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Evaluating Corrosion Protection Systems for Cast Iron Parts

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Background: Customer sent a large cast iron piece to Cortec for evaluation. The part was to be cut in smaller pieces such that it could be tested in multiple rust preventive systems.

Sample Received: One large cast iron piece

Method: ASTM D-1735 Water Fog (38C, 95-100% relative humidity)

Materials: Cast iron piece (cut into five smaller pieces)
VpCI-126 Blue film
VpCI-130 foam
BioCorr Rust Preventative
Non-VCI polyethylene (PE) bags

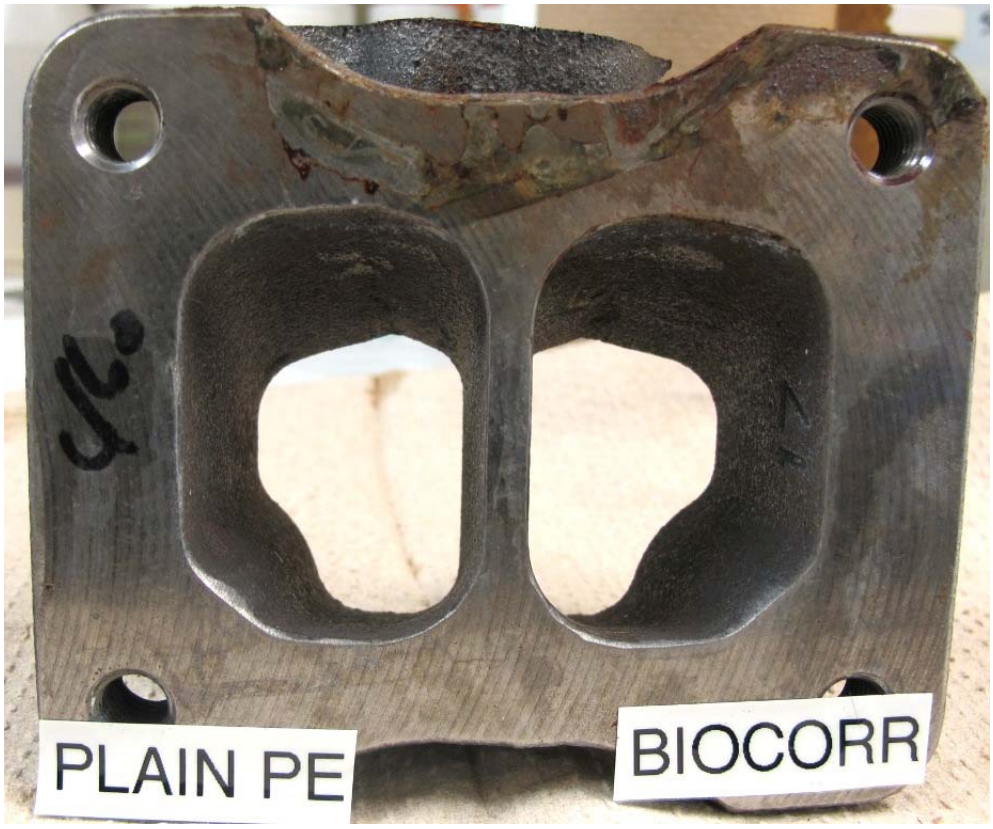
Procedure: The following procedure was used:

1) Prior to testing, the large cast iron piece from customer was cut into five smaller pieces.
2) After cutting, each piece was cleaned thoroughly with laboratory grade methanol to remove any metal shavings and cutting fluids.
3) The five cast pieces were then prepared for testing as follows:
    a. Packaged in plain PE Ziploc bag, no VCI involved.
    b. Sprayed with BioCorr, allowed to air dry, packaged in plain PE Ziploc bag.
    c. Packaged in VpCI-126 bag, which was heat sealed.
    d. Packaged in VpCI-126 bag with 1" square of VpCI-130 foam inside; bag was heat sealed.
    e. Sprayed with BioCorr, allowed to air dry, packaged in VpCI-126 bag, which was heat sealed.
4) After preparation, all cast pieces were allowed to sit in laboratory conditions overnight.
5) All cast pieces were then placed in ASTM D-1735 cabinet.
6) Cast pieces were visually inspected periodically.
7) After 360 hours, cast pieces were removed from ASTM D-1735 cabinet.
8) Cast pieces were visually inspected and photographed.

Results: The following results were found:

Treatment	Time to Corrosion (Hours)
Plain PE bag	<24
BioCorr + Plain PE bag	96
VpCI-126	216
VpCI-126 + BioCorr	312
VpCI-126 + VpCI-130	360

Photos:



Interpretations: VpCI-126 provided a significant increase in protection on cast iron parts. This was true both used alone and in combination with BioCorr, when compared to non-VCI polyethylene. The best corrosion protection in this test was provided by a combination of VpCI-126 film and VpCI-130 foam.