

# Application News

## Turbine Flow Meters Keep Hospital Backup Generators Up and Running

**Industry:** Industrial

**Service:** Flow Rate/Total

**Fluid:** Diesel Fuel

### Overview

Hospitals serve as the community life support system during times of crisis, and are an important provider of general healthcare services. Should a power outage occur, electricity is still needed for operating monitors, oxygen pumps and other necessary healthcare tools. This is where the importance of power generation systems comes in. When the power is out, hospitals require an alternative source of electricity to keep vital equipment up and running.

### Situation

Most modern hospitals today have enlisted the help of diesel-powered backup generators. Depending on the size of the hospital and the amount of fuel stored on site, these types of generators can maintain power for at least 24 hours. Because Federal mandates require documenting generator NOx emissions, backup power systems must be equipped with accurate flow measurement devices to monitor total diesel fuel usage and current fuel usage burn rate.

However, not all flow measurement instruments are suitable for hospital backup power generation applications. Flow meters used in this environment must employ “fail-open” technology to ensure the availability of diesel fuel flow—and thus avert the possibility of starving generators.

### Solution

To help a large hospital in Wisconsin maintain a reliable and efficient backup power source, Flow Technology provided a solution comprised of FT Series turbine flow meters and CA03 signal conditioner, paired with an FC4000 Series rate/totalizer. The FT Series meters offer high accuracy, compact size and fast speed-of-response. The CA03, when used with an RF pickoff, generates a carrier frequency modulated by the rotating blades of the turbine meter. This eliminates the effects of magnetic drag and greatly extends flow meter range and linearity.

The FC4000 can provide two levels of flow rate and total. Two pulse input channels enable the unit to handle two independently scalable flows and display the net, difference and ratio rate/totals. Five-digit floating decimal scale factors allow the flow rate total to be displayed in engineering units, and the fuel burn rate to be indicated in units per second, minute or hour.

### System Description

On the hospital backup power system, one-half inch turbine flow meters were installed on diesel supply and return lines for two 1.5 MW Fairbanks Morse emergency power gensets. These flow meters provide real-time fuel measurements with NIST-traceable flow data. Thanks to the proven turbine meter design, there are no impediments to the flow of diesel fuel in the event of a failure. The gensets can continue running to support the operation of critical life safety equipment.

### Technical Information

|              |  |
|--------------|--|
| Flow Meter:  | FT8-8NEXB-LEA-5  |
| Electronics: | CA03-3-C-0000B6 (pickoff) and<br>FC40-1A3BA (rate/totalizer) |
| Flow Rate:   | 0.08-8 GPM   |
| Fluid:       | Diesel Fuel  |



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