



My Corrosion Journey or My Life in Rust.

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How it Started.

- Way back in the late 1970's, I saw an advert for an MSc degree in Corrosion Engineering at UMIST and applied.
- I was accepted onto the course and completed it in 1979. This was followed by a PhD in corrosion under automotive paint using, amongst other techniques, the then novel electrochemical method known as a.c. impedance.

Then,

- This was followed by research contracts into the repair of re-bar in concrete; energy transmission through metals and paints due to impact and abrasion; water treatment chemistry, etc.
- During the pleasant days of research life, it slowly became apparent that I would eventually have to find a “proper job” in the future.

Beginning Work.

- My (late) colleague Dr Les Callow and I had formed a small business, making corrosion monitoring instrumentation and probes.
- Gradually we were asked to carry out more and more laboratory tests using the equipment and then many failure investigations.
- This gradually changed into full time consultancy work.

Institute of Corrosion.

- At that time, women were rare in the corrosion world and so I applied for (and obtained) Professional Membership of the Institute of Corrosion.
- This added further credibility to my CV.
- Joining the NW branch of ICorr increased my network of contacts.

Quiz

- To keep everyone awake during this talk, there will be a few corrosion based quiz questions included.
- They all assume only a basic knowledge of corrosion, so experts may find them difficult to answer!
- If you are not a corrosion professional or are used to working in only one branch of corrosion, you may enjoy the challenge.
- Answers at the end of the talk.

Life in Corrosion is Varied!

- Potential clients phone and email with strange and interesting questions.
- “Why does my pipe have a hole in it”?
They are surprised when you ask for more information!
- “Someone threw an old rusty bicycle into my garden. Is that why my gate has now gone rusty”?

The Rust Sample.

- Clients say they will send you a section of the corroded item.

The “Corroded Bit” arrives.



- Which of the following type of compounds is not a water treatment additive?
 - A. Sulphate.
 - B. Nitrite.
 - C. Chloride.

Cap on a Barrel of Vape Liquid.



Mixed metal Corrosion.



Corrosion on a Winch Truck.



- Where will cathodic protection never work?
 - A. Under full immersion.
 - B. Under cyclic wet / dry conditions.
 - C. At 60% Relative Humidity.

Filiform Corrosion on an Aluminium Window Frame.



Cladding Paint.



Corroded Edges at the Sea Side.



- Millscale is:
 - A. Anodic to the underlying steel.
 - B. Cathodic to the underlying steel.
 - C. Irrelevant to the underlying steel.

Deck Pipes.



Jetty Loading Arm.



- Thinking about steel, zinc and aluminium, which is the most electropositive?

