Plan Overview

A Data Management Plan created using DMPonline

Title: Environmentally acceptable corrosion and scale inhibitors in circulating cooling water systems

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Template: DCC Template

Project abstract:

It is proposed to study the effectiveness of multi-component chemical liquid blends to prevent corrosion and scale formation in open recirculating cooling systems with variation of: temperature, material of protected surface (steel-3, stainless steel AISI 316, copper M5/M7), chemical composition of the synthetic cooling water and inhibitor dosage. The research work is planned to be carried out using: weight loss tests, electrochemical measurements on a multi-channel potentiostat, surface analyses using scanning electron microscopy (SEM) and X-ray Powder Diffraction. The results of the work will be implemented in the industry (possibly at metallurgical enterprises of Ukraine). Investigation of the effect of different reagents on the process of corrosion inhibition in circulating open cooling systems by means of introduction of a chemical in a potentiostat. • It is necessary to evaluate the effectiveness of corrosion inhibitors and scaling depending on water quality, temperature, current density, structural materials and chemical dosages. • Investigate the effect of each reagent on the rate of corrosion processes at cathode and anode. • Obtain and analyse data from polarization curves, draw evaluations and formulate conclusions.

ID: 35459

Last modified: 17-01-2019

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Environmentally acceptable corrosion and scale inhibitors in circulating cooling water systems

Data Collection

What data will you collect or create?

Data (.xls, txt) < 1GB

Different chemical blends will be places under certain conditions in analytical equipment such as potentiostat and results (output) will be recorded.

Each chemical blend will be numerically coded in order not mix samples and results.

Data is planned to be collected at one site where analytical equipment will be installed (Ukraine).

Results will be store in the format YYYY_MM_DD_[blend-#]

For data processing original files will be duplicated and only then processed. Original files must not be modified.

When information will undergo processing and the initial information has to be preserved the file will be copied and a different version will be stored. i.e. 2019_03_15_[blend-725]_v1; 2019_03_15_[blend-725]_v2.

How will the data be collected or created?

Analytical result will be shown by the measuring equipment. Dependant on the equpment used it can eather be automatically recorded by the measuring device or manually recorded by a person performing the experiment.

Data will be collected after each chemical sample will be introduced.

Each experiment will be repeated until consistent result is shown.

Documentation and Metadata

What documentation and metadata will accompany the data?

Metadata will be added to each set of data collected, to ensure that it is understandable and can be correctly read in the future without a doubt.

Metadata will contain the following:

1. Data and location of data collection
2. Methodology
3. Units and measuring equipment used
4. The logic of collecting and storing the data
5. Methods by which the data will be processed
6. Links to articles or other publications created from this data

Ethics and Legal Compliance

How will you manage any ethical issues?

Data collected will not be considered as sensitive information. It will show how well or how bad different chemicals prevent or promote corrosion.

How will you manage copyright and Intellectual Property Rights (IPR) issues?

The data collected will be owned by the sponsour (COAGULANT Pology Chemical Plant ALC), who will be happy to share this information with other parties.

Storage and Backup

How will the data be stored and backed up during the research?

All collected information will not exeed 1 GB of storage.
The collected information (DATA) will be stored on the Cranfield Z drive, that is daily backed up to other sources. Google Drive will be also used for storing this information as a backup.
The data will be password protected to make sure that the data cannot be modified without authorization.

How will you manage access and security?

The data will be password locked, this data should not require any more protection requirements.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

The data has to be stored for the period of 10 years from the moment of collection.
DATA will be stored for the whole period on CORD and there will be no costs assosiated with this a as the amount stored willbe quire small.

What is the long-term preservation plan for the dataset?

DATA will be stored for the whole period on CORD and there will be no costs assosiated with this a as

the amount stored willbe quire small. Data has to be preserved to be able to refer back to it.

Data Sharing

How will you share the data?

Raw and processed data will be shared, it will be openly available on CORD. Data will be available to other parties after iti has bee collected.
Data could be shared with any person who has interest in this research work.
No restrictions apply.

Are any restrictions on data sharing required?

No restrictions

Responsibilities and Resources

Who will be responsible for data management?

Myself (Pavlo Ostreyko) will be responsible for data management and collection.
DMP will be updated on regular basis up upon request.
I will comply with all the data management policies at Cranfield, and will immediately get myself familiarized with any new innovations that might occur.

What resources will you require to deliver your plan?

Computed for data processing.
Training for data prosessing, evaluation and presentation.