

Piping Connector

Reflange® Inc., Houston, Texas is a leading company in the field of high pressure piping connector technology. Its metal seal piping connectors are widely used in the hydrocarbon processing, chemical, power, aerospace and other industries, in processes where pressures reach 30,000 pounds per square inch and temperatures top 1650 degrees Fahrenheit.

One of Reflange's latest products, the T-Con® connector, is a commercial spinoff of a connector specially developed for the demanding requirements of a complex of high pressure piping at Stennis

that its experience with similar connectors was that they were not suitable for use on lines that carry high pressure cryogenic (extremely low temperature) fuels; similar connectors leaked when the propellant lines were chilled to pretest temperature of 400 degrees below zero Fahrenheit.

Haynes Haselmaier, an engineer with Johnson Control World Services, the SSC facilities contractor, contacted several manufacturers of clamped connectors, advised them of concerns about leakage and sought solutions. One — Reflange, Inc. — expressed interest in customizing an

CTF locations where severe thermal shock was anticipated.

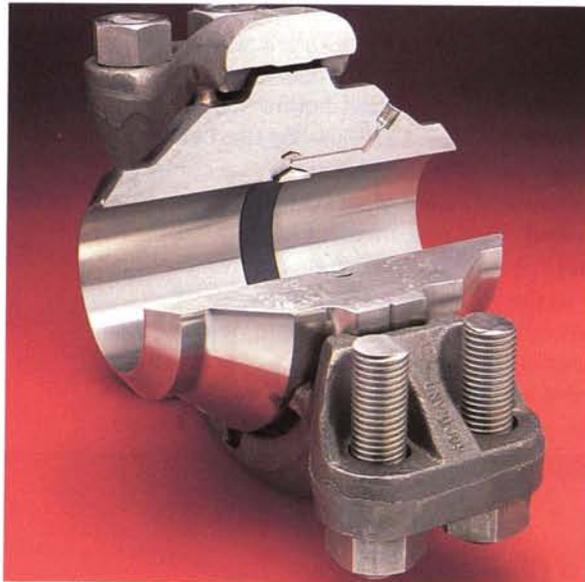
The commercial T-Con, with the secondary face seal for thermal shock applications in industrial service, includes an annular port that permits testing, monitoring or collecting any emissions that might escape the primary seal during severe thermal transition.

Below, designer Kathy Hammett prepares a design for a custom application; in the foreground are the two different sized seals employed in the T-Con. •

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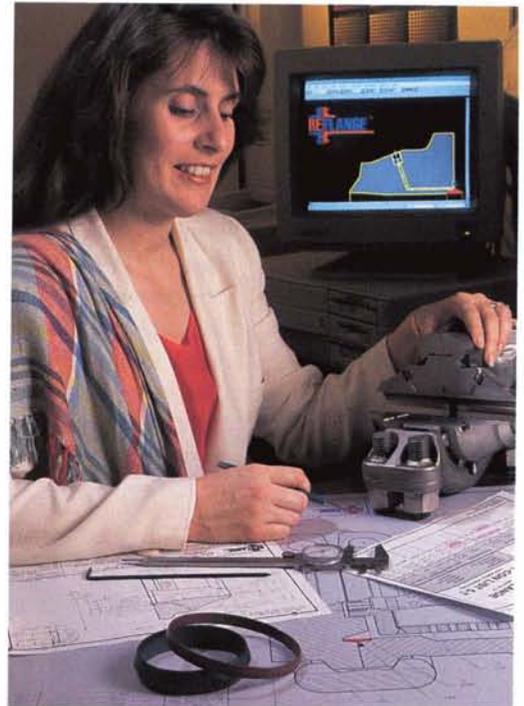
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Space Center's (SSC) Component Test Facility (CTF), where NASA tests rocket engine components.

In the design phase of the CTF's development, it was originally planned to use conventional clamped connectors on the CTF piping lines that carry rocket propellants and other fluids/gases. But Marshall Space Flight Center commented

existing design to include a secondary seal more tolerant of severe thermal gradients. After tests of a prototype at SSC, and further refinement of the secondary seal arrangement, Reflange produced a connector that solved the problem. NASA officials elected to use the new T-Con connector (*left*) in all



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