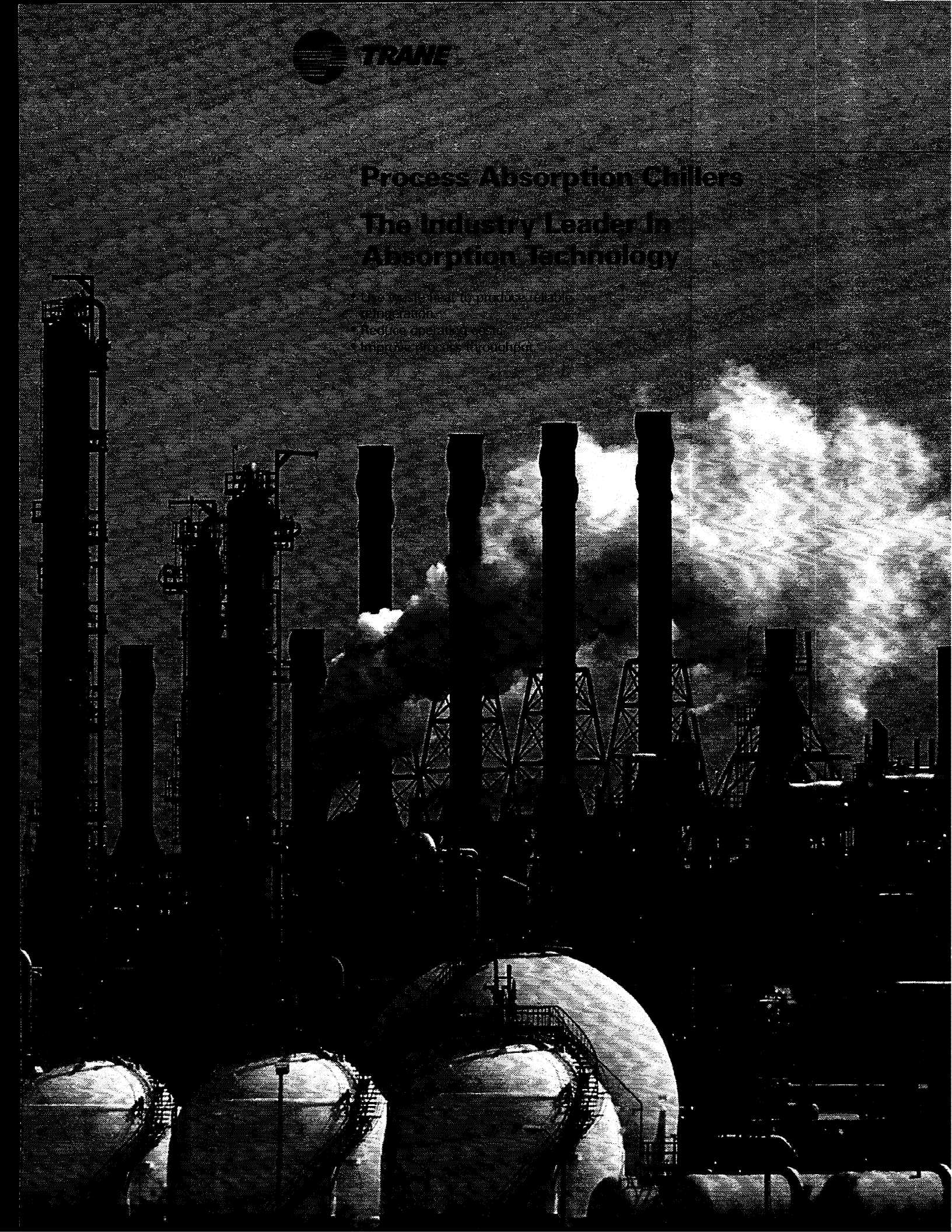




TRANE

Process Absorption Chillers The Industry Leader In Absorption Technology

- High thermal efficiency, reliable refrigeration
- Reduces operating costs
- Improves process throughput



Trane Absorption . . . The Right Alternative

Using Waste Heat For Free Cooling

Facilities which generate waste heat are excellent candidates for Trane absorption chillers. Ideal applications include chemical, processing and cogeneration plants. Why? Because waste heat can be used as the energy source for process absorption cooling, reducing the plant's need for costly electricity.

