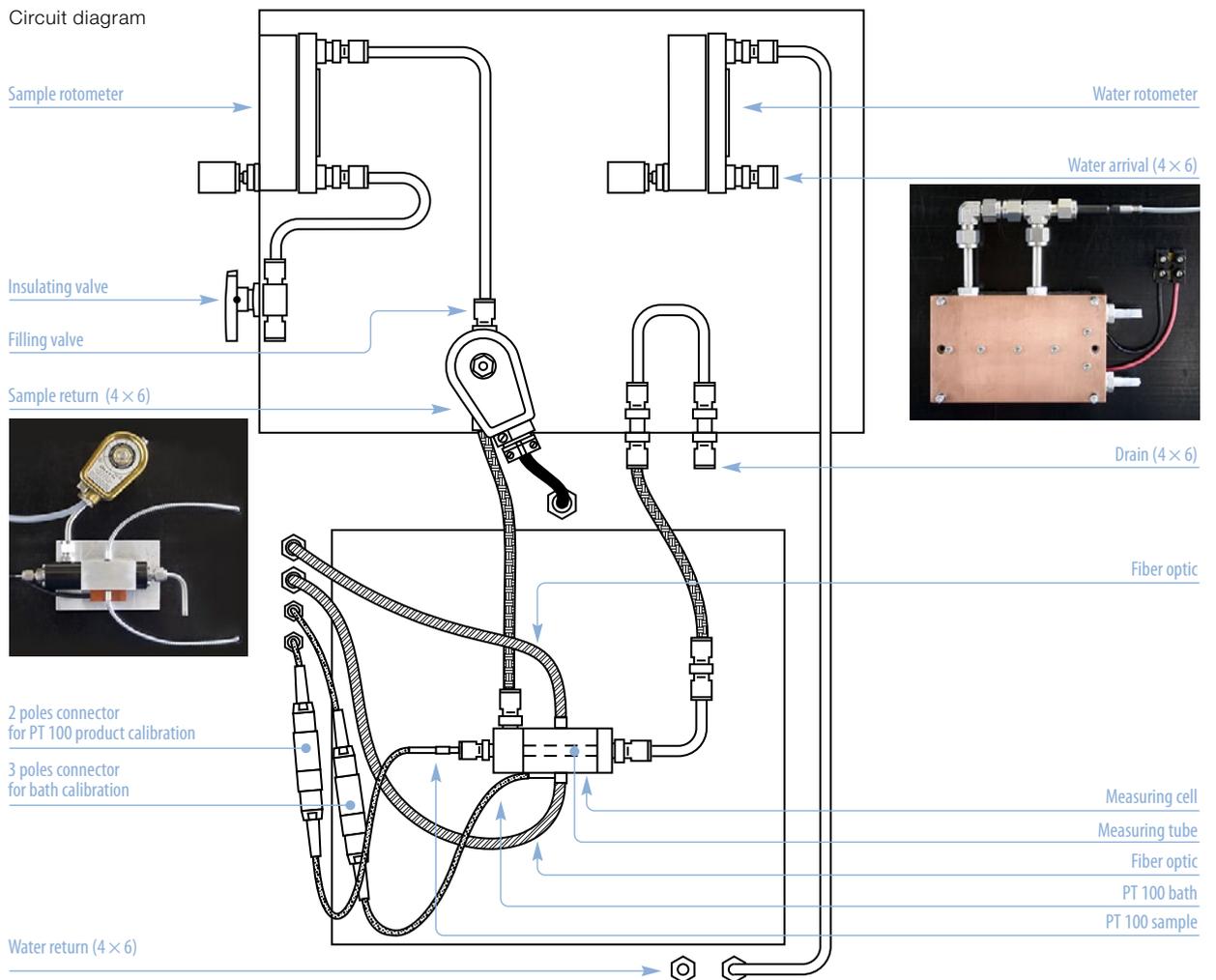
- Flow: 10...30 l/h in rinsing phase
- Consumption: 2 ... 5 l/h, depending on analysis numbers
- Pressure: Min 0,3 bar / Max 0,8 bar
- Contamination
  - Without solid particles > 10 microns
  - Without acid and solvent presence
  - Max 100 ppm of water
- Inlet temperature
  - Cloud Point, Pour Point: max 40 °C
  - Min +10°C above the higher Cloud Point/ Pour Point result
- ASVP: max 35 °C



