ArcticChill®

*application***BULLETIN**

HIGH POWER CABLE COOLING

Background...

Seattle Power and Light sought a highly reliable method for cooling high power underground cables between power stations in order to realize the additional energy throughput available by managing heat.

Solution...

ArcticChill designed and built a 100% redundant chiller system including dual pumps and auto-failover controls.

Results...

Power utility company was able to increase power throughput and eliminated a multi-million dollar substation.

Full redundancy. Two complete chillers and pumping systems in a single frame. Redundancy includes auto-failover PLC controls.

Generously sized stainless steel expansion tank.

Dual tandem compressors in each chiller provides redundancy and excellent part-load efficiency and reduces the complexity of capacity and head pressure control.

Space efficient V-Coils in each chiller enables highly compact yet servicable equipment footprint.

Dual lead/lag pumping system assures critical flow in the event of a pump failure.

Auto-failover control system has no single point of failure and shares a single water system that assures no interruption in chilled water delivery.

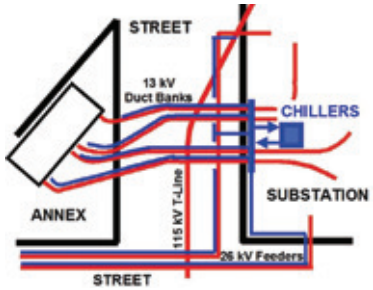
Low ambient flooded head pressure controls and hot gas bypass provides excellent steady operation

Solution Success...

• The chiller consumes only 10kW, but provides substantial gains in power throughput. A 115kV line went from 477 to 812 amps. Another went from 310 to 510 amps.

• Cooling pipes are encased in thermally conductive concrete. Thermisters are installed to monitor temperatures along the line.

• Cable temperatures fluctuate only a small amount although the cable heat load varies by a factor of 3 or more. This is attributed to the effectiveness of the chiller to quickly remove heat.



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