

# Danfoss Turbocor Compressors Solutions for the Health Care Industry

The health care industry is experiencing change and challenges: increased government regulations, spiraling cost of health care technologies, tightening availability of qualified doctors and nurses, to name a few. These challenges extend to the HVAC systems critical to quality health care. What are some of these special challenges:

1. Comfort/reliability
2. Energy efficiency (especially at part load)
3. Need for emergency generation
4. Remote monitoring
5. Reduced maintenance budgets
6. Unit size and weight



## Why?

### Comfort/Reliability:

**Problem** – Few HVAC applications are as critical as they are for health care. For other applications, lack of cooling may be an irritating discomfort. In the health care industry it can be life threatening. Facilities need the absolute assurance that systems will be online all the time, every day.

**Solution** – The Turbocor compressor is a centrifugal compressor with only one moving part. This translates to substantially improved reliability. Another element is its oil-free design, which greatly simplifies not only the compressor, but also the chiller or DX system in which it is used. Multiple compressor retrofit applications also deliver “built-in” system redundancy. Hospital engineers know well that it takes a lot of engineering to make something simple, and they will agree that simpler **is** better.

### Energy Efficiency:

**Problem** – Many areas in hospitals and health care facilities have extended operating hours, some operating 24/7. These extended hours of operation make energy efficiency especially important. Facility engineers are looking for equipment that can deliver more comfort with reduced energy costs.

**Solution** – Turbocor compressors offer significant efficiency advantages, especially at part load conditions. Compared to existing compressor technology, the Integrated Part Load Values (IPLV) of a Turbocor compressor application can deliver as much as 50% better performance. Visualize what this could do for your energy bill. The dollars not used for energy could be redirected to important facility improvements.

### The Need for Emergency Generation:

**Problem** – Critical areas in hospitals and other health care facilities, such as surgical suites, require emergency generation power backup systems. A significant factor in sizing emergency generators is the startup amperage required by compressor motors.

**Solution** – The Turbocor compressor redefines “softstart,” starting up with less than 2 amps vs. a typically 75 ton, 460 volt screw compressor that can pull 500 to 600 amps on startup. The Turbocor compressor never exceeds full load amps, whereas a screw compressor will pull locked rotor amps almost immediately, a value 5 to 6 times that of the full load amps. This can have a significant impact on the sizing of an emergency generator, or will allow the existing generator to serve additional loads.

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### Remote Monitoring:

**Problem** – Providing reliable HVAC systems for health care facilities is critical. This requirement moves remote monitoring and diagnostics from a nice feature to an essential facilities management tool.

**Solution** – The Turbocor compressor is a “computer that thinks it’s a compressor” (a computer that is required to control the magnetic bearings). This same feature allows for cost effective remote monitoring and unit diagnostics at a level which could only be dreamed of yesterday. The engineering staff can monitor operation of the compressor from another building, or halfway around the world because the DTC compressor system can be easily integrated into all EMS systems.

### Reduced Maintenance Cost:

**Problem** – Hospital and health care facilities consistently are looking for ways to reduce maintenance cost.

**Solution** – Experience has proven that Turbocor compressors have one-half the maintenance cost of traditional “oiled” systems. Approximately half of the cost of maintaining many conventional compressors is related to oil, including annual oil inspections, periodic oil changes, and oil filter replacements. The Turbocor compressor is “oil free.” For this compressor, the only maintenance required is to change four capacitors once every five years, tighten the electrical connections once quarterly and annually dust off and clean the electronic cards. That’s it, no oil, no periodic teardowns, no major overhauls. This not only reduces maintenance, but also makes maintenance simpler and much less complex. Less maintenance enhances reliability; a critical need for health care facilities.

### Size:

**Problem** – Size does matter in the HVAC industry. In many health care facilities, the equipment rooms are smaller than ideal. Equipment is often jammed into spaces that make it very difficult to work on, let alone replace.

**Solution** – The fact that Turbocor compressors are typically one-half the size of traditional compressors and one-fifth the weight helps meet the needs of small tight equipment rooms. Because typical Turbocor compressors weigh only 265 pounds, they can be lifted onto and off the equipment instead of hiring a crane or lift, frequently at a cost of thousands of dollars. Multiple compressor retrofit applications can provide “built-in” compressor redundancy. For extremely critical applications, a backup compressor can be stored on site. With nothing more than a few hours of manual labor, the compressor can be replaced and the HVAC system placed back online.

The Turbocor compressor is an exciting technology that provides solutions for hospitals and other health care facilities. To learn more about Danfoss Turbocor, visit our Web site at [www.turbocor.com](http://www.turbocor.com).



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