



PRODUCT BULLETIN HANWEST AQUA SYSTEMS WATER COOLED CONDENSERS FOR AIR CONDITIONING.

The Aqua Systems series water cooled condensers are of a unique design providing a very high level of heat exchange efficiency between refrigerant and water. The extended surface tube with internal spiral fin extends the surface area up to 3.7 times that of plain tube. A tube geometry exclusive to Aqua Systems condensers result in a close tolerance refrigerant path and suitability for the ecologically sound "Freeze cleaning" of water tubes should fouling occur.

REDUCED WATER CIRCULATION.

Air conditioning equipment utilising Aqua Systems water cooled condensers will operate efficiently with a lower water circulation rate due to the high level of heat exchange efficiency. Following are typical examples of conventional shell and tube or tube in tube condenser performances compared to air conditioning units with Aqua Systems condensers.

	Shell & Tube	Tube in Tube	Aqua Systems
Total Heat Rejection	22.8 kW	22.8 kW	22.8 kW
Condensing Temp.	42°C	42°C	42°C
Liquid Sub-Cooling	6 K	4 K	4-6 K
Entering Water Temp.	29.5°C	29.5°C	29.5°C
Leaving Water Temp.	35°C	35°C	38.5°C
Water Flow Rate	1.14 l/s	1.11 l/s	0.62 l/s
Water Side PD	45 kPa	56 kPa	42 kPa

The condenser water circulation rate for an installation utilising water cooled air conditioners with conventional water cooled condensers is approximately 0.05 l/s per kW THR.

By comparison the condenser water circulation rate for an installation using Aqua Systems water cooled condensers is approximately 0.027 l/s per kW THR. This is a reduction of approximately 46% in the amount of condenser water required to be circulated.

COOLING TOWER EFFECT.

The comparative selection of a cooling tower with a heat rejection capacity of 200 kW is as follows.

	Conventional System	Aqua Systems System
Total Heat Rejection	200 kW	200 kW
Condensing Temp.	42°C	42°C
Supply Water Temp.	29.5°C	29.5°C
Return Water Temp.	35°C	38.5°C
Entering Wet Bulb Temp.	24°C	24°C
Water Circulation	10 l/s	5.4 l/s
BAC Tower Selection	*VXT45	*VXT40

* BAC Cooling tower selection courtesy of G.S.WAGG Pty Ltd.

An air conditioning system with Aqua Systems condensers would reduce the cooling tower size - condenser water pump size and condenser water reticulation pipework size.

This will result in installation and operating cost savings.