

System 017 - Site 501529, Pasco, WA

Site 501529 is a grocery store located in Pasco WA. There are four refrigeration circuits—a low temperature Circuits 16 and 17 and medium temperature Circuit 14 and 15 – installed in approximately 2000. Both racks share a single Emerson E2 refrigeration system controller.

Circuit 16 and 17, Low Temperature

Circuits 16 and 17 is a low temperature multiplex system with four semi-hermetic screw compressors and R22 refrigerant. Compressor 1 on Circuit 16 is controlled by a suction pressure setpoint with a sensor located on one end of the suction manifold. Compressors 2 to 4 on Circuit 17 are controlled by a suction pressure setpoint measured at the opposite end of the suction manifold. All four compressors discharge into a common discharge manifold. The circuits share a heat recovery desuperheater, condenser and common liquid manifold. The desuperheater recovers heat from the hot discharge gas to heat hot water, which also decreases the gas temperature before entering the condenser, increasing refrigeration efficiency. The low temperature rack serves 13 evaporator circuits.

Table 1. Measured data on Circuit 17

Measured Data	Variable Name(s)	Point Number
Outdoor Temperature	TT_OUTDOOR	--
Discharge Temperatures after each Compressor	MISC2 to MISC4	2
Common Discharge Temperature	TT_RCOMP_OUT	2
Suction Temperatures before each Compressor	MISC8 TO MISC10	1
Compressor Power	EP_COMP	--
Low Pressure, Suction Manifold	PT_RLP	1
High Pressure, Discharge Manifold	PT_RHP	2
Condenser Entering Temperature	TT_RCOND_IN	3
Condenser Fan Power	EP_AUX_SECW	--
Condenser Leaving Temperature	TT_RCOND_OUT	6
Temperature Leaving Subcooler	TT_RMP_OUT	--
Temperature Entering Subcooler	TT_RCOMP_IN_MP	--
Liquid Line Temperature entering expansion device	TT_REXP_IN	7

Figure 1. Pressure-enthalpy diagram for basic refrigeration cycle, neglecting pressure losses.

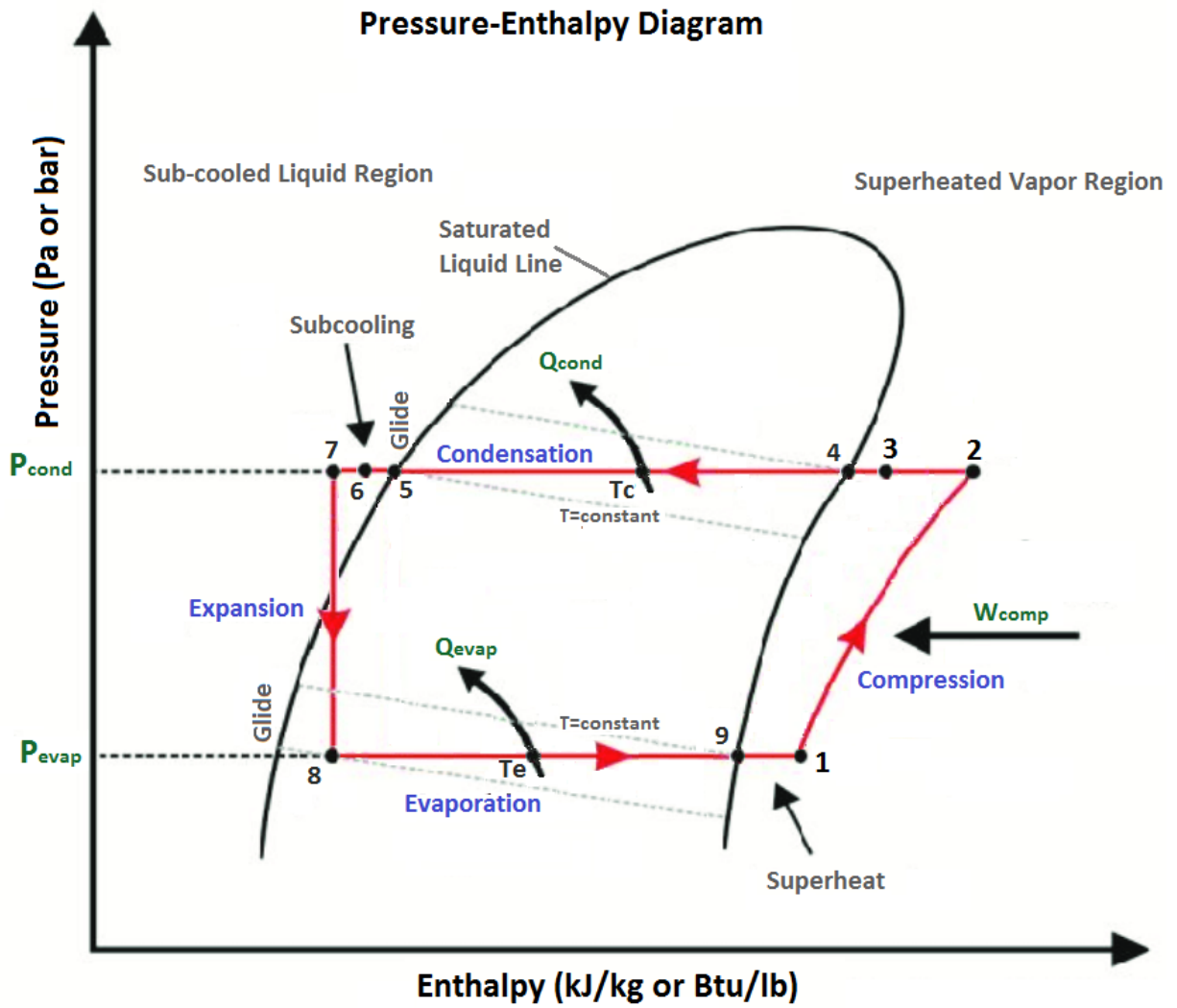


Figure 2. Circuits 16 and 17 ClimaCheck system diagram

