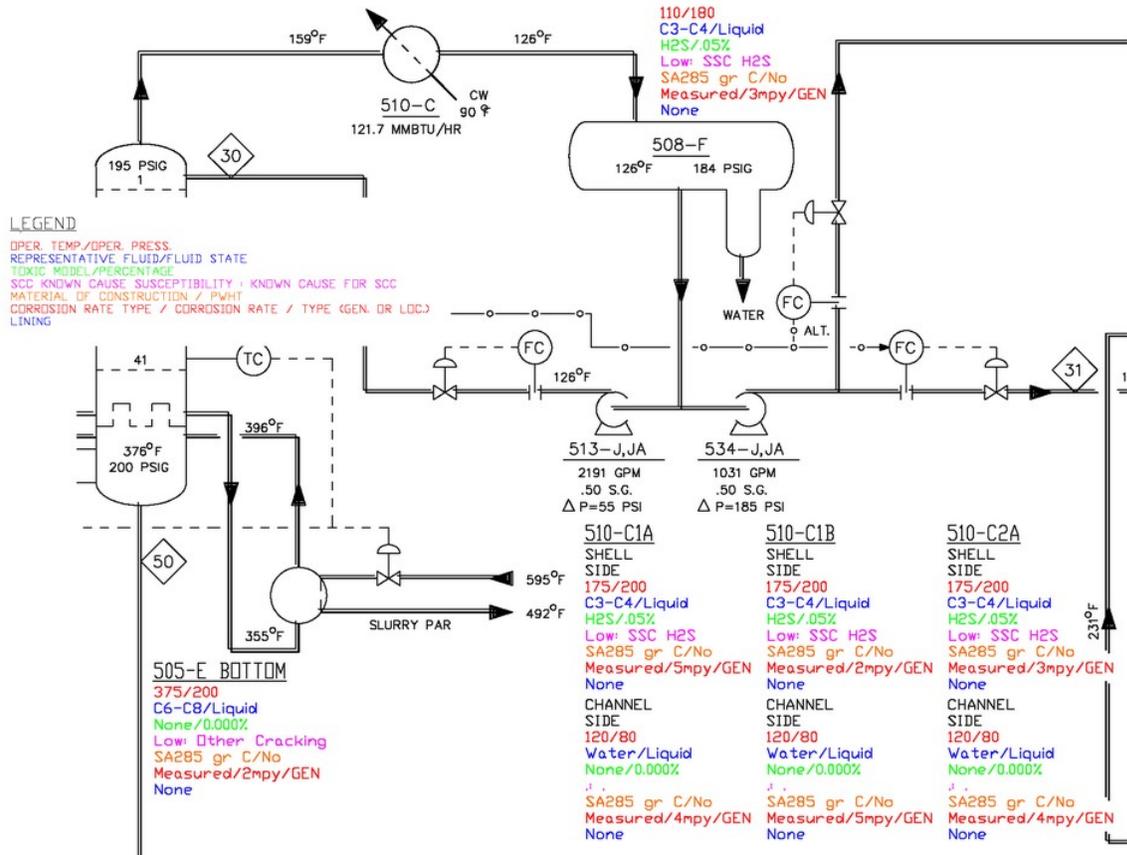


Independent Review of Designs, Specifications and Test Reports

It is always easier and cheaper to erase lines on a drawing than to repair or replace failed components.



WebCorr has [NACE certified Corrosion Specialist](#) providing professional corrosion services including: corrosion design review, corrosion consulting, cathodic protection design, in-house training, online and distance learning corrosion courses, corrosion diagnosis, failure analysis, corrosion expert witness in litigation and arbitration cases related to corrosion, materials, metallurgy, paints & metallic coatings.

Our NACE certified Corrosion Specialist can conduct a complete and detailed corrosion study and review of your design to identify potential risks of corrosion between various materials in the system and recommend mitigation measures including alternative materials and effective protection methods.

WebCorr provides the following document preparation, third party independent review and endorsement services:

- Development, independent review and endorsement of
- Corrosion Study,
- Corrosion Design Basis Memorandum (CDBM),
- Corrosion Management Plan (CMP),
- Corrosion Monitoring Plan and Philosophy,
- Corrosion Control Manual, Corrosion Management Philosophy (CMP),
- Corrosion Control Philosophy,
- Material Selection Guide (MSG),
- Material Selection Diagram (MSD),
- Material Selection Summary Table (MSST).
- Cathodic Protection Design.
- **Third-party review of designs, drawings and technical specifications to identify potential corrosion risks, the compatibility of materials, the forms of corrosion and their mitigation.**
- **Third-party review of design and specifications on materials, processes, cathodic protection and coatings to identify potential corrosion failures and any clauses in the specification that may lead to potential dispute, arbitration or litigation among the parties involved. Corrosion liability can be avoided through proper specifications.**
- Independent 3rd party verification/validation of modeled/predicted corrosion growth rates. In CO₂ corrosion modeling, there is no such thing that one model fits all pipeline conditions. It is simply wrong for a contractor/consultant to use one (1) modeling software for all clients and all pipeline conditions. At WebCorr, our NACE certified Corrosion Specialist will validate your modeled/predicted corrosion growth rates using properly selected models, laboratory test results and field data in the literature. Our verification/validation report will come complete with all supporting

data and reference documents. If necessary, we can train your engineers on CO₂ modeling. Click the link below to see details on our 5-day training course on CO₂ modeling:

