

WATER AND MECHANICAL TECHNOLOGY S.R.L.

VACUUM FILTER



LIQUID VACUUM SANDWICH PANEL

Patents nr. 01273048
and nr. 01254551

The LIQUID VACUUM SANDWICH PANEL system, after LVSP, was developed to meet the customer request of very fine filter degree, constant during time, together with a lower environmental impact.

Through the analysis of the installed vacuum filter, we have point out their disadvantages like the chip migration phenomena, the buying and managing cost of the filter media and the environmental impact due to the exhaust filter media wasting.

In that way W.M.T. has try to apply the pre-coat three dimensional filtering concept to the vacuum filtering system.

The two panent nr. 01254551 and 01273048 are the results of this research introducing a new typology of filtering panel, three dimensional self cleaning and regenerable with pressurized backwash.

In engineering the new system a special care was dedicated on the possibility to up grade the traditional vacuum filter at the new one in order to grant a managing cost reduction also for the installed old type.

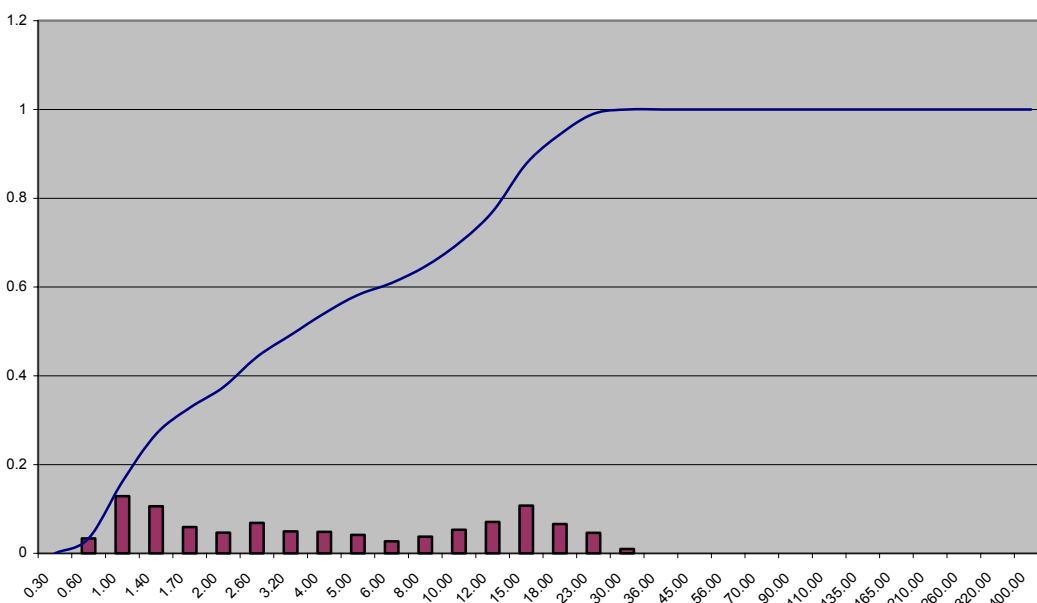
SYSTEM MANAGING

The system is handled by a PLC and, to control the working paramenters, it is equipped with digital 4-20 mA devices.

These devices, through a dedicated program, let the system work on variable condition in function of the pollution, chip or tramp oil, collected in the thank by the flumes. Six working mode, VERY SLOW, SLOW, NORMAL, FAST, VERY FAST, CONTINUOUS are the variable working condition.

Thank to the fully automatic logic and to the parametric working mode W.M.T. has developed a Remote Installation Administration System RIAS[®] that make possible, if necessary, to modify remotely the system parameters. This system also send, to a defined distribution list, in order to have a continuous monitoring, all the working parameters and the alarm signals to prevent undesirable shut down condition.

