Fume treatment

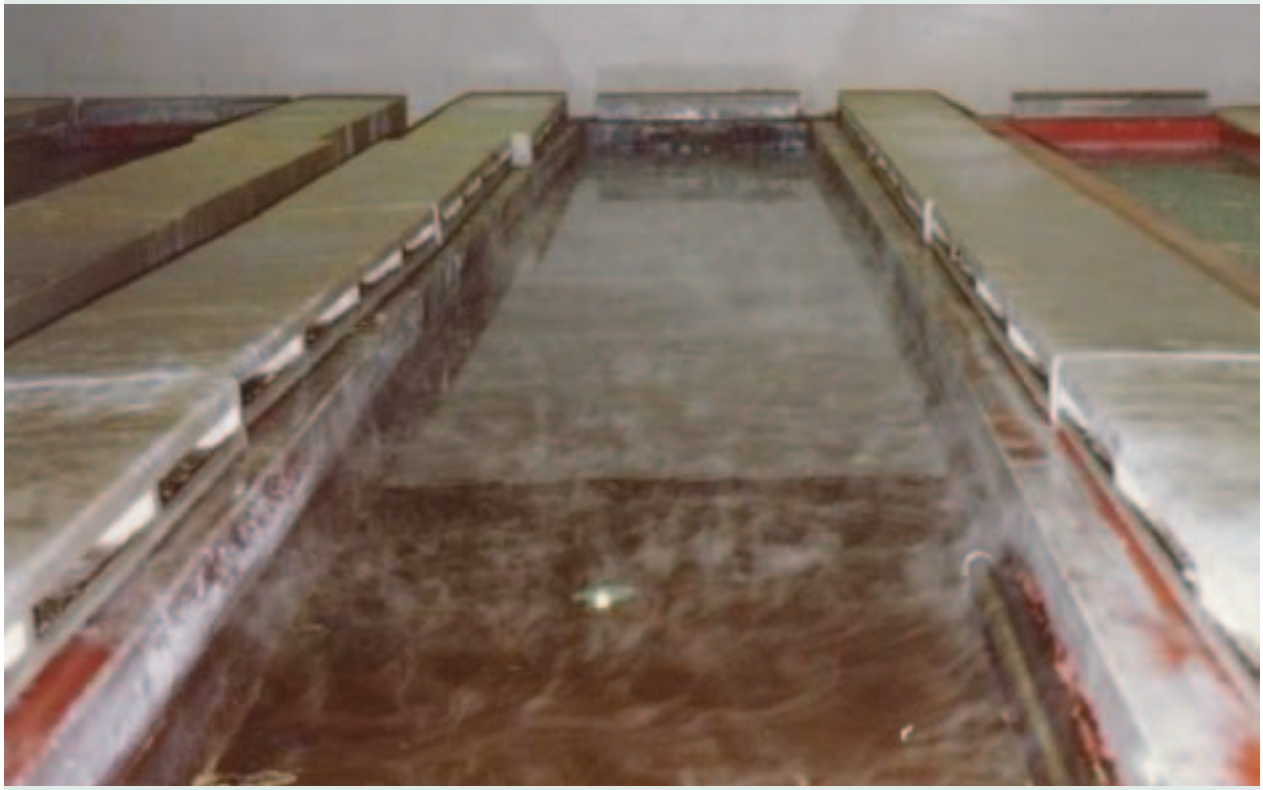
Environment

In anodising and etching the process develops hydrogen which carries caustic soda and sulphuric acid: therefore one needs to extract the fumes generated during the process and to treat them before releasing them into the atmosphere. Aluengineering achieves perfect results through a process which can be simplified in 3 stages.

- Fume extraction hoods on the tank
- Fan and manifolds
- Scrubber

Fume extraction hoods

To avoid sulphuric acid and caustic soda going into the atmosphere we use hoods on the tank which suck the fumes out. The danger of having fumes on the plant is not only related to ruining aluminium which may be stocked nearby, but has also environmental implications, being very dangerous for human beings.



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Fan and manifolds

The extraction circuit continues through manifolds which convey the fumes thanks to a fan appropriately designed and dimensioned. When newly constructed the manifolds are located between the tanks in such a way not to have any further bulk on top of the tanks.

Fan

Manifolds on the side of the tank

Manifold under ground level

Fume treatment

Environment

Aluengineering

Scrubbers

Before gases are vented to the atmosphere, it can be necessary to wash them to absorb entrained acid or caustic. One or two washing towers are normally employed, depending on the gas volume.
The scrubber is composed by the adsorbing section, the drops separator, the washing circuit and the exhaust to the atmosphere.

Floating bed scrubber: the best solution for acid and caustic fumes

The washing towers based on spheres turbulence effect, are particularly suitable when the fumes to be treated are very reactive and therefore need short contact time.

Running principle:

The washing solution flow is sprayed from the top of the tower while the fumes are in counter current, entering the lower part of the tower.
During the ascent, the fumes cross several different chambers separated by grates containing empty polypropylene spheres with density being intermediate between the density of the washing solution and fume density.
Under the pressure generated by incoming gases and resistance caused by the descending fluid, the spheres are elevated and are free to fluctuate in the contact chamber giving maximum contact surface between the fumes and the washing solution.

Technical characteristics:

- High crossing speed of the fumes with consequent reduction of the overall size of the tower
- Washing solution recycling achieved with vertical axle centrifugal pumps.
- Pre selection working cycle:
  - With constant renewing of solution for saturation of the same
  - With total renewing of neutralising solution
- In line water reinstatement due to evaporation.
- Washing solution tank at the foot of the tower body.

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Scrubber functioning
in section

Q (cum/h)	Size DN	A (mm)	B (mm)	C (mm)
20500	1200	6500	2000	700
28000	1400	6500	2400	800
36000	1600	6500	2600	900
45000	1800	7000	2800	1000
56500	2000	7000	3200	1100
68000	2200	7000	3200	1200
81500	2400	8000	3400	1300
95500	2600	8000	3400	1400