

98% SULFURIC ACID DILUTION CIRCUIT



Key Facts

Client: NT Power and Water

Location: Alice Springs, NT

Purpose: To dilute 98% sulfuric acid to improve public safety during usage

Technology: Static mixing

Supporting Infrastructure Supplied by Ixom:

- Custom static mixer and housing
- Temperature feedback and SCADA tie-in
- Standalone dilution skid

Capacity: 400 litre/hour diluted 8.7% sulfuric acid

Contract Type: EPC (turnkey) and commissioning

Start Up: 2018

Benefits:

- Improved inherent process safety
- Replacement of carbon steel pipe with uPVC pipe and PTFE hose
- Convenient single skid operation
- Temperature feedback for maintenance of a safe dilution operation

Background

NT Power and Water operate a wastewater treatment plant (WWTP) in Alice Springs. The plant utilises sulfuric acid at 98% to dose the waste water. However, the compatibility of the carbon steel piping that carries the solution has been questioned, raising safety and integrity concerns.

NT Power and Water engaged Ixom with their challenge and the experienced project team investigated the problem and developed an inherently safer process solution.

The Ixom Solution

Ixom designed and constructed a singular skid to dilute and supply a low concentration sulfuric acid solution to the plant.

The concentrated acid is supplied through an actuated ball valve for better process control to a PVDF static mixing vessel where a Halar coated Cs static mixer dilutes the acid below 10%, a safe level for solution transport through uPVC piping



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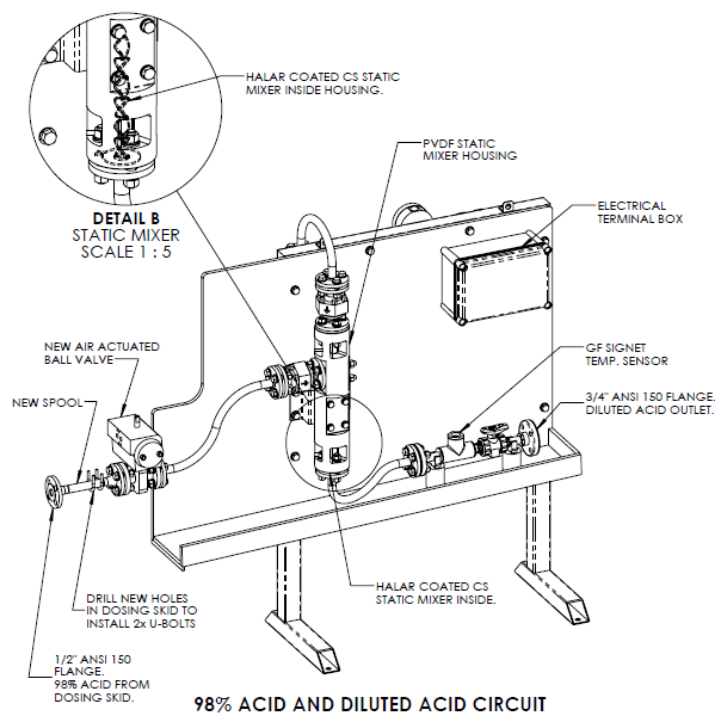
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Customised Solution

One of the key features of this solution is the use of a PTFE hose at the injection and exit points of the static mixer. This is important to remove unnecessary elbow joints where high shear and turbulence would be imparted on the fluid.

The uPVC water supply line contains a low flow switch, water rotameter, pressure gauge and a diaphragm valve for flow adjustment.

The skid also employs a temperature sensor on the outlet of the mixer which relays temperature information back to site SCADA. This extra layer of protection can alert operators to potential overheating.

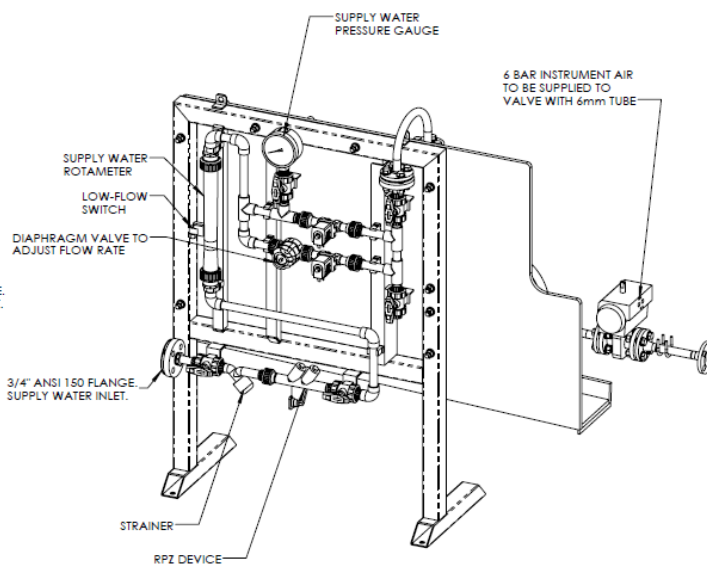


98% ACID AND DILUTED ACID CIRCUIT

Result

The dilution circuit was designed and built at Ixom's Adelaide manufacturing facility. This allowed for the circuit to be mobilised to site pre-installed and factory tested, minimising the site works required at the Alice Springs WWTP.

The circuit delivers the safer, more reliable dosing of a low concentration of sulfuric acid to the WWTP. The successful installation and commissioning demonstrates Ixom's commitment to delivering high quality solutions for any challenge, and highlights Ixom's dedication to site safety and integrity.



SUPPLY WATER CIRCUIT

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Revision 1 released 6/07/2021. Uncontrolled if printed. Access latest version at www.ixomwatercare.com/ixomwts-case-studies.

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