TKL™ SC
Axially
Split-case
Large Capacity
Custom Made
Centrifugal
Water Pumps
In 2004 Flowserve Pump Division (FPD) acquired Thompsons, Kelly & Lewis Pty. Ltd. (TKL) which was formed in 1987 by the merger of two long-established pump companies, Thompsons at Castlemaine (Vic) and Kelly & Lewis in Melbourne. FPD is a division of Flowserve Corporation of the USA, a global company manufacturing centrifugal pumps, mechanical seals and control valves, and with pump operations in many countries.

Company Profile

These well-known TKL SC pumps are used extensively in Australia and the Asian Pacific area for applications involving the transfer and boosting of large volume flows of water, for water supply, power station, and other industrial services.

Project Engineering
Flowserve Pump Division is experienced in the administration and supply of complete turnkey pump mechanical and electrical installations. We undertake erecting and commissioning work with our fully qualified field engineering staff. Package pumping projects which include the supply of ancillary items such as motors, switchgear, valves, pipework, steelwork, etc., are a specialty of the company.

Test Facilities
Our extensive testing facilities allow pumps to be set-up for testing in closed loops, under suction lift or with booster pumps. Acceptance tests of finished pumps can be carried out in our test laboratory to Standards Australia and International Standards organisation testing standards. Outcome of tests are analysed by computer and fully tabulated results can be provided.

The main test area is equipped with flow measuring equipment up to a maximum flow rate of 7000 litres/second and the electrical supply is suitable for electric motors up to 4.1 MW at 6.6 kV, and 3.7 MW at 11 kV.
Operating Range
50 HZ – TKL SC Pumps
- Flow to 5000 L/s (18000 m³/h)
- Head to 200 m (660 feet)
- Temperature to 150°C
- Working pressure to 2500 kPa
- Power Range to 5000 kW and larger
- Flange branch sizes to 1200 mm (48") and larger

Model Testing
Flowserve Pump Division has experience in designing model tests and developing prototypes (scale models) to prove performance prior to the manufacture of a large pump. Of vital importance are sump model studies to ensure that an intake structure has suitable hydraulic characteristics for the pump suction, and mechanical stiffness to support the pump machinery.

Tests are carried out to:
- eliminate the formation of air-entraining vortices
- confirm that air entrained at the base of the sump would not be drawn into the pumps
- ensure uniform steady eddy-free flow to the pump intakes
- eliminate stagnant areas where silt could accumulate
- eliminate resonant mechanical vibrations in the structure

Quality Assurance
Quality control is applied to product design and manufacturing. The Flowserve quality assurance system complies with the ISO9000 Standard, and Flowserve is certified by the Australian Department of Defence as an accredited supplier.

Range Chart
Over 50 different TKL SC pump sizes are available to meet your hydraulic requirements.
Typical Pump Sections

Reliable operation is derived from low velocities in discharge branch and the shaft and bearings are sized for minimum deflection and for low stresses. The pumps are axially split-case, single stage, double suction design. The can be supplied in horizontal or vertical configuration, and with rotation to suit a pump station layout. Double volute hydraulic designs are employed to minimise radial shaft loads and to provide extra casing stiffness. Our current designs incorporate many improvements in mechanical and hydraulic characteristics. These include hydraulic efficiency exceeding 90%, increased suction lift capacity, extra large suction branch, well-proven stuffing box layout with the option of mechanical seals and advanced bearing design. Every TKL SC pump is custom engineered to fit the duty and operating conditions specified by the customer, and is subjected to a complete full load test before leaving our plant. There are many construction and design features, and the major ones are:

Casing
Axially split-case, with suction and discharge branches located in the lower half casing. Double volute design (not used in all models) balances radial load and minimises deflection. Removal of upper half casing permits inspection, maintenance and withdrawal of rotating element.

Impeller
Enclosed, double-suction with vane shapes to ensure good suction performance against low N.P.S.H. values, and to ensure maximum axial hydraulic balance. Internal surfaces are dressed as necessary to give a smooth surface to passages and vanes. Optional open-type impeller for paper pulp.

Wear Rings
Pumps are fitted with renewable casing wear rings, and when preferred, the impeller can also be fitted with wear rings.

Shaft and Sleeves
Shaft sleeves with O-rings, fully protect shaft of ample size to operate below first critical speed.

