

# ANSELMUS

**Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems**

**Grant Agreement Number 101061185**

**Research and Innovation Action**

**Topic: HORIZON-EURATOM-2021-NRT-01-02**

Safety of advanced and innovative nuclear designs and fuels

**Start date: 01/09/2022 – End date: 31/08/2026 (48 months)**

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## **D6.3 Newsletter 1**

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This project has received funding from the European Union's Horizon EURATOM 2021 Research and Training Programme under grant agreement No 101061185.

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 <b>ANSELMUS</b>	Newsletter 1	Version 1.0
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### Document Control Sheet

Deliverable no and title	D6.3 Newsletter 1
Deliverable lead beneficiary	RATEN
Lead author(s) & affiliation	Mirela NITOI (RATEN)
Work Package Lead	WP6 - VKI
COO ALX reference	SCK CEN/61707519

Contractual Delivery date	Actual Delivery date	Deliverable Type*	Dissemination Level**
Month 12	22/11/2023	DEC	PU-Public

\* Type: R-document, report; DMP-Data Management Plan; DEC-Websites, patent filings, videos, etc.

\*\* Dissemination level: Public: fully open, posted online; Sensitive: limited under the conditions of the GA

### Document Summary

This report summarizes the content of the 1<sup>st</sup> ANSELMUS Newsletter.

The newsletter is structured in the following main sections: Project events; Facilities on focus; Project activities; Get to know us, and their content is shortly presented. The main channels that will be used to distribute the newsletter are specified also.

### Document Revision History

Version	Date	Author/Editor/Contributor	Description/Comments
v0.1	01/10/2023	Mirela Nitoi	Draft version
v1.0	16/11/2023	Mirela Nitoi	Final version

### Document Approval

The author, WP Leader and Coordinator acknowledge and accept delivery of the work completed for this deliverable.

Author: Mirela Nitoi	RATEN	16/11/2023
WP leader: Philippe Planquart	VKI	20/11/2023
Coordinator: Paul Schuurmans	SCK CEN	22/11/2023



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## 1) Introduction

The ANSELMUS (Advanced Nuclear Safety Evaluation of Liquid Metal Using Systems) Task 6.1 “Dissemination and exploitation of the results” role is to ensure that the project results are widely disseminated to stakeholders and the wider nuclear community, while ensuring that its key findings will be exploited for further use.

The newsletters inputs are collected from the project partners. By distributing the newsletters, the relevant achievements of the project will be disseminated to scientific community and to interested parties. The project newsletters would include technical highlights, related international news, announcements of relevant events, etc.

The electronic newsletters will be issued periodically to keep the interested audience informed about the project’s evolution and progress. Their yearly elaboration and distribution will increase the project visibility.

### 1.1. Purpose and Scope

The main purpose of elaborating the newsletters is to create and raise public awareness about the project’s vision and achievements. They will summarize the project results, achievements and plans and they will keep inform the interested parties about the progress of the project.

The first newsletter of the project was elaborated a year after the beginning of the project, and includes the main elements characteristic to the project activities for this period.

Deliverable D6.3 summarizes the content of the first newsletter of the project. A link to the electronic newsletter is included.

## 2) Newsletter summary content

The first newsletter is structured in the following main sections:

- Project events
- Facilities on focus
- Project activities
- Get to know us

The first newsletter has a cover page and ends specifying the link to the ANSELMUS community and the Editorial Board for the newsletter.

