

Dynamic Corrosion Test System

ALLOY EVALUATION AT HIGH TEMPERATURE AND PRESSURE

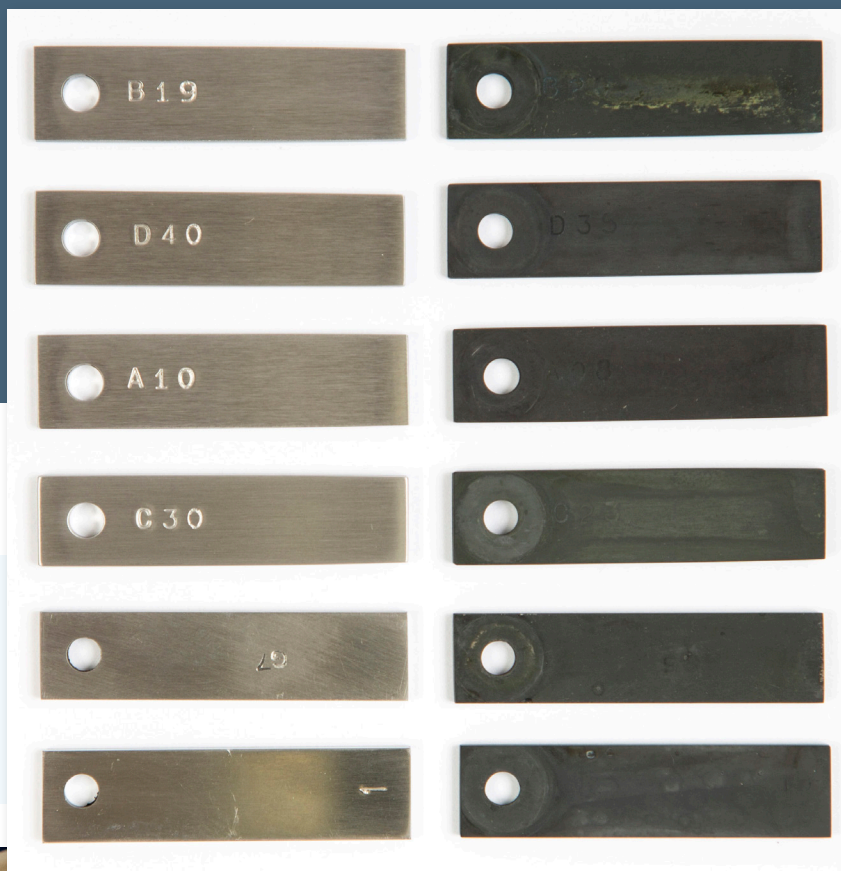


THE EERC HAS DEVELOPED a novel test system to dynamically evaluate alloy coupons in environments that mimic supercritical CO₂ cycles. Static test environments, such as autoclaves, do not fully represent the dynamic conditions of exposure. This system improves on the autoclave technique, yielding more representative results of actual processes.

The system tests up to 18 coupons at a time with dimensions 3.2 x 12.7 x 50.8 mm (0.125 x 0.5 x 2.0 in.).

MAIN COMPONENTS OF THE SYSTEM

- Gas preheater
- High-temperature reactor
- Heat exchange section
- Acid removal/sampling section



COUPONS CAN BE EXPOSED TO

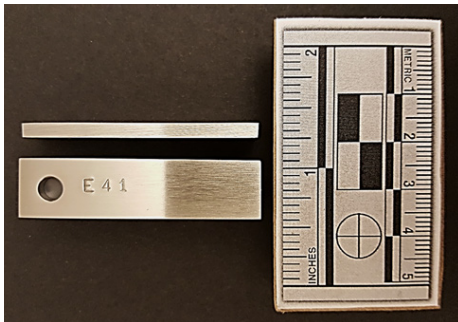
- Pressures up to 300 bar (4350 psi)
- Temperatures up to 750°C (1380°F)

Gas mixtures can be combined to simulate actual environments.

Downstream of the reactor lies the heat exchange section. This section experiences acid condensation as temperature drops along its length. The section can be used to study acid condensation and composition. Condensed liquid flows to the acid removal/sampling section where acid samples can be taken for analysis.

The computer-controlled system can be operated for thousands of hours and is available for your organization's use. Contact us for more information on how this system will benefit your bottom line.

- Haynes 282
- Haynes 230
- Inconel 625
- Inconel 617
- Inconel 740H
- Stainless steel 316



Reactor Gas Flow

Support Hanger

Coupon

Ceramic Bolt, Nut and Washers

The diagram illustrates the specimen assembly. A vertical support hanger is shown on the left, with a coupon attached to it. The coupon is a rectangular block with a central orange section and green sections on either side. The coupon is held in place by ceramic bolts, nuts, and washers. A circular inset provides a detailed view of the coupon's internal structure, showing a grid of green squares with orange and grey sections. Arrows indicate the relationship between the labels and the corresponding parts of the assembly.



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