In years past, low energy costs made it difficult to justify recovering waste heat for most purposes. With today's rising electrical costs and environmental concerns, however, recovery of waste

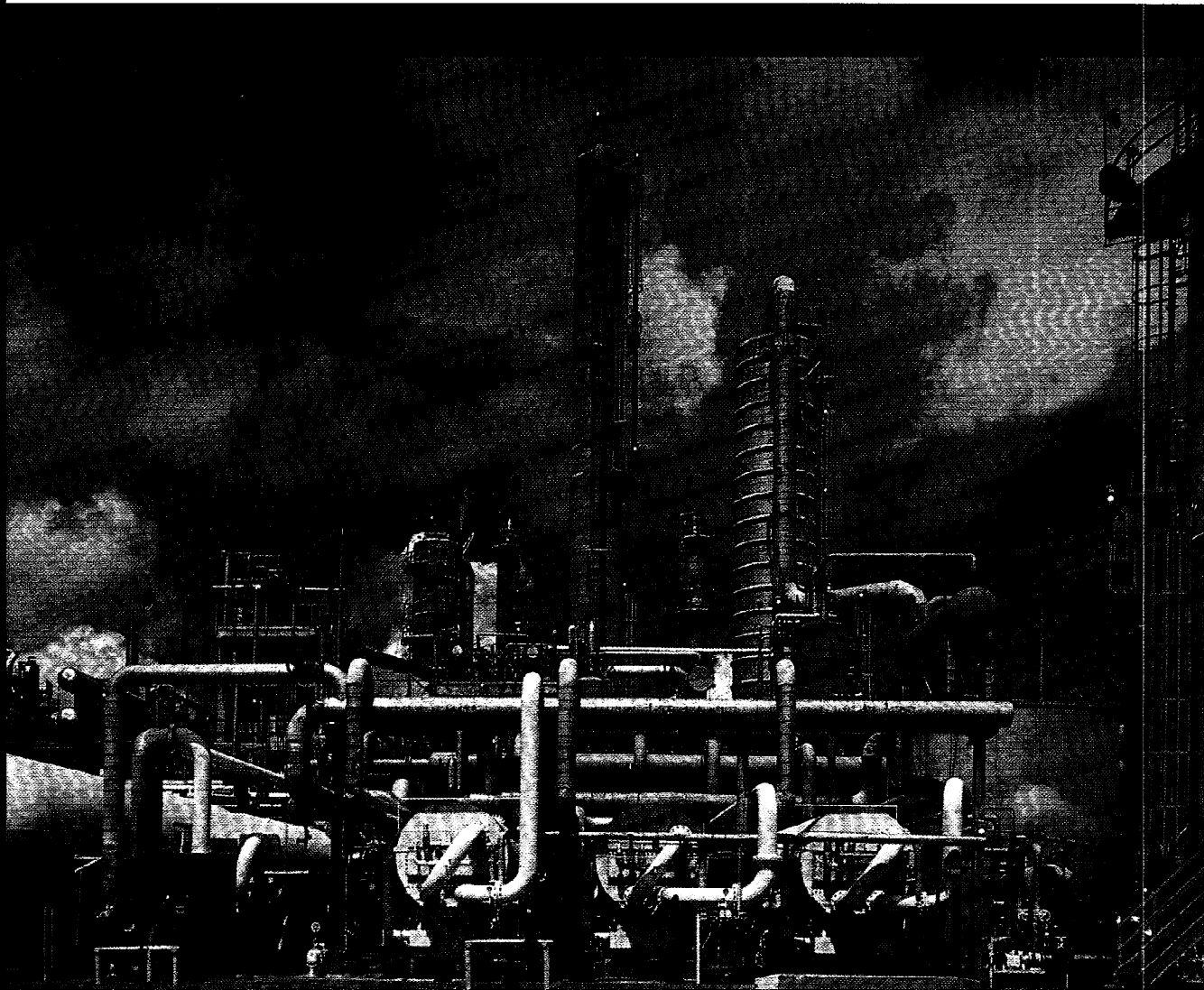
heat is much more attractive. In fact, the use of absorption chillers to satisfy cooling needs typically provides quick payback, justifying their use.

Is Absorption The Right Choice?

An absorption chiller is the right choice if a low cost heat source is available. Any source of low pressure steam, hot water or other hot fluid can be the absorption energy source. Examples of heat sources that can be used for absorption include waste or excess process steam, cogeneration systems, vapor-condensing heat recovery and hot oils or process fluids.

Is There A Need For Chilled Water?

