

Rotating Wheel Corrosion Oven



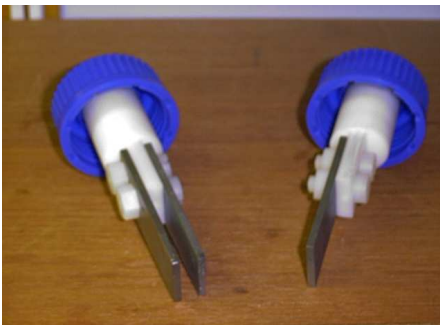
PMAC Systems provide this apparatus to support one of the original techniques of evaluating the effectiveness of corrosion inhibitor performance, which still holds a useful place within today's sphere of electrochemical analysis. Not only is it useful as a method in its own right it also compliments that of more modern ones. Some of those advantages are:

- Many samples can be cost effectively tested at the same time, normally in the region of 24
- Being a comfortable sample volume to handle.
- Sour analysis can more easily be conducted as the test is carried out in sealed sample cells.
- Long-term tests (days, weeks or months in some cases)

can be conducted with minimal supervision.

- Effect of Pitting, stress cracking and interface corrosion can be assessed far easier by coupon inspection after the exposure period.
- Since the coupon is alternately immersed in the crude oil and then the brine due to the rotational effect of the wheel partitioning tendencies of the inhibitors tend to be more realistic and compare better with that of field results.

PRINCIPLE OF OPERATION:



A weighed metal coupon (it is preferable to have a coupon with a large surface area to weight ratio rather than the reverse) is placed in a glass jar or cell and filled with the required ratio of deoxygenated (nitrogen / carbon dioxide saturated.) brine and crude, the jar is then allowed to overflow slightly to eliminate all gas space from the bottle. The desired chemical inhibitor dosage is then injected into the lower liquid level and the bottle capped tightly. During the filling operation both the jar and the filling chamber must be continually purged with carbon dioxide to eliminate oxygen ingress into the cell which would otherwise cause oxidation of the coupon and invalidate the test. This is then repeated until the required numbers of products have been prepared; it is normal to conduct each test in triplicate to reduce statistical error.

- The bottles are then placed in the holding cups situated around the axis of the wheel shaft and fixed into place with the holding caps.
- The wheel is then heated and rotated at the desired temperature and speed for the duration of the test
- On completion of the test each coupon is removed from the bottle, cleaned and dried then weighed to four decimal places.
- A standard weight loss calculation is then applied taking into account the weight loss, exposure period and coupon surface area to produce a corrosion rate that can be expressed in MPY or MILS per year.