[CO₂ Corrosion Modeling for the Prediction of Internal Corrosion in Oil Gas Pipelines](#)

- **Third-party review of contracts to identify potential corrosion liabilities and advices on how to deal with them**
- **Third party review of test reports and interpretations of test results**
- Technical bid evaluation support
- **Analysis of raw data from corrosion tests (both DC polarizations & AC EIS impedance measurements) and interpretation of corrosion test results**
- **Expert witness and support in litigation and arbitration matters related to corrosion, materials, metallurgy, paints & metallic coatings including thermal spray metallizing, galvanizing, anodizing, chromating, phosphating, electroplating, electroless plating, mechanical plating, and sheradizing or diffusion coating.**

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[Service Quality Guarantee](#) - **Why You Need Your Corrosion Consultant to Have NACE Certification**

What does it take to become a NACE certified Corrosion Specialist?

NACE stands for **National Association of Corrosion Engineers (USA)**. It is the largest corrosion professional institution in the world. With reference to Corrosion Specialist certification, [NACE certification document](#) states:

"The Corrosion Specialist is NACE Institute's highest level of certification.

This certification is geared towards very experienced corrosion control personnel,

with broad and extensive expertise, in both the theory and practice of multiple areas of corrosion and corrosion control, and capable of performing work at a very advanced level."

The hierarchy structure of NACE certification is shown below (click on each title to see the detailed requirements):



The highest level of certification by the world's largest corrosion professional institution is your best guarantee of the highest quality of services you can expect from WebCorr Corrosion Consulting Services. Corrosion consultants with NACE certification at the Corrosion Specialist level can save you a lot of money and make your life a lot easier. [Read this story on the mis-diagnosis of Stray Current Corrosion.](#)

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Sent: Friday, May 14, 2004 4:43 PM

Subject: Seeking for Independent Review

We need your independent review on the topics shown below. Pls take a look at it and justify on how soon you can give us the review in writing. Also pls let us know what are the charges for this review. If you need further information to justify any thing, pls let me know. I'll also send you the thesis extract later on since i'm still preparing some extract of it. However, i've also attached a part of it in the word document.

A. We need your professional view on the following:

- (1). Deposition of scale is expected to occur after only about 200 to 400 hours of

chiller operation.

(2). Hence, based on 12 hours daily operation 365 days per year, we can work out that the BEST PRACTICE to do manual cleaning is 22 times/year.

B. For Anodic Corrosion Effect in condenser tubes. We need your professional view on the following (please refer to my powerpoint slides attached)

(1). How serious is Anodic Corrosion effect on the normal operation of the condenser tubes?

(2). For heat exchanger / condenser tubes maintenance, what do you think is the best method / strategy in preventing fouling and scaling?

(3). Our company has developed an automated heat exchanger cleaning system for the prevention of fouling and scaling. You can check out our website at [removed] to have a basic understanding of the system. We need your independent review of our system as compared to systems available in the market. If you need further information to justify, please let us know.

C. The normal life of industrial chiller is quoted to be around 15-20 years as referenced to the following materials [removed]. How reasonable is this statement in the context of local and overseas environments?

Thanks. Best Regards,

[name removed]

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Subject: Design Consultancy Enquiry

Date: Wed, 8 Sep 2004 18:09:06 +0200

Dear Sirs,

we are interested in contracting your services for an independent design consultancy review for two industrial shell and tube heat exchangers (AET type). These shell and tube heat exchangers are being supplied by our Company, [name removed] (Engineering Contractor Company), and the final Client is [company name removed].

In order to give you a brief idea, the materials in question are:

- Tubesheets: Carbon Steel titanium clad from the tube side process and bundle cage in SS 316 L (SS 316 L baffles, tie rods ,spacers, sealing strips and bundle runners instead of carbon steel).

- Tubes: Ti

- Baffle plates: SS316 L
- Process shell side fluid: Hydrogen (Wet Sour/HIC Service)
- Tube side fluid: Sea Water
- Shell Material: KCS HIC Resistant (Full details such as datasheets, specifications and drawings will be provided later).

The consultancy would consist of a design review of this equipment with particular regard to material choice for tubes, baffles and tubesheets with respect to the possibility of galvanic corrosion and/or hydrogen embrittlement cracking between tubes, baffles and tubesheet materials owing to the design conditions and process fluids. We would appreciate it if you could provide us with a quotation and/or indicate your standard rates for this type of consultancy including the delivery date for your final technical report.

We look forward to hearing from you.

Best Regards,

[name removed] Project Engineer [company name removed], Heat Transfer Division
Madrid (Spain)

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