

**Application Example – VLT HVAC Drive
Parameter set-up for a Variable Speed Secondary Loop Control**



The secondary pumps maintain a differential pressure at a specific point in the system. In Figure 1 this point is the pressure difference across the most significant distant load. The pressure difference is the coil, piping, and control valve pressure drop at design flow.

As the building cooling loads are satisfied, the coil two-way control valves move toward the closed position, this increases the differential pressure measured across the cooling coil, valve and piping. As the differential pressure starts to rise, the frequency converter slows the pump to maintain the differential pressure setpoint value. The frequency converter setpoint value is the sum of the pressure drop of the cooling coil, coil piping, and two-way control valve under design flow conditions.

For this example, we are using a 4-20 mA transmitter rated 0-50 psi. The motor is 1735 rpm, and the minimum speed is 900 rpm.

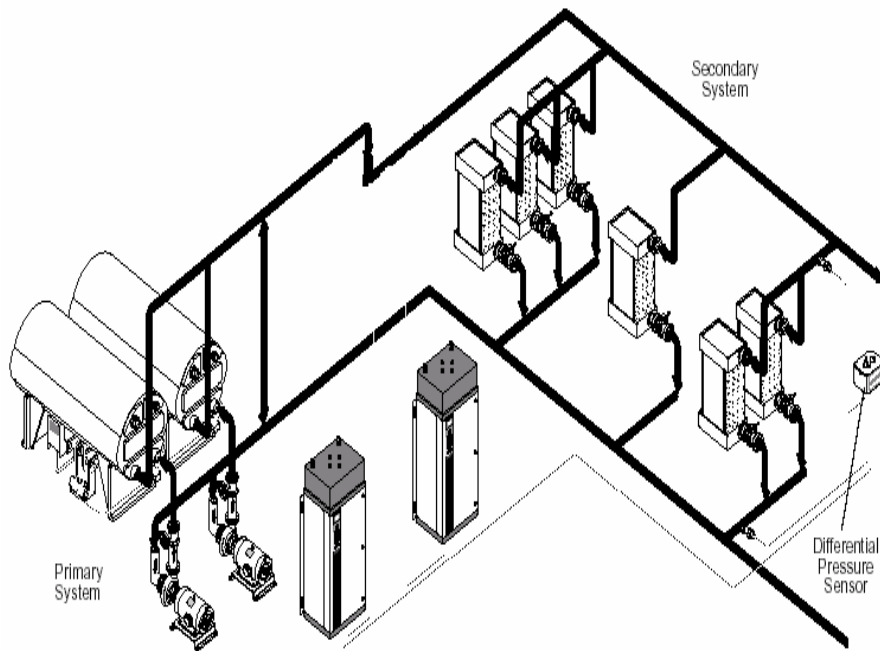


Figure 1

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ID	Name	Setup 1	Factory Setup	Unit
100	Configuration Mode	Closed Loop		
103	Torque Characteristics	Auto Energy Optim. VT		

ID	Name	Setup 1		
302	Minimum Reference	0 psi		
303	Maximum Reference	50 psi		
315	Reference 1 Source	No function		

ID	Name	Setup 1
4-11	Motor Speed Low Limit (RPM)	900 rpm
4-13	Motor Speed High Limit (RPM)	1800 rpm
4-53	Warning Speed High Limit (RPM)	1800 rpm

ID	Name	Setup 1		
510	Terminal 18 Digital Input	Start		
512	Terminal 27 Digital Input	Coast inverse		
622	Terminal 54 Low Current	4 mA		
623	Terminal 54 High Current	20 mA		
624	Terminal 54 Low Ref./Feedb. Value	0 psi		
625	Terminal 54 High Ref./Feedb. Value	50 psi		

ID	Name	Setup 1		
2000	Feedback 1 Source	Analog input 54		
2012	Reference/Feedback Unit	in PSI		
2021	Setpoint 1	25		
2081	PID Normal/ Inverse Control	Normal		
2091	PID Anti Windup	On		
2093	PID Proportional Gain	0.5		
2094	PID Integral Time	10		

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