



Issue date Dissemination Level Page LAUNCH D1.1.2 Degradation Database User Guidelines.docx 07.04.2023 Public 3/12

Executive summary

A public database for amine degradation data was established during the LAUNCH project. This is a unique platform for sharing and searching for data related to the stability and degradation of amine solvents for CO₂ capture and facilitates knowledge sharing and application of real data in models and simulations of the CO₂ capture process. Data from a range of lab and pilot scale degradation tests are made available and searchable in this database, which is currently administered by SINTEF Industry. The database currently contains 45 different datasets, which are all connected to published literature. In the database, a collection of data, metadata and additional information about setups and experiments can be found and shared. This memo introduces how the database works and how it can be used.



Issue date Dissemination Level Page

Table of Contents

1	INTRODUCTION		5
2	THE	E DATABASE	6
	2.1 2.2	DATABASE DEVELOPMENT TEMPLATE FOR THE ANALYTICAL DATA	6
3	ACO	CESSING THE DATABASE	7
4	ADI	DING NEW DATA TO THE DATABASE	



Issue date Dissemination Level Page LAUNCH D1.1.2 Degradation Database User Guidelines.docx 07.04.2023 Public 5/12

1 Introduction

As part of the LAUNCH project a solvent degradation database is established. In this database the main focus is analytical results of degradation compounds in solvents during bench scale solvent degradation, pilot testing, etc. The first version of the database was based on available literature data, incorporating data from lab to pilot scale, and was later extended with data generated in the project. During the project the access to the database was limited to the project partners, but now as the project is ended the database is made publicly available. This MEMO gives a short description of the database, how to access it as well as how to add new data.

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Issue date Dissemination Level Page LAUNCH D1.1.2 Degradation Database User Guidelines.docx 07.04.2023 Public 6/12

2 The database

2.1 Database development

The database was developed by using Dataverse – Open-source research data repository software framework (<u>https://dataverse.org/</u>). A custom LAUNCH Dataverse repository was established. The database with web portal and REST-API deployed on Azure Cloud (with SINTEF access control during the project, but now made public)



2.2 Template for the analytical data



Figure 2.1: Structure of analytical data to be uploaded to the database

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Issue date Dissemination Level Page

3 Accessing the database

Go to the Database which is located here: https://launchdb.sintef.no

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	>LAUNCH>	Add Data - Search - User Guide Support Sign Up Log In
	Welcome to the LAUNCH d	egradation database
	The solvent degradation database contains available data fro The database will be extended throughout the LAUNCH proje	n literature, incorporating data from laboratory to pilot scale. zt with data generated in lab scale and by operating the LAUNCH degradation rigs, pilots and commercial plants.
	In this first version of the database, data will be added by part	cipants of LAUNCH project Task 1.1 in WP1. All work packages of the project will have access to the data.
	Click here to enter the database	
	Acknowledgement This project has recieved funding from RVO (NL), FZJ/PJ (D Gassnova (NO), BEIS (UK) and DOE-FE (USA) and is funder under the ACT corrorame. Grant Agreement No 290662	ε),
	Project homepage: www.launchccus.eu	
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Figure 3.1 LAUNCH database, welcome page.

From the welcome page you click on the button marked *Click here to enter the database* to enter the database.

In the database there is a search field, which can be seen marked with yellow in *Figure 3.2*. Here it is possible to search for instance on chemical name (or abbreviation) or CAS number. It is also possible to click on the Subject and Author Affiliation and list with matching entries will appear in a new window. In the bottom you can scroll through all entries in the database. On the top there is also a User Guide if help or more info on the Dataverse is needed.

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Issue date Dissemination Level Page

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Acids (12) Pilot plant (10)	Muhammad, Akram, 2023, "MEA Campaign at TERC, Accelerated conditions (Higher Stripper Temperature)", https://doi.org/10.5072/FK2/CK/WWYO, LaunchDatabase, V1, UNF-6.fdHotP4/8C0vr0VzELKo6w== [fileUNF]	
Ammonia (9) Thermal experiments (9)	Pilot campaign with 35vt% MEA at the Translational Energy Research Centre (TERC), Energy Institute, University of Sheffield, UK. Pilot s (11CO2/day). Campaign with higher stripper temperature. A range of degradation compounds analysed in LEAN solvent.	cale unit
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AMP (2) Aldehvdes (2)	Muhammad, Akram, 2023, "MEA Campaign at TERC Normal conditions", https://doi.org/10.5072/FK2/IB6SNV, LaunchDatabas	e, V1,

Figure 3.2 LAUNCH degradation database, Overview Window

To see the contents of an entry, just click on the name/title and that entries opens in a new window, as illustrated below (*Figure 3.3*). Here the entered metadata appears as well as all files that are available for this entry. In this case there were 7 files, which is also available to download. For this example, the XY data with the analytical results is in the file *RAW data SDR MEA 2016.tab*. There is also a supporting file with compounds name and more details of the analytical methods used (*Overview compounds and liquid analysis.xlxs*), file with a picture of the apparatus, file with procedure, as well as files with P&ID and Flow Diagram.

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Figure 3.3 Example of a dataset in the database, with Metadata and files available for download.

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Issue date Dissemination Level Page LAUNCH D1.1.2 Degradation Database User Guidelines.docx 07.04.2023 Public 10/12

4 Adding new data to the database

To add new data to the database, you must first create an account which is done by clicking Sign Up (see *Figure 4.1*)



Figure 4.1 Sign up

When you sign up, you will be given access to add new data. Please note that this you take some days before the account is ready.

When you have the account, you then need to Log in (Log In is on the upper right side of the page). Then you choose Add Data and New Dataset (as illustrated in *Figure 4.2*)



LaunchDatabase (Part of the LAUNCH project)

Figure 4.2 Adding New Dataset

You then get a form where you fill in the metadata, and upload the relevant files (see Figure 4.3)

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Figure 4.3 Form to enter metadata and upload files.

The analytical data (i.e., chemical analysis) of samples from experiment/pilot campaign must be added as an XY table and it is most convenient to upload an MS-Excel or Tab separated file. All analyzed results and compounds should be uniquely described, i.e., heading should include unit, analysis method and CAS number. It is worth noting that the search bar of the LAUNCH database searches only through the header row of the data tables, which is why descriptive headings facilitate finding the data you need when searching. The first columns should be used for sample id, time or sequence number, values for conditions that were varied. If you have many literature references for your set, this could be listed in a separate file which then also should be uploaded. Further details may be described in separate files which can also be uploaded. It is recommended to look at already published data sets in the database as examples.

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Issue date Dissemination Level Page LAUNCH D1.1.2 Degradation Database User Guidelines.docx 07.04.2023 Public 12/12

When the metadata and files has been entered, remember to save the dataset (button on the left bottom of the page). You can later edit the entry, this you do by choosing the dataset in the database and then select the Edit button (*see Figure 4.4*), where you can edit the metadata. or upload more files etc.



Figure 4.4 Edit of dataset.

At this stage the data is not yet published in the database (it is only you who see the dataset), but will at this point be reviewed (currently by SINTEF) before it is published to the database. After you have submitted your dataset for review, you may no longer edit it, until the review process is done. Once the review has been completed and the dataset is approved, it will become searchable, and you may also edit the submission. If you make changes and resubmit the dataset, another review of the data will take place before the changes become publicly available.

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