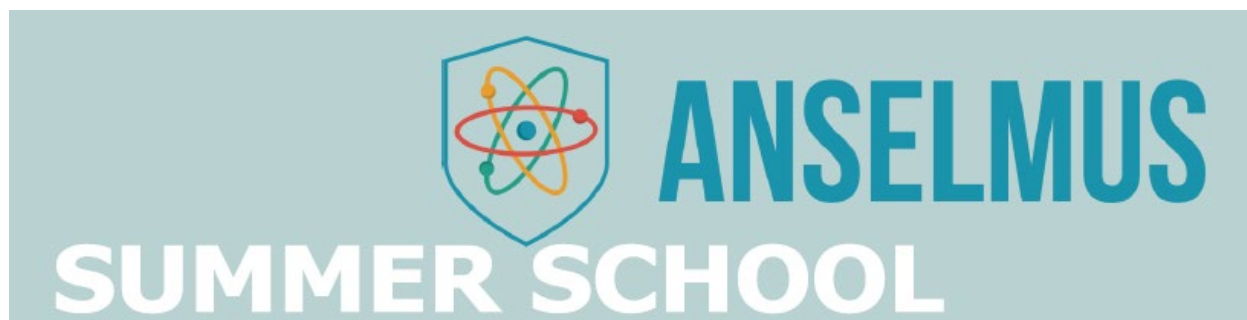
The cover page of the first newsletter specifies the title of the project, and acknowledges the funding received from EURATOM Horizon Europe Programme 2021 (see figure 1).



Figure 1: Cover page



## 2.1. Project events



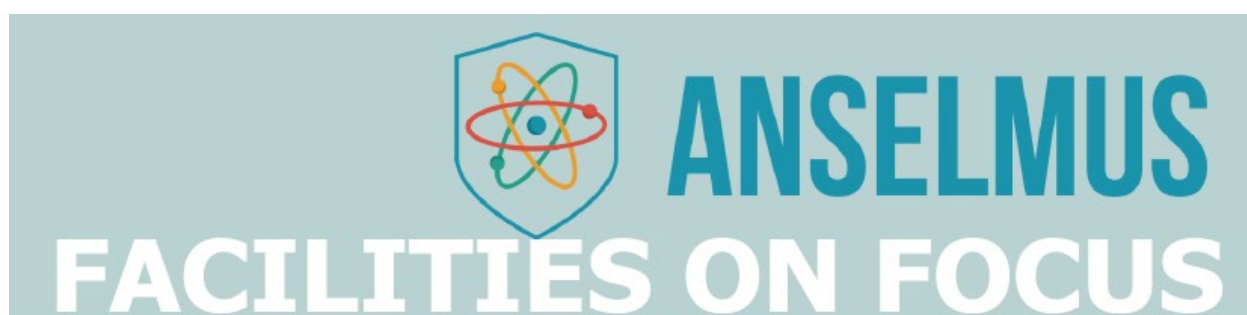
The “Events” section of the newsletter is reporting on the ANSELMUS Summer School.

The summer school was organized in Mol, Belgium, by SCK CEN, between 12 and 16 of June, 2023, for 18 students. Due to the generous support of the EU, both via the ANSELMUS project but also through ENEN+, it was possible to offer financial mobility support to most of the students.

During the summer school, participants have gained insight into the state-of-the-art research focused on the development of MYRRHA and ALFRED. The summer school covered a wide range of topics including rationale & motivation, system designs of the ALFRED reactor and the MYRRHA Accelerator driven system, non-nuclear applications of heavy liquid metals, fuel, materials, thermal hydraulics, coolant chemistry, reactor physics and safety.

Throughout the course week, participants had the opportunity to brainstorm on best practices and selections of technologies for HLM cooled nuclear systems in interactive sessions with the experts. The feedback received from the participants was a very positive one, concerning the quality of lectures, organization and atmosphere.

## 2.2. Facilities on focus



This section presents two facilities that are used for the project activities, one located in ENEA Brasimone, Italy, and the other in Mol, Belgium. A short description of the installations, along with their use in frame of the project are provided.

- **ENEA Installations: the NACIE-UP Facility**

NACIE-UP (NAtural Circulation Experiment Upgrade) is a loop-type facility using Lead-Bismuth Eutectic (LBE) as primary coolant, located at the ENEA Brasimone Research Centre in Italy. NACIE-UP is a

rectangular loop that allows to perform experimental campaigns in the field of the thermal-hydraulics, fluid-dynamics, chemistry control, corrosion protection and heat transfer and to obtain correlations essential for the design of nuclear plant cooled by heavy liquid metals.