A. Aluminium

B. Steel

C. Zinc

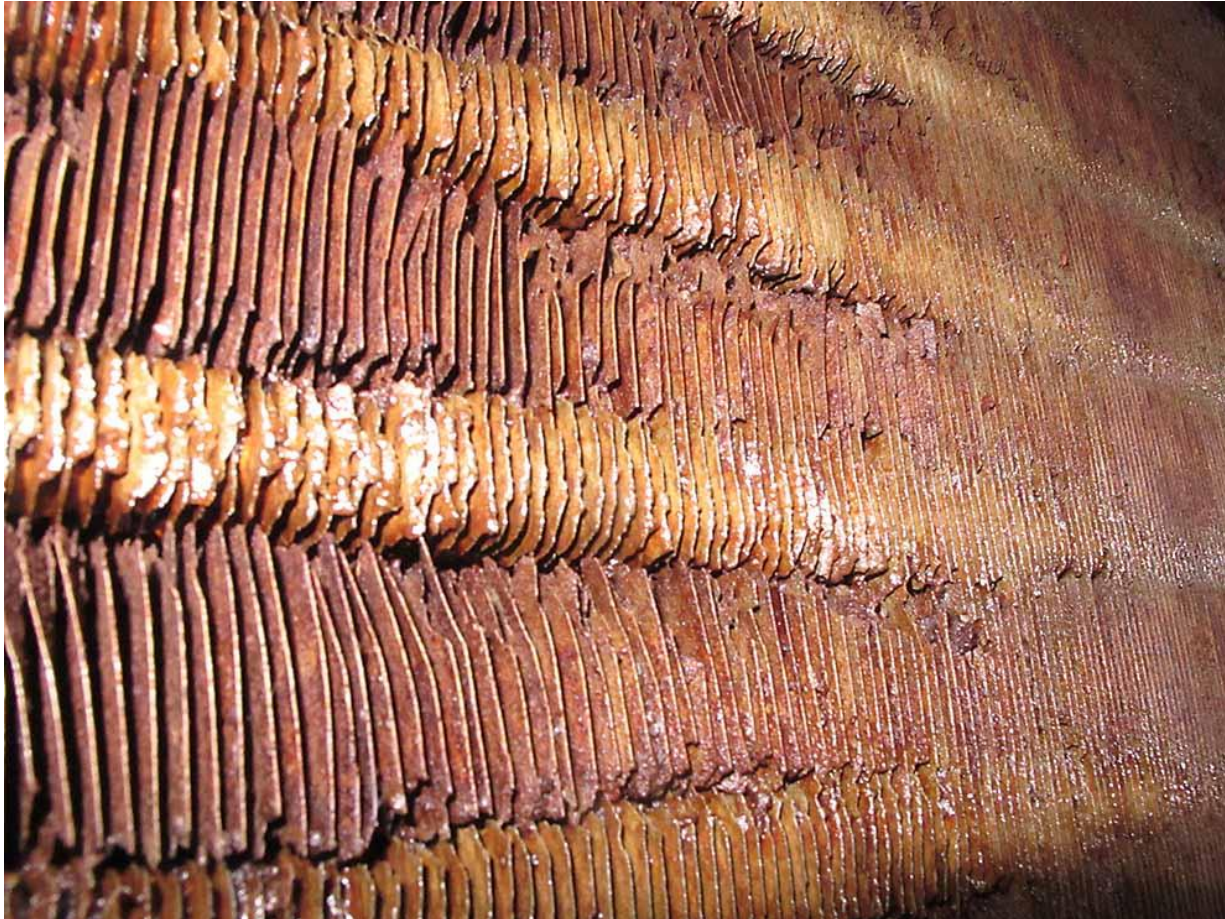
Corrosion is a Strong Force.



Pump Component.



Heat Exchanger in a Fabric Manufacturer Plant.



- The Pilling-Bedworth ratio is:
 - A. The ratio between the volume of oxide and the original metal volume.
 - B. The ratio between the thickness of a plated metal and the original metal thickness.
 - C. The ratio between the depth of a pit and the original pipe wall thickness.

The Fun Aspects of Corrosion Engineering.

- Flying to the USA on Concorde.
- Examining the corrosion at the very top of Blackpool Tower.
- Going through the Panama and Suez canals on a tanker full of jet fuel.
- Visiting a hot dip galvanising plant in China.
- Travelling to new countries and having a day for sightseeing.
- Enjoying a new challenge every week.

The Less Attractive Aspects of a Life in Rust.

- Examining corrosion in an industrial composter.

Industrial Composting – Material Arrival.



Challenges and Drawbacks.

- During my ship inspection days:
- Being covered in cargo whilst inspecting ships; black with coal dust, white from china clay, red from iron ore and slippery soya beans!
- Travelling for 27 hours and being expected to work for the next 12. Thankfully that is rare these days.

Cargo Ship with Soya Beans.



Challenges of Working with Rust.

- Almost anything related to cherry pickers.
- The canteen closed half an hour ago, did you want anything to eat?
- Ladies toilets??

How Did the Institute of Corrosion Help my Career?

- Credibility for a young corrosion engineer, especially a young female engineer in the late 1980's.
- Confidence for my late colleague and I to start our corrosion consultancy business.
- Provided access to relevant information and experienced personnel.
- Training courses such as PCI 1-3.

Giving Back.

- NW Branch committee.
- Honorary Secretary and Trustee of the Institute.
- The opportunity to help the next generation of corrosion engineers.
- Providing information and education about corrosion via ICorr FOCE (Fundamentals of Corrosion for Engineers) course.

- Answers

1. C

2. C

3. B

4. B

5. A

Thank You