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## Cartridge valve handles challenging shutoff applications

Hemiwedge Valve Corp. has developed and manufactures a new patented-design valve. The Hemiwedge Cartridge Valve is claimed to combine the benefits of quarter-turn valves with the durability of gate valves. The unique valve is well suited for shutoff-valve applications such as for salt dome storage wells, which can encounter saturated brine with solid small chunks of salt.

Texas Brine has two of the new cartridge valves installed in its Almeda Storage Terminal on the south side of Houston, Texas. One is a 6-in., full-port ANSI 600 Class valve installed in the main brine line on the storage well. Brine is pumped into the well cavern to force the butane out of the cavern. When butane is pumped into the cavern, the brine is forced out. The installation also has a 2-in., full-port ANSI 600 Class valve installed as a bypass to the 6-in. valve.

**Features.** The Hemiwedge Cartridge Valve uses a tapered hemispherical closure member (hemi) that rotates around a fixed core and wedges into a fixed seat to affect a seal. The closure member is rotated a quarter turn by a valve stem that may either be



**FIG. 3** New cartridge valve combines benefits of a quarter-turn valve with durability of a gate valve.

operated manually with a wrench or gear operator or automatically with pneumatic, hydraulic or electric actuators.

The valves have a floating hemi for low-pressure applications, in which the upstream pressure assists the seating. The valve also has a trunnion design hemi for high-pressure applications to significantly reduce torque requirements. Both designs provide a positive, bidirectional, bubble-tight shutoff due to the tapered hemi wedging into the seat during the final 10° to 15° of travel.

The constant, fixed position of the core within the body provides protection of the

seating surfaces when the valve is opened and minimizes turbulence as the valve is opened or closed, compared to designs with a rotating ball or plug (Fig. 3).

The seat may be resilient or metal seated. The packing may be configured with O-rings, die-formed graphite rings, die-formed graphite rings with bolted gland, Teflon V-rings or Teflon V-rings with injectable packing. The rotation-only stem results in low emissions compared to rising-stem or rising- and rotating-stem designs. Further, the valve may be operated significantly faster than rising-stem valves and even faster than quarter-turn valves.

The valve's defining feature—its cartridge design—allows all internal parts (core, hemi, seat, stem and bushings) to be affixed to the bonnet and removed by simply unbolting the bonnet fasteners. This allows quick and easy serviceability, reducing downtime for maintenance. No special tools are required for replacing the cartridge. The entire process takes less than 15 minutes. No routine lubrication is required for normal operation.

Hemiwedge Cartridge Valves are available in the following sizes and pressure classes: 2 in.—8 in. full port, 150-900 Class and 3 in.—10 in. reduced port, 150-900 Class.

Body materials are carbon steel (ASTM A216 Grade WCB and WCC), impact-tested carbon steel (ASTM A352 Grade LCC), stainless steel (ASTM A351 Grade CF8M), 22 Cr and 25 Cr duplex, monel and inconel. Trim materials are carbon steel, NACE, SS and monel. Seat types are Teflon, elastomers and PEEK.

The valves are available in a temperature range of -50°F to +400°F (-46°C to +204°C).

## REVOLUTIONIZING THE VALVE INDUSTRY

### Combining the Benefits of Quarter Turn Valves with the Durability of Gate Valves

- Innovative Technology**

Unique, patented mechanical closing principle for reliable tight shutoff at high and low pressures. Operating the valve stem rotates the hemispherical closure member (Hemiwedge) a quarter turn, moving it between the core and the valve seat and loading the seat during the final closing action.

- Superior Performance**

The Hemiwedge's unique design principle protects the seals and seating surfaces from media flow, providing greatly increased service life and reliability.

- Unique Cartridge Design**

All trim components are housed in a single pretested cartridge which can be easily replaced without pulling the valves or requiring special tools. Rapid replacement reduces maintenance costs.



## HEMIWEDGE® CARTRIDGE VALVE

### Innovative Valve Technology

Hemiwedge Valve Corporation is U.S. based, customer-focused and ready to take on your most critical applications. Join the valve revolution today.  
 Call 936-539-5770 or visit [www.hemiwedge.com](http://www.hemiwedge.com).  
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Patents: 4,962,911; 5,333,834  
Other patents pending