

Absorption Cooling Technology

CLEAN ENERGY FOR YOU

Absorption chillers with water / lithium bromide or ammonia / water generate cold through a closed, continuous cycle.

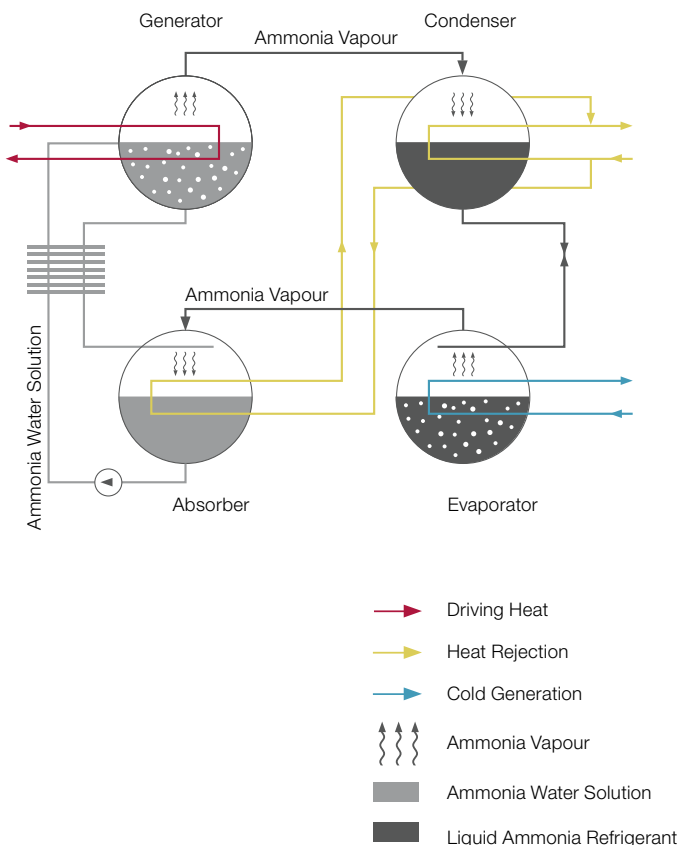
The evaporator temperature of ammonia absorption chillers can be reduced to minus 60 °C, making it applicable for industrial cooling processes. When water is being used as the refrigerant, the evaporator temperature is limited to temperatures above freezing point at 5 to 6 °C.

Schematic description exemplified by our chillii® PSC (ammonia / water):

The absorption chiller consists of four main components: The generator (also named boiler or expeller), the condenser, the evaporator and the absorber.

Inside the generator, hot water is supplied to the chiller through a heat exchanger. A part of the ammonia is being expelled from the ammonia / water solution and condensed again inside the condenser. The ammonia condensate is fed to the evaporator where it is evaporated. During this process, heat energy is discharged from the cooling cycle which cools it down. Inside the absorber, the ammonia is absorbed from the low concentrated refrigerant ammonia / water solution and the cycle starts over again.

As the water chilling process produces waste heat (which is the case for compression cooling for example), a cooling tower is required. The functionality of water / lithium bromide absorbers is nearly identical. In this case water is the refrigerant. The biggest difference is the different pressure levels of the two technologies (ammonia is driven with high pressure and water with a vacuum) and the different evaporator temperatures.



Why absorption technology ?

- Absorption chillers are practically maintenance-free (few mechanical parts)
- The life expectancy of absorption chillers is at least 20 years, but can also be significantly higher. For example, in the USA, an absorption chiller has been in operation for 70 years!
- Absorption chillers consume almost no electrical energy
- Using heat instead of electricity as driving energy reduces CO₂ - emissions
- Absorption chillers use natural refrigerants which have no global warming potential (GWP)