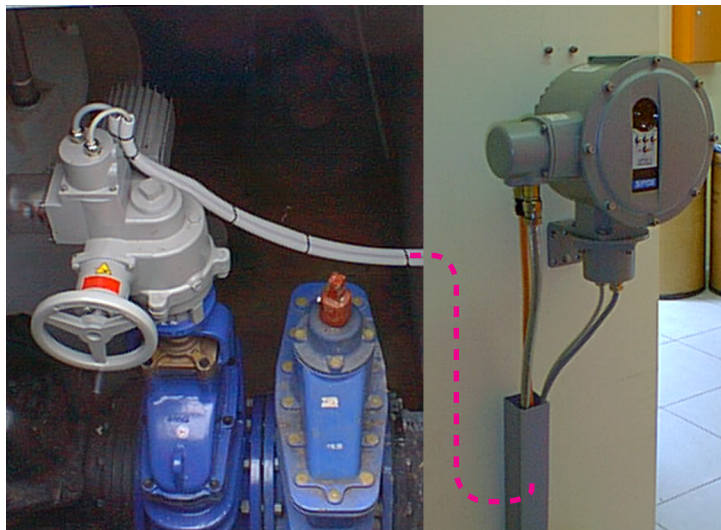


# Water hammer prevention at Wyong's sewage facility

Photograph shows the inside of a pumping station in Wyong, Australia housing a SIPOS 5 actuator mounted on a 600mm Tyco sluice valve. The electronics unit is located 30 metres away from the actuator to provide remote valve operation and manual override.



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## Application

### Sewage pumping

Wyong's sewerage system consists of sewers, pumping stations and pump mains to transfer predominately liquid waste to the treatment works. Within the pumping stations, in addition to the dual pump system, sluice valves are used to control the flow of effluent.

## Design Challenge

### Water hammer prevention and remote operation

Rapid closure of the pump discharge valve during normal operation will cause water hammer to occur. The hydraulic forces generated during rapid closure are sufficient to cause damage to pipework and therefore must be prevented. In addition, the installation of pump, pipework and valves underground means that access is limited.

## Solution

### SIPOS 5 variable speed control with remote mounted electronics unit

The use of the SIPOS 5 actuator allows different closure speeds for different parts of the valve stroke to be selected. In this case a fast speed (80 rpm) was selected from fully open to 30%, then the speed is reduced to a slower speed (20 rpm) for the last 30% of valve movement to avoid water hammer.

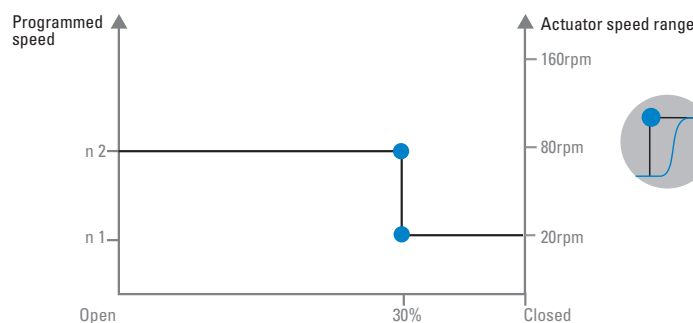
In addition, using the remote mounting capability of the electronic head enables the control electronics to be installed 30 meters away from the pump, valve and actuator gear unit.

## Function Profile

The SIPOS 5 actuator has the unique capability to change output speed subject to its position of travel. This advanced flexibility can produce linearisation of valve characteristics, allowing simpler valve selection, or significant reduction of water hammer when closing valves. The valve speed is defined by a maximum of 10 interpolation points which can be set in increments of 1% of the open position. Speeds can then be set in up to seven values (n1-n7) subject to the actuator type.

## Technical Data

Location: Wyong, Australia



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