

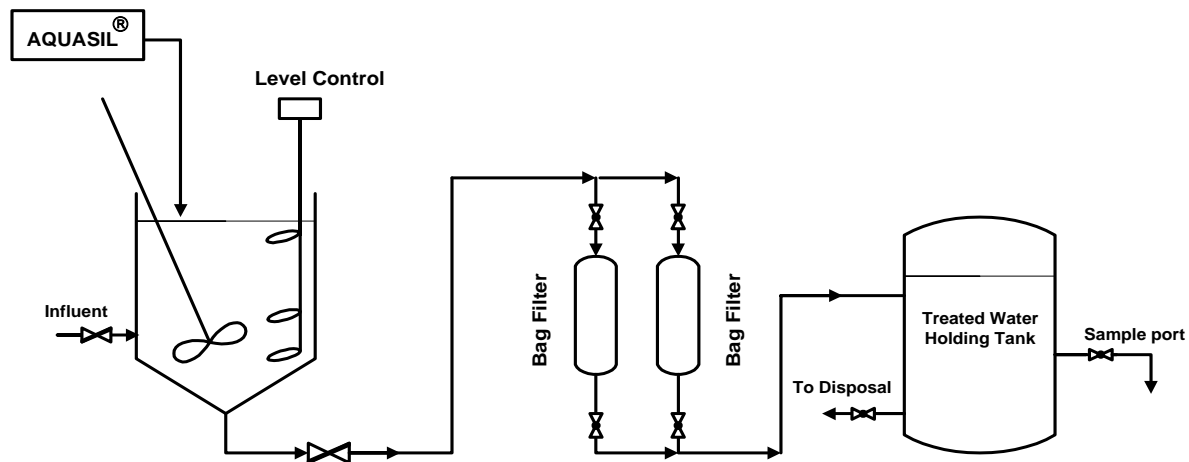
AIRCRAFT MAINTENANCE & SERVICE OPERATION

The wastewater contains high levels of lubricant, cutting fluids, tar, grease, diesel oil, jet fuel, emulsified oil, cleaners, solvents, and heavy metals. The waste was previously treated by a GAC-Organoclay based adsorption system. The nature of waste made the system prone to fouling and in need of continuous monitoring. Expired cartridges required frequent removal and replacement by the vendor. The system failed to meet the requirement for the removal of heavy metals and was finally decommissioned.

THE SOLUTION

The automated AQUASIL® batch system consists of a 500-gallon conical bottom reaction tank equipped with level controls, a dry powder feeder, an air-operated diaphragm pump, and two bag filter assemblies—one in use and the other on stand by. A 500-gallon treated water holding tank and a control panel with an audible horn and flashing red beacon alarms that indicate the ready-to-treat, bag-filter-full and cycle-complete phases are also included in the system.

Wastewater is collected in drums and brought to the treatment system. If light fuel is present in a substantial amount — most of it is siphoned out prior to treatment and the waste is pumped into the treatment tank. The treatment cycle starts when the water level in the treatment tank reaches a level where contacts in the control panel trigger a switch that starts the mixer. When the high level is reached, the ready-to-treat alarm is energized, feed pump stops, and the dry powder feeder starts dispensing a timed dose of AQUASIL®. The powder feeder stops automatically at the end of the timed period. The mixer continues operating for a timed period. The content of the treatment tank is pumped through the bag filter and clean water collected in the holding tank and, once quality has been checked and approved, the water is released to a sanitary sewer.



The AQUASIL® Treatment achieved almost 100% removal of heavy metals and oil & grease and more than 99% of TSS. The solid waste generated is characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA).

Great Chemistry At Work™



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THE SOLUTION

A performance test was conducted using AQUASIL[®] AMX-5G and analytical data for raw and treated water are shown in the table below.

Parameter (Total)	Discharge Limits (mg/L)	Raw water (mg/L)	Treated water (mg/L)
Arsenic	0.002	0.500	< 0.001
Barium	1.00	5.100	0.034
Cadmium	0.050	120.0	< 0.001
Chromium	0.200	14.00	0.017
Copper	1.130	2.900	0.050
Iron	0.300	79.00	0.030
Lead	0.200	0.990	0.003
Mercury	0.002	0.001	< 0.0005
Nickel	1.290	85.00	0.060
Selenium	0.002	2.000	< 0.002
Silver	0.100	1.200	< 0.025
Zinc	0.400	2.500	0.070
Suspended Solids	275	580	7.5
Oil & Grease	25.00	23,000	13.6
pH	6.5 – 9.5	7.85	8.4

AQUACHEM installed an automated batch system, based on AQUASIL[®] which consists of a 500-gallon conical bottom reaction tank equipped with level controls, a dry powder feeder, an air-operated diaphragm pump, and two bag filter assemblies, one in use and the other on stand by. Wastewater is collected in drums and brought to the treatment system. The treatment cycle starts when water level in the treatment tank reaches a level where contacts in the control panel trigger a switch that starts the mixer, the ready-to-treat alarm is energized, feed pump stops, and the dry powder feeder starts dispensing a timed dose of AQUASIL[®]. The powder feeder stops automatically at the end of the timed period. The mixer continues operating for a timed period. The content of the treatment tank is pumped through the bag filter, clean water collected in the holding tank and, once quality has been checked and approved, the water is released to the sanitary sewer.

WASTE CHARACTERIZATION

Parameter	Regulatory Level (mg/L)	TCLP (mg/L)
Arsenic	5	ND
Barium	100	ND
Cadmium	1.0	ND
Chromium	5.0	ND
Lead	5.0	ND
Mercury	0.2	ND
Selenium	1.0	ND
Silver	5.0	ND
Flash point (°F)	NA	> 200

The AQUASIL[®] treatment delivered high quality effluent with consistent performance. The treatment achieved almost 100% removal of heavy metals and oil & grease and 99% of TSS. TCLP results showed that all metals are below detection and although wastewater had more than 20,000 ppm of oil & grease, the generated waste did not produce a flash point. The waste is characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA).

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