If a low cost heat source is available, then the use of chilled water or other suitable fluid provides many opportunities for economical cooling. One common application involves a process fluid heat exchanger which previously used a cooling tower as the cooling source. A process heat exchanger requires less cleaning and operates more efficiently. Another advantage of this application is reduced circulation which allows the pumps and piping to be downsized.



Reliable Operation

The reliability of process absorption chillers is comparable to, and in many cases better than, that of mechanical refrigeration. The pump is the only moving part of the absorption chiller. Fewer moving parts means fewer parts to fail and, therefore, greater reliability.

Trane absorption chillers are built using advanced, proven manufacturing methods. A single shell design using a minimum number of welded joints assures hermetic integrity of the product. Safety controls also help assure proper machine operation. In

addition, the Trane absorption chiller is designed for easy maintenance. And a better maintained machine means a machine with reduced downtime.

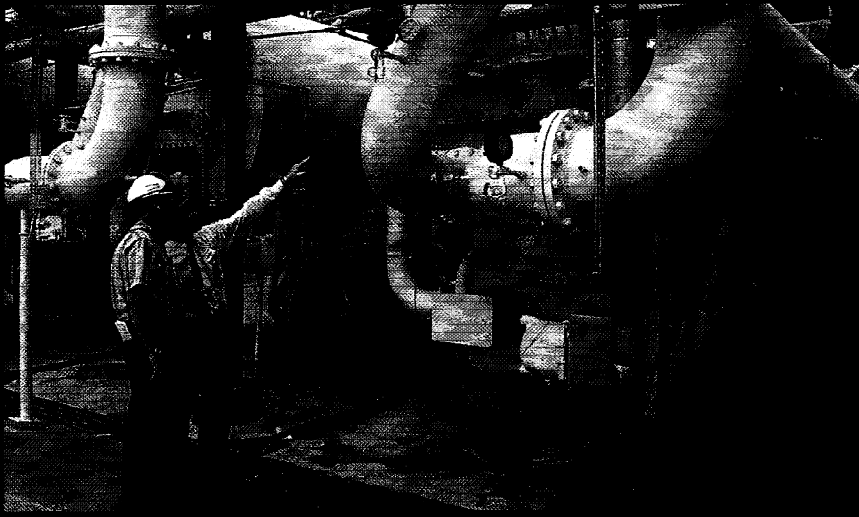
Trane uses the heaviest construction in the industry. The shell of the Trane absorption chiller is substantially thicker than that of any other manufacturer.

This feature, combined with cupronickel tubes, helps add to the durability and life-cycle of the absorption unit. In addition, all Trane absorption chillers ship completely assembled and factory leak tested, a requirement for long-term reliability.

The Industry Leader In Absorption Refrigeration

Trane produces more absorption chillers than any other U.S. manufacturer. The company introduced the world's first hermetic absorption machine and continues to be the industry leader in absorption technology.

More importantly, being an industry leader means you can count on Trane to support you before, during and after the sale. Trane has been in the absorption business since 1958 and will continue providing strong absorption support both at the factory and on a local level.



How Absorption Works

The absorption chiller consists of four main heat transfer sections: the generator, condenser, evaporator and absorber. Other components include the pump and heat exchanger.

- **Generator** — In this section, a dilute solution of lithium bromide is boiled, using the energy source, to produce the refrigerant water vapor for the cycle.
- **Condenser** — Refrigerant vapor from the generator is condensed on the outside tube surface and passes to the evaporator through an expansion device. Cooling water, typically from a cooling tower, removes the heat of condensation.

- **Evaporator** — The system water/fluid is cooled by refrigerant vaporizing on the outside of the tubes. This chilled system water provides economical comfort cooling and air conditioning or may be used as a process heat sink.
- **Absorber** — Absorbs the refrigerant vapor produced by the evaporator. This task is accomplished by distributing the concentrated solution from the generator over the absorber tubes. As the lithium bromide solution absorbs the water vapor, it becomes more diluted and must be cooled to remove the heat gain from the absorption process. Heat is removed by cooling water being circulated through the tubes.

- **Solution Heat Exchanger** — Recovers heat from the solution leaving the generator and uses it to preheat the dilute solution entering the generator.
- **Pump** — Circulates lithium bromide and refrigerant throughout the machine.

Environmentally Acceptable

There are no CFC's or HCFC's used in Trane absorption chillers. The absorbent/refrigerant is lithium bromide and water. The solutions used are environmentally safe when normal EPA handling standards are followed.

