

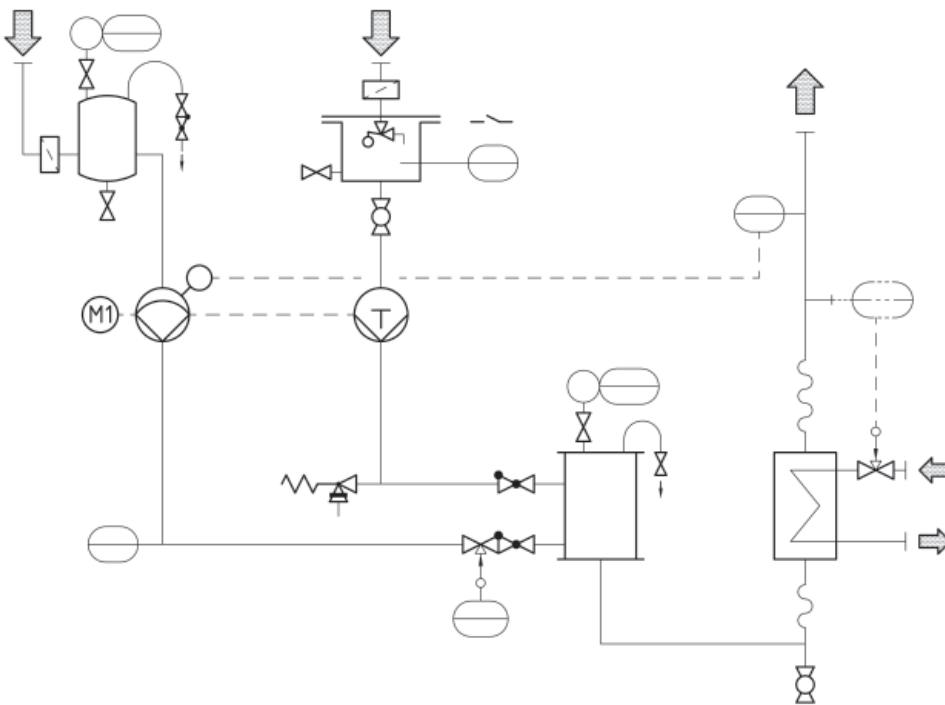


AutoBlend Systems

Dilution of Chemicals

In the finishing industry the various chemicals are often not used in the maximum possible concentrations. However, transport and storage costs usually drop when the concentration increases, since the share of water needs to be neither transported nor stored.

Simplified process diagram



When a simple, reliable and automatic diluting station is available, ROI calculations often show great advantages in purchasing concentrated chemicals.

Suitable diluting stations for caustic soda solution, potash lye, peroxide, sulphuric acid, etc. can be easily assembled with metering pumps.

The following example describes a plant for the continuous dilution of 96% sulphuric acid. A feature of this dilution is that the relatively high heat of dilution must be eliminated.

For this purpose a cooler of impregnated graphite is fitted downstream of the mixing air vessel, in which the temperature of the diluted acid is lowered to under 40° C, so that the subsequent pipework can be made out of chemically resistant materials.

The basic unit for acid dilution consists of the two-component metering pump, the suction air vessel for H₂SO₄, the suction side tank with float valve for H₂O and a PTFE-lined mixing air vessel. Both product inlets in the air vessel are fitted with non-return valves which are unaffected by temperature.

In order to ensure that the water does not react into the acid pipe when the metering pump is stationary, automatic shut-off valve is also fitted here and is closed during shut downs. Relief valves are installed for both liquid phases. The diluted acid is cooled in the heat exchanger fitted downstream. To keep the consumption of cooling water to a minimum, the flow of cooling water is controlled independently of the initial temperature of the acid. A temperature limit switch ensures against excess temperature via a completely separate system.

Options with the following functions increase ease, reliability and economy of operation.

1. Monitoring of cooling water flow in respect of conductivity of pH value, so as to exclude damage resulting from a possible escape of acid in the heat exchanger.
2. Monitoring for product loss in acid and water.
3. Automatic operation on the shut-off valve in the acid pipe with starting lock.
4. Automatic setting of the dilution ratios by means of stroke length programming.
5. Automatic switching of the destination.
6. Continuous measuring (recording) of the acid concentration.
7. Stabilizing of fluctuations in the concentration of the initial acid by means of the three-step controller and electric stroke length adjustment, if necessary with programmed nominal values.
8. Cooling tower for water recooling in a circulating system circulating pump, ventilator and antifreeze heating.



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