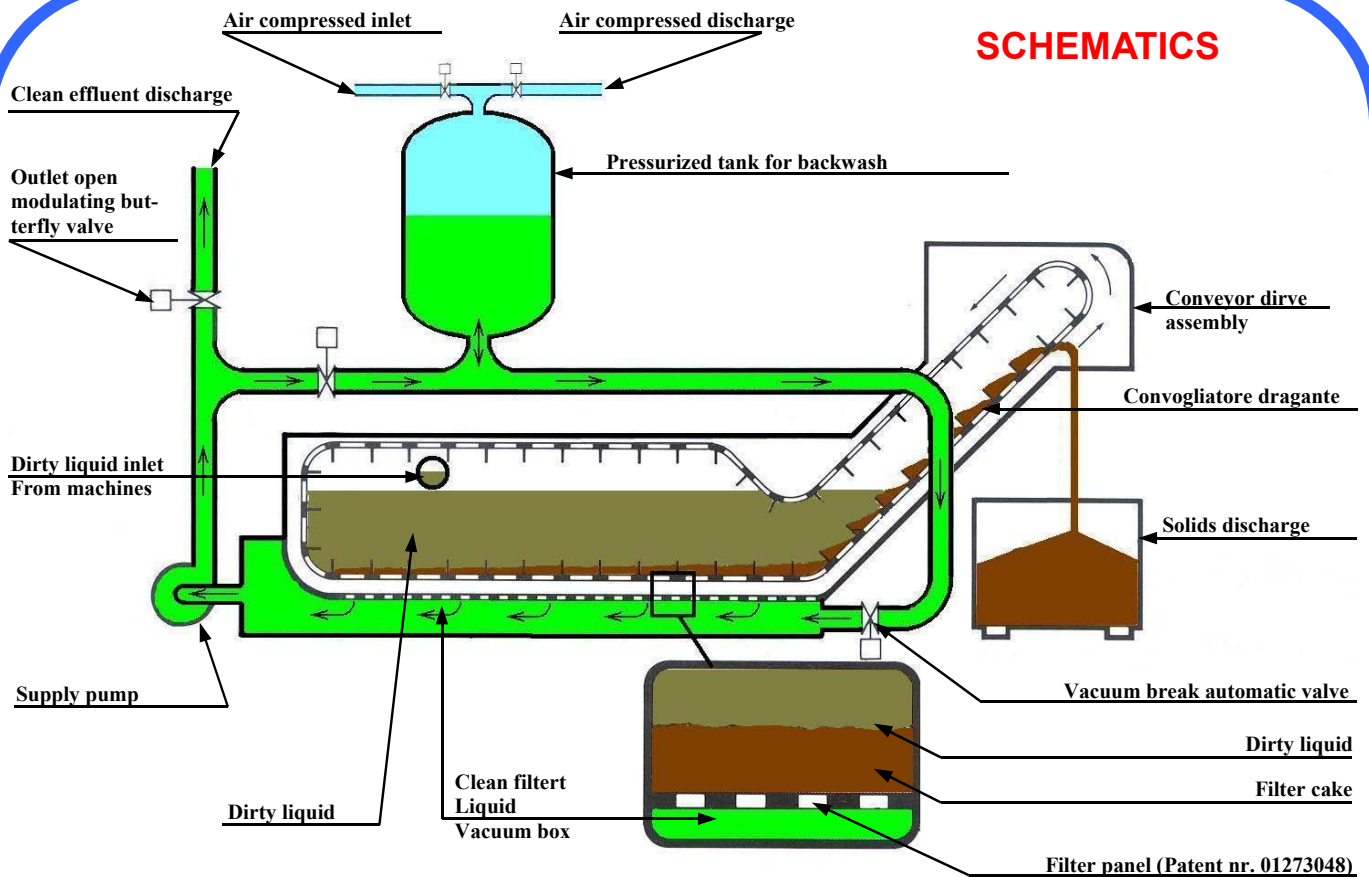
In such way we have improved the panels life, before it will be necessary their regeneration, till a period between 1 and 2 years with a consistent reduction of the filter media managing cost.



CILAS 920 SAMPLES ANALYSIS

In this graph you can see a analysis of a sample taken from a cylinder head washer with a LVSP filter. The medium filter degree is 3,32 µm. The bars represent the pollution particles percentage divided in dimensional class (µm). The curve is the bars cumulative result.

SCHEMATICS



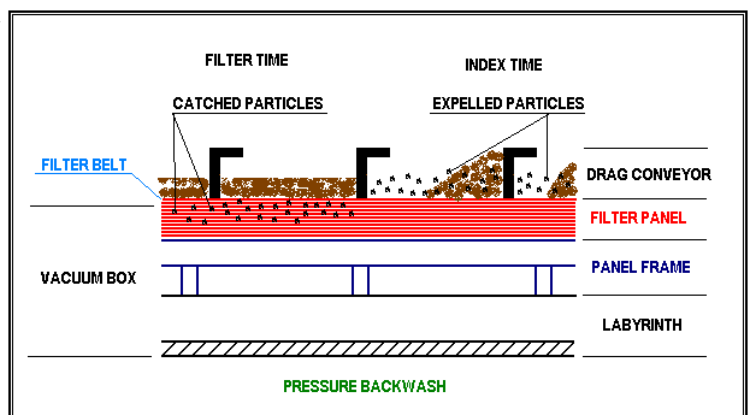
LIQUID VACUUM SANDWICH PANEL (Patent nr. 01254551)

Looking at the above scheme you can notice that the new LVSP system is different from the old one primarily for the filtering septum and for the backwash circuit.

