

Safety Alert March 2023

Subject: Water Pump Fire

UNSW is issuing a safety alert to remind staff and students to be vigilant about switching equipment off after use to prevent overheating and the risk of a fire.

Background

A person was using an arc melter in a laboratory that was connected to a water pump in an adjacent service corridor. The water pump provides cooling water for several devices in the lab. The person had switched on the water pump prior to using the equipment in the laboratory but had forgotten to switch it off at the conclusion of their work. Several days later after operating continuously, the pump caught fire causing the building to be evacuated.

Investigation

The investigation identified that:

- The person was being trained in the use of an arc melter
- The Safe Work Procedure for the task indicates that the water pump should be switched on prior to melting operations, and switched off 20-30 minutes after melting operations have been completed (following arc melter clean up and shut down)
- Both the person and their trainer forgot to turn the water pump off at the conclusion of the melting operations
- The water pump is a Lowara Close coupled Vertical Inline Multi stage motor/pump unit
- The pump was custom built for the school and is not on the Estate Management asset register
- The lab manager advised that the pump is intended for short term operations not for continuous use
- The pump was running for approximately 5 days continuously prior to the fire starting
- The location of the fire was identified by two Wormald technicians who were working close by and attended the building fire indication panel when they heard the fire alarm sounding
- The Senior Facility Manager and the Wormald technicians proceeded to the location of the fire in the service corridor
- The Senior Facility Manager extinguished the small fire with a fire extinguisher before the NSW Fire Brigade arrived onsite
- A building evacuation was undertaken involving approximately 20 building occupants

Actions Taken

- The lab has been closed pending the outcome of the incident investigation

- Estate Management arranged for a third-party review of the damaged water pump to determine the probable cause of failure
 - The review of the damaged pump indicated that the probable cause of failure was the motor run capacitor breaking down, eventually causing the motor to stop rotating, leading to the generation of heat resulting in the plastic components heating to the point of combustion
 - The third party has recommended that the motor/pump be fitted to a starter/controller that has an overload protection circuit to suit the motor operating parameters, and incorporating a water flow switch to prevent the unit from operating with no water flow through the system
 - Estate Management have requested a quote from the third party for the modifications above, which will be made available to any areas which require it
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- **What should we do now?**
 - Conduct a condition check on all water pumps, particularly ones of this make/model
 - Implement the modifications to the equipment recommended above
 - As an interim control, implement local processes to ensure the water pumps are not run for extended timeframes. This could include daily equipment checks or fitting timer switches
 - For more information on plant and equipment requirements, refer to [Plant and Equipment Procedure](#)



Further Information: safety@unsw.edu.au