Carwashbox

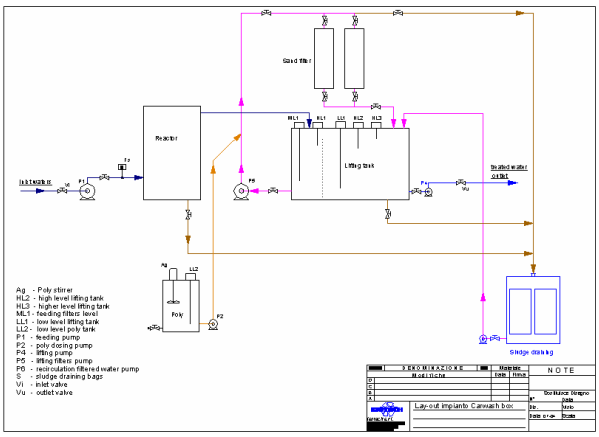
Working principle

The treatment and recycling of wastewaters from carwash stations is based on the principle of electrocoagulation.
In fact, a suitable potential applied to a watery solution is able to provoke both oxidation-reduction reactions affecting the pollutants present and to create micro bubbles of hydrogen/oxygen at the cathode/anode; moreover, where the electrodes are made of metals such as aluminium or iron, their respective ionic forms (Al^{3+}, Fe^{3+}) are formed at the anode and hydrogen and hydroxyl ions are formed at the cathode (H_2, OH^-). The effect of the electric field is such as to provoke the breakdown of the large organic molecules of the ethoxylate compounds (non ionic surfactants) into particles with lower molecular weights, thus destroying the active ingredient and more generally reducing the soluble C.O.D.
The combined effect of the three actions described above (destruction of the macromolecules, formation of coagulating centres such as the metal hydroxides already present in the solution or produced by the solubilisation of the electrodes and the creation of micro-bubbles of gas which, rising to the surface, drag with them emulsions, colloids and the flakes being formed) has a clear synergic effect on the flocculation in progress, thus significantly increasing the efficiency of the system.

Performance

- Efficiency of treatment constantly higher than with the traditional chemical-physical treatment
- Use of small amounts of auxiliary products (coagulants, polyelectrolytes etc.) with a consequent considerable reduction (up to 50%) of the final sludge
- Reduced running costs (up to 50%) compared to traditional systems
- Reutilisation of the treated water
- Space required for the system limited to a maximum

CarWash box with external sand filters



CarWash Lay-out

System compenents

- Electrocoagulation reactor with sacrificial electrodes
  Rectangular tank, containing electrodes in Al/Fe arranged vertically all round the section for the oxidation-reduction reactions formulated in this treatment, with waste trap/drain and flanged inlet and outlet stub pipes
- Sand filter/s
- Accessories
  Polyelectrolyte preparation and metering station, metering system for back up flocculant if used, feeding recirculation and lifting pump; general electric command panel to control all the functions.
  Filtering system with filtering sacks

Technical-functional data	CW5
Running capacity	5 m^3/h
Water treatment capacity	5 m^3/h
Contents to be removed max	2000 ppm
Discharge sludge for thickening	0.3 m^3/h
Discharge clarified water	4.7 m^3/h
Consumption of compressed air at 6.5 bar	0.4 Nm^3/h
Power used	8.8 kW
Dimensions	2000 x 2000 x 2000 mm

Carwash box with filtering sacks

Carwash box overall view