Stuffing Boxes
Provided as standard with soft packing, removable lantern rings and renewable stuffing box throat bushings and gland adjustment. The stuffing boxes can accept alternative manufacturers mechanical seals in accordance with duty requirements and customer preference.

Bearings
Anti-friction bearings or sleeve bearings with special thrust bearing, either grease or oil ring lubricated to suit the operating conditions and availability of services. The bearing housings are designed to prevent entrance of moisture or dirt and are provided with monitoring connections.
Stuffing Boxes
Maybe of the conventional soft-packing type with adjustable glands arranged for either product, water or grease sealing. Various alternative mechanical seals can be fitted, and connections are provided for product circulation and/or other necessary service requirements.

Wear Rings
Several popular designs of casing and impeller (optional) wear rings are shown. For high pressure sealing the throttling surface can be stepped, or grooved rather than continuous flat.

Bearings
Journal or sleeve bearings are of the bush type, horizontal split and white metal lined. Residual end thrust is taken by a double thrust bearing fitted in the non-drive end housing. Oil retention and dirt exclusion devices are incorporated. Lubrication is arranged to suit the operating conditions and availability of services.

Materials
Materials for the TKL SC pumps are chosen to suit the specific application. Typical materials for normal duties are all iron, bronze fitted or all bronze construction, with ni-resist, steel and stainless steel for special conditions. Materials may be produced to Australian, International and American specifications.

Applications
- Water Supply
- Waste water / Effluent treatment
- Heavy Industry / Steel Mills / Paper Mills
- General Industry / Sugar Mills / Fertilizer Plants
- Power Generation
- Irrigation Systems
- Mining Industry

Projects
Overleaf are some of the projects undertaken by Flowserve Pump Division, and serve to illustrate the scope and diversity of TKL SC split-case pump installations.

Flowserve puts into practice a philosophy of flexible product design which benefit the customer with optimum performance in the application concerned.
The TKL SC custom made split-case pumps are an extension to the standard Super-Titan™ split-case pump range pictured left and as shown on range chart page 3. However, smaller TKL SC pumps are also available to suit applications when engineered pumps with special requirements are needed.

1. Sugarloaf Reservoir Pumping Station, Victoria
Transfer of reservoir water to treatment plant. Three 1000/1200 SDS-DV pumps. Duty 4500 L/s at 54 m head. Driver 2800 kW at 735 r/min.

2. Bayswater Power Station, New South Wales
Condenser cooling water make-up service. Three 400/450 CL pumps. Duty 500 L/s at 90 m head. Driver 630 kW at 1480 r/min.

3. Stones Road Pumping Station, Queensland
Upgrading of local water supply system. Three vertical 500/500 CLW pumps. Duty 750 L/s at 30 m head. Driver 280 kW at 960 r/min.

4. Haughton No. 1 Pumping Station, Queensland
Large scale irrigation water pumping. Two 1000/1400 CDV pumps. Duty 3500 L/s at 17 m head. Driver 750 kW at 495 r/min.
1. Yering Gorge Pumping Station, Victoria

Pumping water from the Yarra river into the Sugarloaf reservoir. Four vertical 900/1050 SDS-DV pumps. Duty 2900 L/s at 130 m head. Drivers 4725-5250 kW at 735-745 r/min.

2. Mundaring Weir ‘B’ Pumping Station – Kalgoorlie Pipeline, Western Australia

First booster station in O’Connor pipeline to Swayers valley high level storage tank. Five 250x300 GME pumps. Duty 300 L/s at 227 m head. Driver 955 kW at 1485 r/min.

3. Yallourn ‘W’ Stage 2 Power Station, Victoria

Main circulating water pumps for delivering water to the condensers of the associated turbo/generator units. Four 1200/1350 SDS pumps. Duty 4675 L/s at 24.5 m head. Driver 1300 kW at 490 r/min.

4. North Pine Pumping Station, Queensland

Water supply to the city of Brisbane. Four vertical 600/750 C pumps. Duty 1052 L/s at 54 m head. Driver 780 kW at 960 r/min.
1 Forrestfield Pumping Station, Western Australia
Mains booster duties for water supply to Perth. Two 375/400 SCO two stage pumps and two 300/350 SDS-ML pumps in series. Duty 300 L/s at 82-170 m head. Drivers 400-700 kW at 1480 r/min.

