ACID AND ALKALI DILUTION PROCESS SKIDS

INTRODUCTION

The concentrated acid/alkali and water are mixed in the dilution unit. This reaction is very exothermic and the diluted liquid has a high temperature. In acid/alkali dilution skid, Heat produced from dilution is removed by a heat exchanger, and the diluted liquid can be cooled to the designated temperature rapidly.

LIST OF EQUIPMENTS

- Acid/Alkali Tank
- Water Tank
- Water pump
- Dilution ejector
- Heat exchanger
- Programmable Logic
 Controller (PLC)



WORKING PHILOSOPHY

The Motive liquid (Water) stored in the tank is pumped at a high pressure through ejector, the pressure energy of motive liquid is converted into a high velocity energy. The momentum present in the motive liquid is transferred to the suction liquid (Acid/Alkali) thereby enabling a lift, entrainment and mixing. At the Venturi diffuser, the velocity energy is converted to the pressure energy and we have diluted Acid/Alkali at the outlet of the ejector.

The diluted Acid/Alkali from the ejector contains high heat of reaction. So when the diluted fluid is passes through the Heat Exchanger, the heat produced from the dilution is removed by using cooling water. Then we can achieve the desired temperature of diluted Acid/Alkali at the outlet of the process skid.



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MATERIAL OF CONSTRUCTION

ACID/ALKALI STORAGE TANK

- Polypropylene (PP)
- Poly Vinyl Chloride (PVC)
- Fiberglass reinforced plastics (FRP)

EJECTOR:

- Polypropylene (PP)
- Poly Vinyl Chloride (PVC)
- Stainless Steel (SS)
- Hastelloy
- Titanium
- CS with PTFE lined
- CSRL + Ebonite

HEAT EXCHANGER:

- Teflon
- Graphite

SUITABLE CHEMICALS TO BE DILUTED

S.NO	PROCESS CHEMICAL	CONCENTRATION
1	Sulphuric Acid (H ₂ SO ₄)	0-98%
2	Hydrochloric Acid (HCI)	0-32%
3	Phosphoric Acid (H ₃ PO ₄)	0-40%
4	Sodium Hydroxide (NaOH)	0-47%
5	Nitric Acid (HNO ₃)	0-28% or 36-96%
6	Hydrofluoric Acid (HF)	0-30%
7	Hydrobromic Acid (HBr)	0-35%
8	Potassium hydroxide (KOH)	0-45%





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SCOPE OF CUSTOMER

- Cooling water supply
- Power source

ADVANTAGES

- The device is compact and takes up little installation space
- It's automatic and easy to operate
- Low maintenance is required
- Flexible use with respect to a nominal flow rate
- Possibility of varying the concentration and temperature of the diluted acid/ alkali