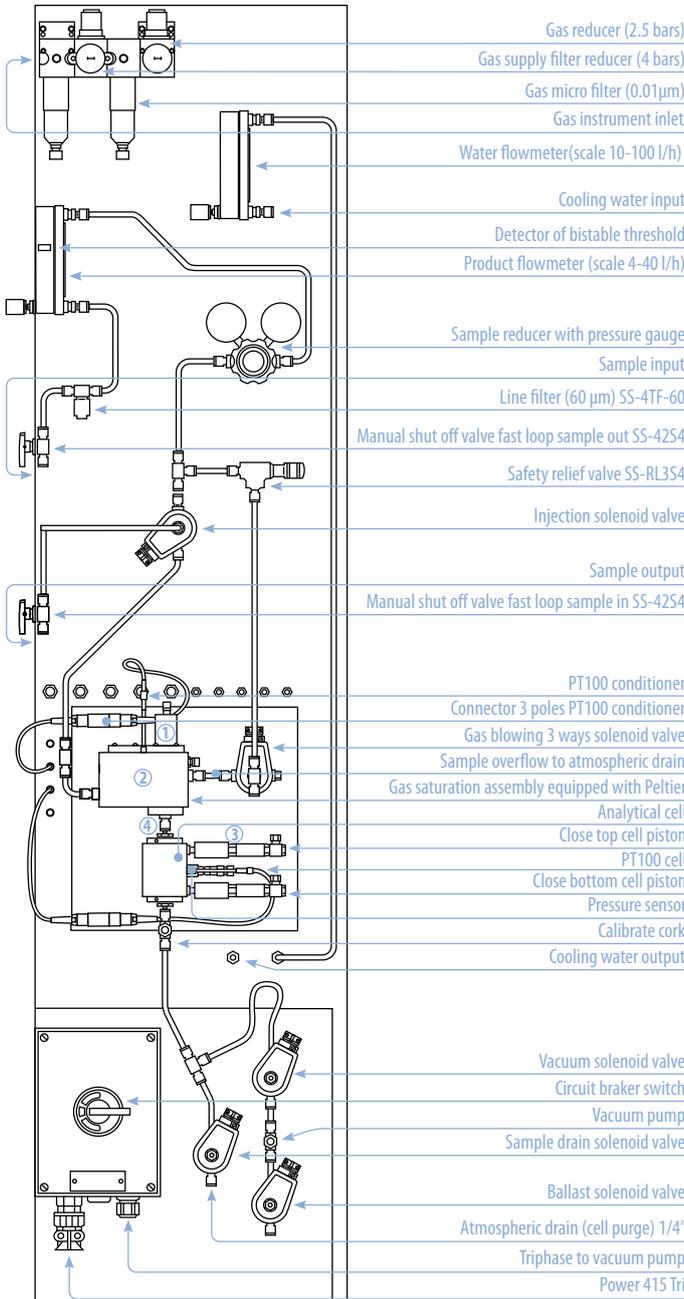
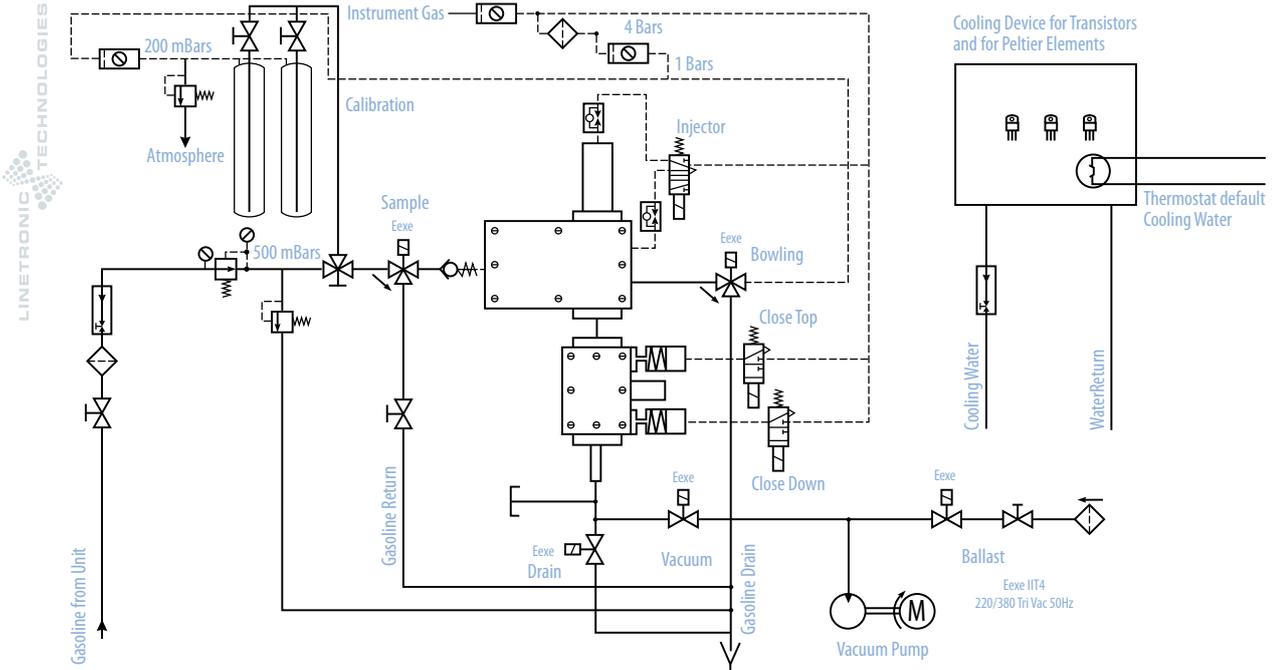


New-on-Line 100, New-on-Line 300

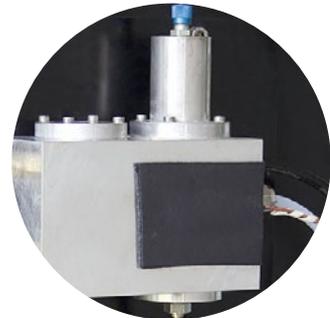
We made design and technology. These features improves the quality of the analyser. All the electronic boards are developed in our facilities. Our know out at your service. The simplicity of the mechanical parts and supports give the best point of view during the services.



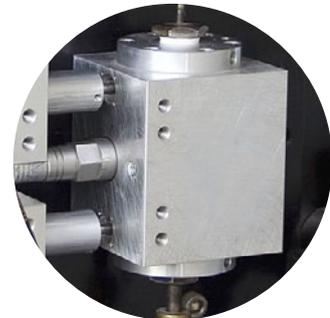
New-on-Line 700



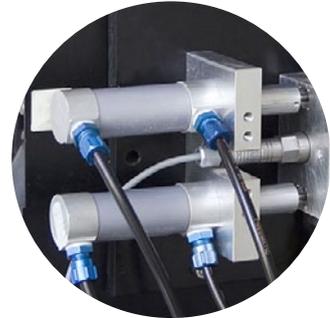
1. Pneumatic injector



2. Measuring cell



3. Loading valve and draining valve



4. Pressure regulator

