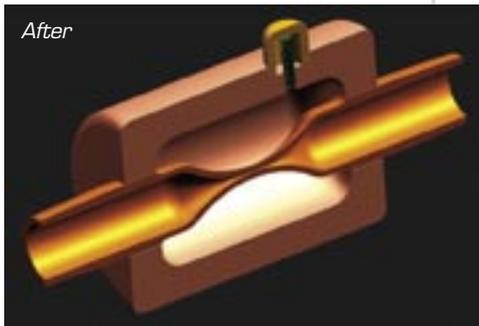
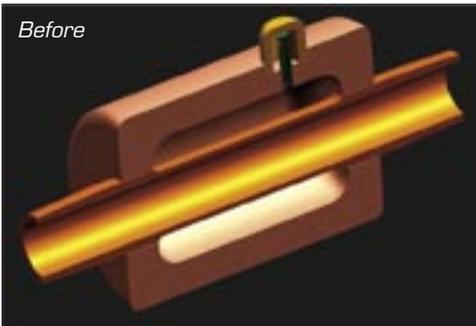




Passive High Temperature Sealing Device

Scientists at the Savannah River National Laboratory (SRNL) have designed a sealing device that can act as a high-temperature shutoff valve for pipes and ducts. This passive device can be used to stop the flow of gas or liquid in conditions of sudden overheating.



Quickly stops process flow

The device is a ring that can be slipped over the outside of a pipe. A cavity formed between the ring and the outer wall of the pipe is filled with gas. The wall of the pipe is thinner than the outer wall of the ring. When exposed to high temperature, the gas in the cavity expands, pinching the thinner pipe wall to stop flow within the pipe.

In another configuration, the ring can be installed above the stem of a gate valve. In this case, the ring has a thinner lower wall and a thicker upper wall. When heated, the expanding lower wall of the ring will force the stem downward to push the gate into the pipe.

Seals process lines

To use as a seal, the ring can be inserted inside a pipe with the thinner wall in contact with the inner wall of the pipe. High temperature will cause the thinner wall to expand outward, providing a tight seal against the pipe. The expanding ring wall will accommodate irregularities in the pipe wall.

at a glance

- temperature activated
- provides circumferential sealing
- maintains continuous force
- conforms to irregular shapes and surface conditions
- expands to fill large gaps

Adaptable to varying process parameters

Choice of material for constructing the ring would depend on specific process parameters, such as corrosivity, activation temperature, and elevated temperature mechanical properties of the valve or process system. The cavity may be filled with a gas, such as nitrogen, with a volatile non-corrosive liquid, or with a volatile solid.

Technology transfer

SRNL is the applied research and development laboratory at the Savannah River Site (SRS). With its wide spectrum of expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting edge technology delivers high dividends to its customers.

SRNL and SRS are managed for the U.S. Department of Energy by Washington Savannah River Company (WSRC). WSRC is responsible for transferring technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

Partnering opportunity

WSRC invites interested companies with proven capabilities in this area of expertise to enter into a licensing agreement with WSRC to manufacture and market this device as a commercial product. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention. Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

for more information

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