2 Sepp Outfall Pumping Station, Victoria
Pumping reconditioned water through a 9.6 km raising main to a gravity outfall, discharging into Bass Strait some 60 km away. Five 900/1050 SDS-DV pumps. Duty 2800 L/s at 76 m head. Driver 2600 kW at 400-600 r/min.

3 Apsley Pumping Station, Queensland
Pumping fresh water to reservoirs supplying Brisbane with water supply. Two vertical 350/400, two 500/500 and two 750/750 SDS pumps. Duties 550-600-1500 L/s at 33-9-16 m head. Drivers 225-75-300 kW at 980-750-750 r/min.

4 Lloyd Street Pumping Station, Queensland
Interchanges water between the North Pine and Mount Crosby source of supply. Three 750/750 SDS-DV pumps. Duty 795 L/s at 10.7 m head. Driver 275 kW at 740 r/min.
1 Yallourn ‘W’ Stage 1 Power Station, Victoria

Main circulating water pumps for delivering water to the condensers of the associated turbo/generator units. Four vertical 1200/1350 SDS pumps. Duty 4300 L/s at 23 m head. Driver 1120 kW at 495 r/min.

2 Lantana Booster Pumping Station, New South Wales

Water supply boosting from the Lantana reservoir to the Forster reservoir in the Manning District Water Supply Augmentation Scheme. One 400/450 CL and one 400/400 C pump. Duties 520 L/s at 89 m and 490 L/s at 112 m head. Drivers all 800 kW at 1475 r/min.

3 Happy Valley Stage 2 Water Filtration Plant, South Australia

Pumping filtered water to reservoirs and holding tanks in outer Adelaide suburbs.

Four 380/380 CW pumps. Duties 300-375 L/s at 63-78 m head. Driver 280/410 kW at 1480 r/min. Two 200/250 CHH and two 350/400 SDS-DV pumps. Duties 208-375 L/s at 140-195 m head. Drivers 440/1250 kW at 1480 r/min.

4 Woodman Point Water Treatment Plant, Western Australia

The pumps receive treated sewage and pump the effluent to Point Peron. Two 1000/1100 C pumps. Duties 2800-3080 L/s at 59-74 m head. Driver 2800 kW at 990 r/min.
1 Elwick Booster Pumping Station, Tasmania
To extend the existing domestic water supply to Hobart. One 600/750 SDS pump. Duty 1157 L/s at 80 m head. Driver 1175 kW with variable speed to 1000 r/min.

2 Bootawa Dam No. 2 Pumping Station, New South Wales
Raw water supply servicing the Manning Water Supply Augmentation Scheme via the Wingham pipeline. Two 400/450 CL pumps. Duty 770 L/s at 71 m head. Driver 800 kW at 1475 r/min.

3 Tarong Power Station, Queensland
Condenser circulating water duties. Four 1200/1400 SDS pumps. Duty 5100 L/s at 22 m head. Driver 1300 kW at 490 r/min.

4 South Dandalup Pump Station, Western Australia
Recharges (pump back) Lower South Dandalup dam with captured spillway water. 700x800-850 SDS-DV pump. Duty 1388 L/s at 209 m head. Driver 3500 kW at 1489 r/min.
1 Isis Main Pumping Station, Queensland

Water from the Burnett river is pumped into a main channel for irrigation of sugar cane fields in the Bundaberg region. Two vertical 900/1000 CDV pumps. Duty 2500 L/s at 70 m head. Driver 2000 kW at 895 r/min.

2 Hinze Dam Pumping Station, Queensland

Pumps water from Hinze Dam to Molendinar Water treatment plant. One 900x1100-890 CDV pump. Duty 2500 L/s at 40 m head. Driver two speed 1100 kW at 720 r/min and 600 kW at 590 r/min.

3 Jugiong No. 1 Pumping Station, New South Wales

Upgrading of existing water supply system near Gundagai. Two 375/400 SDO two stage pumps. Duty 380 L/s at 192 m head. Driver 850 kW at 1485 r/min.

4 Monduran Dam Pumping Station, Queensland

The project supplies irrigation water to the sugar cane industry in the drought-prone Bundaberg area. Three 825/900 SDS-DV pumps. Duty 2570 L/s at 28 m head. Driver 750 kW at 728 r/min.

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Prospect Pumping Stations, New South Wales

Water supply Thornleigh units. Four 600/600 SC two stage pumps. Duty 980 L/s at 213 m head. Driver 3000 kW at 1450 r/min.