

## TECHNOLOGY FACTSHEET

### **GAS ABSORPTION HEAT PUMPS**<sup>1</sup>

1. **Sector/ Sub Sector:** Heating Ventilation and Air Condition
2. **Introduction:** Gas absorption heat pumps (GAHP) systems provide a green way of heating and cooling buildings with up to 150% efficiency. Gas absorption heat pumps (GAHP) can provide sustainable solutions for both industrial and commercial businesses as well as for homes.
3. **Technology Name:** Gas absorption heat pumps
4. **Technology Characteristics:** The systems take advantage of freely available energy from the air and turn it into higher or lower temperature for building heating or cooling. The technology is clean as GAHP systems compared to the best condensing models available on the market can considerably reduce CO<sub>2</sub> emissions compared to the best condensing models available on the market. An important feature is that GAHPs can produce heat in extreme temperatures - even at -20°C. While conventional heat pump water heater designs are limited to using toxic ammonia water systems, this system uses heat drawn from the ambient environment to achieve energy efficiency. This approach extends the application of the invention beyond industrial settings to residential and commercial use. The system features one assembly with a condenser and an evaporator, a second assembly with an absorber, a desorber, and a heat exchanger, and a thermal coupler. The system employs lithium bromide, which is now widely used in commercial air conditioning. In current systems, however, efficiency has been limited by crystallization at the solution heat exchanger outlet and at the absorber. ORNL researchers found a way to avoid crystallization by increasing evaporating pressure. Further crystallization is averted by directing the process water first through the absorber and then through the condenser. The water flow direction can be changed at run-time to optimize performance.
5. **Country Specific Applicability:** -
6. **Status of the technology in the country and its future market potential:** -
7. **Barriers:** -
8. **Benefits:** Energy saving, Less impact on Environment

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<sup>1</sup> This fact sheet has been extracted from TNA Report – Mitigation for Sri Lanka. You can access the complete report from the TNA project website <http://tech-action.org/>

**9. Operations: -**

**10. Costs: -**

**11. Reference:** <http://www.energ.co.uk/>