



Red Valve Company

Case Study

Red Valve employs total-system approach at Seletar, Singapore's new 200-mgd WWTP

Responding to steady population increases and overall city growth, the Singapore Ministry of Environment called on engineering firm Kinhill Tan, Australia, for the design and construction of a new, state-of-the-art, high-capacity wastewater treatment plant. Because the new facility was expected to meet Singapore's wastewater treatment needs for decades to come, the Ministry was primarily interested in long-term cost savings and reliability.

In the design of this 200-mgd plant, Kinhill Tan included only top-of-the-line equipment to keep maintenance costs and downtime to an absolute minimum. Knowing of Red Valve's expertise in all stages of a wastewater treatment plant and aware of its international reputation for manufacturing efficient, reliable and cost-effective valves, the firm ultimately chose to install more than 900 Red Valve manually and electrically operated pinch valves.

The plant's design incorporated the enclosed egg digester, a revolutionary new trend in solid-waste treat-

APPLICATIONS OF RED VALVE MANUAL AND CONTROL PINCH VALVES AT THE SELETAR WASTEWATER TREATMENT PLANT:

- INFLUENT FLOW
- PRIMARY SLUDGE
- PRIMARY SCUM
- GRIT VALVES
- DIGESTED SLUDGE
- BLENDED SCUM
- DRAIN WATER
- SAMPLING LINES
- WASTE-ACTIVATED SLUDGE

ment that improves sanitation, controls odor and allows for more accurate temperature manipulation. Egg digesters allow for complete sludge mixing as they eliminate dead spots and reduce solids accumulation. To match this efficiency with the best available process equipment, designers of the egg digester have standardized on Red Valve Pinch Valves. Many of the hundreds of Red Valves installed are involved in the circulation process of the plant's enormous egg digesters, where sludge is highly solidified and abrasive.

Called Seletar, the plant went online in the latter part of 2000. From the point at which the raw sewage enters the plant, across the headwork section, during all sludge-processing phases and onward through effluent dis-

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A view of one of Seletar's enormous egg digesters during plant construction



Manual Pinch Valves feature drop-tight shutoff for reliable isolation on grit lines.



Singapore standardized on the Series 5400 Control Pinch Valve for use on waste-activated sludge.



Red Valve Control Valves have no seats or packing glands to maintain and are ideal for primary sludge.

Closing Action of the Red Valve Pinch Sleeve



The flexible sleeve isolates the valve's working parts.



Two pinch bars close on centerline, eliminating turbulence and wear, and provide a smooth closing venturi that self-cleans with each operation.



Fully closed, the sleeve ensures drop-tight, bi-directional shutoff and an intrinsically safe design with no packing to maintain.

charge, Red Valve Manual and Control Pinch Valves are in use. By employing a total-system approach, Red Valve ensured that the entire plant would reap the benefits of superior pinch valve technology, including excellent throttling characteristics for control applications and positive, drop-tight shutoff for isolation.

Red Valve made use of its own expertise and worked closely with Kinhill Tan and the Ministry of Environment to provide Seletar with the best possible products for its myriad of needs. The elastomers for Red Valve's rugged pinch sleeves were hand selected for compatibility in each individual process. Red Valve was even able to make valuable recommendations on the most efficient valve accessories. For throttling control of waste-activated sludge, Red Valve suggested equipping the Series 5400 Control Pinch Valves with Rotork IQ-Series Electric Actuators.

The Rotork IQ is "the world's first non-intrusive actuator," said Rotork Sales Vice President Chris Warnett. "Set-up, configurations, calibration, torque settings and diagnostics can be reviewed and changed without removing the actuator cover, simply by using an infrared setting tool similar to a television remote control." He added that the IQ has digital two-wire communication to allow control commands, position feedback and a host of other diagnostics to be transmitted digitally over a single pair of wires back to the control room.

Red Valve President George Raftis II stated, "By combining Red Valve's Series 5400 Control Valve with the
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"By combining Red Valve's Series 5400 Control Valve with the Rotork IQ Electric Actuator, we are providing Singapore with one of the most advanced and reliable valve and actuator control systems in the world." - George Raftis II, President



The Rotork IQ-Series Electric Actuator is equipped with a non-intrusive remote setting tool.



Large-diameter, 450-mm manually actuated pinch valves for sludge service at the SELETAR WWTP

Contact us for more information: Valve & Equipment Consultants, Inc. • Phone: 281-324-1500 • Email: sales@valveandequipment.com

Website: www.ValveAndEquipment.com

Rotork IQ Electric Actuator, we are providing Singapore with one of the most advanced and reliable valve and actuator control systems in the world."

Shortly following Seletar's start-up, Red Valve Sales Vice President Chris Raftis accompanied Red Valve Representative Ron Rodrigues of Flotech, Australia, to Singapore to view the plant's operation and to conduct a valve-training seminar on Red Valve's total-system capabilities. Seminar participants even discussed Singapore's expansion plans for the Seletar Wastewater Treatment Plant.



Red Valve Representative Ron Rodrigues of Flotech, Australia, visited Seletar immediately following start-up.

From the point at which the raw sewage enters the plant, across the headwork section, during all sludge-processing phases and onward through effluent discharge, Red Valve Manual and Control Pinch Valves are in use.



Red Valve provided more than 900 Pinch Valves for Seletar, Singapore's new 200-mgd wastewater treatment plant.

Red Valve Pinch Valves a standard in revolutionary new design

Egg digesters feature superior circulation benefits over a conventional mixing tank by reducing surface areas and eliminating dead spots. Mixing occurs throughout the entire tank, preventing settling and stratification. To match this excellence in sludge handling with the most reliable and efficient process equipment available, the egg digester design has always specified Red Valve Pinch Valves.

As word spreads of the egg digester's many advantages, wastewater treatment plants in Los Angeles, Boston Harbor, Salt Lake City, Gwinnett County and now Singapore are currently employing the new design. Each plant, ranging in capacity from 20 to 200 mgd, is equipped with Red Valve Pinch Valves for throttling and isolation.

