Corrosion Test Coupon Racks

GE Corrosion Test Coupon Racks provide a convenient means of monitoring the progress of corrosion in systems such as boilers, condensate lines, open recirculating cooling water, closed circulating hot or chilled water systems, etc. The corrosion test rack creates a side stream off the main system, in which corrosion test coupons can be exposed to system water under controlled and reproducible conditions.

The corrosion coupons can be periodically removed and either visually examined or returned to the laboratory for determination of weight loss, corrosion rate and pitting severity.

Mild steel Corrosion Rack

The Mild steel Corrosion Rack is recommended for corrosion monitoring in raised temperature installations such as high temperature water, recirculating process systems, etc. The Mild steel rack is constructed of 1" (2.5 cm) threaded black iron pipe. It is supplied with four 1" (2.5 cm) MNPT steel mounting plugs,

Maximum Pressure: 150 psig (10.3 Bar)

Maximum Temperature: 160°F (71°C)

PVC Corrosion Rack

The PVC Corrosion Rack is recommended for corrosion monitoring in low temperature systems such as open recirculating cooling water systems, chilled water, process water systems, etc. The PVC Rack is constructed of 1" (2.5 cm) threaded PVC pipe.

Figure 1

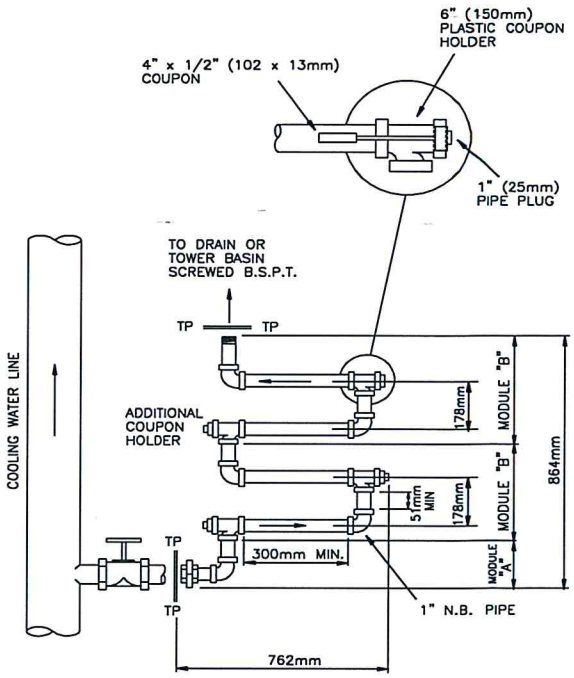

Table 1

Flow Rate	Velocity	
	1" (2.5 cm) PVC Rack	1" (2.5 cm) Mild steel Rack
5 gpm (19 Lpm)	2.2 ft/sec (0.67 m/sec)	1.9 ft/sec (0.58 m/sec)
8 gpm (30 Lpm)	3.6 ft/sec (1.1 m/sec)	3.0 ft/sec (0.91 m/sec)
10 gpm (38 Lpm)	4.5 ft/sec (1.4 m/sec)	3.7 ft/sec (1.3 m/sec)
12 gpm (45 Lpm	5.4 ft/sec (1.6 m/sec)	4.4 ft/sec (1.4 m/sec)

Flow Vs Velocity Chart

Velocities in BOLD indicate standard flow controller supplied with that rack.

Options

A Corrater probe may be installed in the corrosion rack to provide instantaneous corrosion readings, to supplement the data provided by the weight loss corrosion coupons.

Corrosion Test Rack Installation

1. The Corrosion Test Rack may be assembled for vertical mounting as shown in Figure 1, or a horizontal position, Figure 2. Items shown in single line schematic are not furnished.
2. Attach the corrosion rack to a wall or column. Do not suspend it from the supply and return piping alone.
3. To avoid air binding, pipe the corrosion rack so that water will flow upward through it, and in such a way that it will remain full of water at all times and not backdrain when the main recirculating system shuts down.
4. Install gate or ball-type isolation valves on both sides of the rack.
5. Do not use this bypass loop for any other purpose, such as chemical injection, or mounting of conductivity or pH sensors.
6. For measurement of corrosion at points of highest temperature in the circulating system, the water supply to the corrosion rack should be from the exit of the heat exchanger(s). Average corrosion rate measurements may be obtained by supplying the corrosion rack with water from the main cooling tower riser, etc.
7. Return water may be piped to the recirculating pump suction header, cooling tower basin, or other suitable point with sufficiently low pressure to ensure flow through the rack.
8. Flow velocities should not be variable. Avoid extremely high or low velocity conditions. A Dole or other suitable flow control valve is recommended to ensure constant velocity.
9. For PVC Test Racks with transparent viewing sections, install the slotted polyfoam pipe insulation over the transparent sections to discourage algae growth.

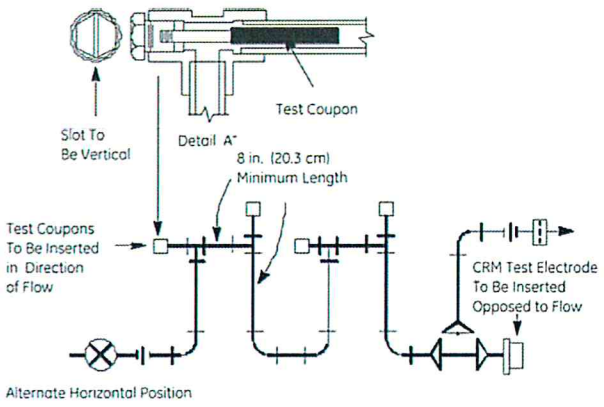

Figure 2

Corrosion Test Coupon Installation

1. Keep the metal test coupon in the special treated envelope before and after exposure.
2. Do not leave fingerprints on the coupon. They will cause false corrosion readings.
3. Attach the coupon to the mounting stud using the special nut and bolt provided.
4. Corrosion coupons should always be installed so the water flows first over the plastic mounting rod and then over the coupon. Water flowing directly onto the coupon may cause erosion-corrosion and lead to false weight loss measurements.
5. Use only Teflon (Teflon is a registered trademark of DuPont) thread sealing tape on mounting plug threads. Do not use pipe dope.
6. The witness slot on the coupon mounting plug should be parallel with the flat surface of the corrosion test coupon. Install the mounting plug in the tee and align the witness slot (and coupon) in the vertical position as shown in Figure 1.
7. Note the date of installation on the back of the white Tyvek Coupon Return Envelope (ENG 322) and retain both the Coupon Return Envelope and the treated brown envelope.
8. When removing, each test coupon should be carefully dismounted from the holder and immediately dried with a blast of hot air or blotted with a paper towel or clean rag. Do not clean. Reinsert the coupon in the treated brown envelope in which it was received.
9. Complete the back of the white Coupon Return Envelope, insert the treated brown envelopes, with coupons inside, and return the envelope with the coupons to the Woodlands laboratory.