
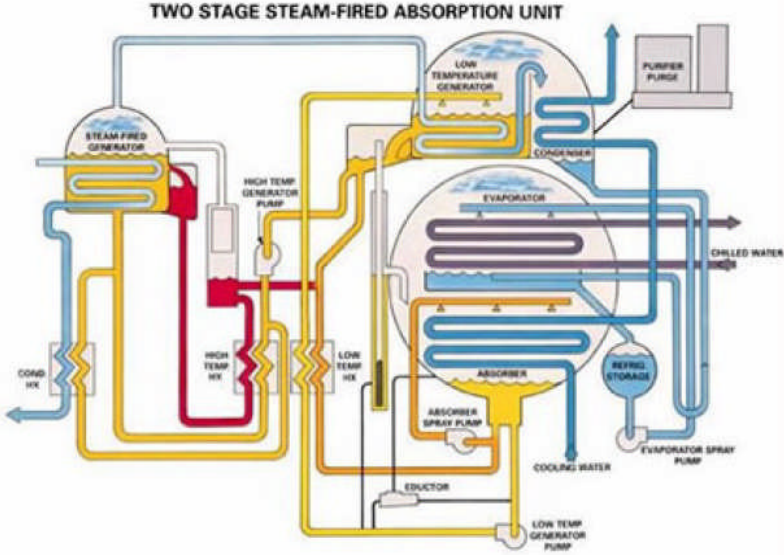


TECHNICAL DIRECTORY

Building 2.1		Absorption Chiller		Energy Source
Industry classification				Electricity
Open				Practical Use
Technology Classification		1998		
Air Conditioning				
Outline	Steam-fired absorption is a good application where there is a low cost of steam such as a cogen or waste energy plant. Direct-fired natural gas units are used in hybrid and high-cost electricity areas. Absorption chillers do NOT use a CFC or HCFC refrigerant; therefore, some users purchase absorption chillers for this environmental advantage.			
Principle & Mechanism	It seems unreasonable to burn a flame to produce cooling, but that is what happens inside an absorption chiller. The refrigerant used is actually water, as that is the working medium that experiences a phase change that causes the cooling affect. The second fluid that drives the process is a salt, generally lithium bromide. Heat is used to separate the two fluids; when they are brought back together in a near vacuum environment, the water experiences a phase change to remix with the salt at a very low temperature (at normal atmosphere pressure, water vaporizes at 212F; in an absorber, water vaporizes cold enough to produce 46F chilled water).			
Description	 			
Structure explanation, shapes, and/or System diagram	Absorption chillers cost more to operate than electric chillers. They also cost about twice as much to purchase. Therefore, a reason other than average electric cost is needed to justify a base-loaded absorption system. Economics are more favorable for hybrid systems. Hybrid systems combine absorption chillers for use during on-peak electric hours and electric chillers for base load operation.			
Energy Saving effect	is expected to be 50 percent more efficient than conventional chillers.			
Economics Equipment Cost	The cost of the equipment selection depending upon several factors including: building type, equipment, climate, utility rate, and scalar ratio.			
Remark	Absorbers have a Coefficient of Performance (COP) that is about 1.0, compared to engine driven compressors about 1.5 and electric at about 3.0.			
Example Sites Building	References	Inquiry		
	Southern California Gas Company, New Buildings Institute	US DOE		