For that one a variable number of pressurized tank, in which the clean liquid is pumped, are used. After the clean liquid inlet a compressed air charge is given and when the prefixed vacuum value, or the prefixed filter time, is reached the vacuum break automatic valve opens.

This operation together with the contemporaneous partially shut down of the outlet valve grant a pressure changing in the vacuum box, from negative to positive, that allows at the very fine particles to be expelled from the filter panel and discharged by the drag conveyor.

The partially shut down of the outlet valve is needed to keep the flow rate constant and to prevent that the backwash pressure goes away through the pump without making the pressure changing in the vacuum box.

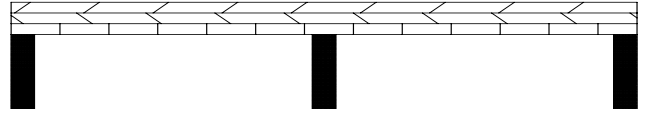


FILTER PANEL TYPOLOGIES

Patent nr. 01273048

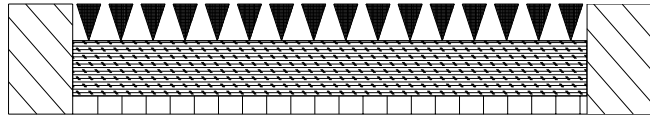
MP - MULTIPLATE PANEL

Filter panel made with superposed pressed, pressed and sintered, sintered wire gauze with a filter degree of $1 \div 5 \mu\text{m}$, regenerable with 200 ÷ 300 bar backwash or with ultrasound washing.



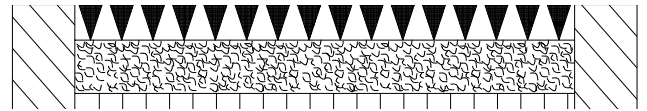
SP - SANDWICH PANEL

Filter panel made with: wear sliding material (usually wedge wire); pressed, pressed and sintered, sintered porous material such as metallic, animal, vegetable or synthetic material; support structure. This panels are regenerable with 200 ÷ 300 bar backwash or by changing the inside porous material.



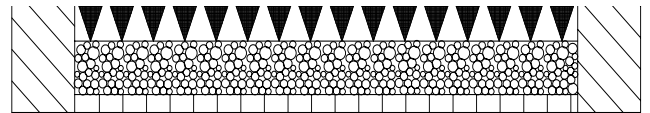
CP - CHIPS PANEL

Filter panel made with: wear sliding material (usually wedge wire); pressed, pressed and sintered, sintered porous material such as metallic, vegetable or synthetic chip; support structure. This panels are regenerable with 200 ÷ 300 bar backwash or by changing the inside porous material.



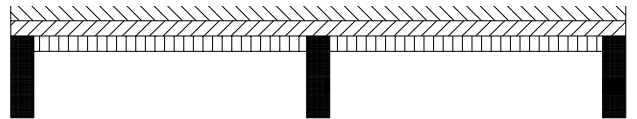
SI - SPHERICAL INSERT PANEL

Filter panel made with: wear sliding material (usually wedge wire); pressed, pressed and sintered, sintered porous material such as metallic, vegetable or synthetic granulated material; support structure. This panels are regenerable with 200 ÷ 300 bar backwash or by changing the inside porous material.



HT - HIGHT TEMPERATURE PANEL

Filter panel made with superposed pressed, pressed and sintered, sintered titanium wire gauze with ceramic insert with a filter degree of $1 \div 5 \mu\text{m}$, regenerable with 200 ÷ 300 bar backwash or with ultrasound washing.



SERVICES

Some services complete our offered product range:

- Engineering and/or furnishing of coolant piping.
- Engineering and/or furnishing of chip conveyor, mechanic, hydraulic or mixed.
- Engineering and/or furnishing of chip treatment.
- Engineering and/or furnishing of Remote Installation Administration System RIAS[®].
- Granulometric coolant analysis with CILAS 920 device



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