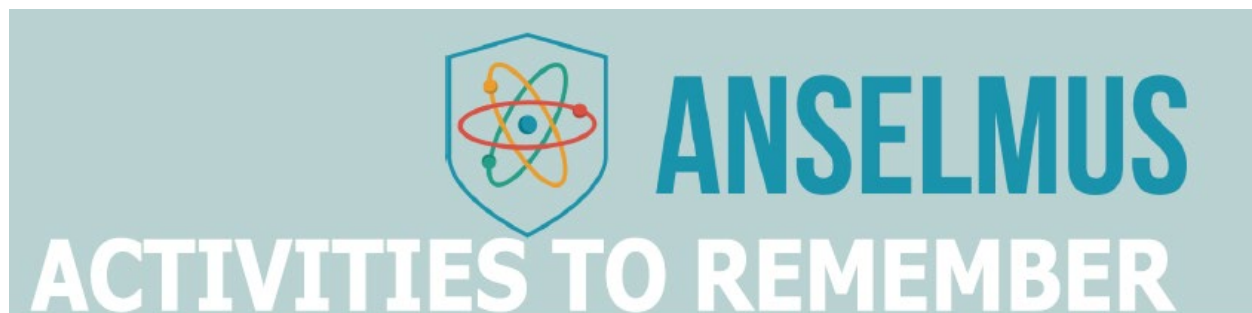
In 2023, the loop will be converted in pure lead to carry out experiments on deformed bundle configuration for the ANSELMUS project. A new test section with deformed pins will be mounted in the facility substituting the BFPS test section and will be instrumented with about 100 thermocouples and a differential pressure transducer.

- **SCK CEN Installations: MEXICO Facility**

MEXICO (Mass Exchanger in Continuous Operation) is an LBE experimental loop designed specifically for coolant chemistry research for MYRRHA. The exceptional flexibility of MEXICO (it possess three distinct temperature zones, achieved by coupling two main heater zones and two economizers) enables researchers to efficiently study coolant chemistry across a wide range of temperatures.

Its primary use in the ANSELMUS project is to validate the long-term reliability of the oxygen control system, with a special emphasis on its resistance to chemical poisoning in the lead-oxide mass exchanger.

### 2.3. Project activities



This section presents the main activities performed in a year project period.

- **Conceptual Design of Deformed Fuel Pin Bundle Experiment on Alfred Mock-Up**

A new Deformed Fuel Pin Simulator (DFPS) test section will be designed, manufactured and installed in the NACIE Facility, and the DFPS test section will be instrumented by bulk and wall thermocouples to allow a complete mapping of the temperature field. A complete test matrix with flow rates up to 20 kg/s representative of the ALFRED pin bundle, will be carried out. The main parameters of the Deformed Fuel Pin Simulator are specified also.

- **Phenomena and Identification Ranking Table**

The efforts are aiming to gather experts' knowledge and to achieve consensus across the EU HLM community about the phenomena having low level of knowledge and high importance for safety demonstration (for both ALFRED and MYRRHA). The main steps of the process and current status of activities are detailed. It was highlighted that the efforts are aiming at having a robust safety demonstration for ALFRED and MYRRHA designs.

- **Social sciences in ANSELMUS**

The activities and the results obtained in the efforts to engage the researchers involved in the ANSELMUS project with the social impact of innovative heavy metal-cooled nuclear technology are presented. The planned activities and exercises that will bring together different researchers and that create spaces for societal and ethical reflections are specified.

- **LFRs economic and financial analysis**

A systematic literature review, considering both scientific and industrial literature, was performed, focused on both lead and lead-bismuth eutectic technologies. The main activities and their planning, along with preliminary results are also specified.

- **Work on “Inspection Strategy”**

The activity of ANSELMUS on “Inspection Strategy” is in close connection with the activity of the European Network for Inspection Qualification (ENIQ). The joint planned activities of ANSELMUS and ENIQ experts are mentioned.

## 2.4. Get to know us



This section includes two interviews with our younger colleagues, one from the Energy and Nuclear Science and Technologies of Politecnico di Milano (Italy), and the other from Von Karman Institute for Fluid Dynamics (Belgium).

The organization signs of all ANSELMUS project partners are included at the end of the section (see figure 2).

The editorial board -Mirela NITOI (RATEN); Philippe PLANQUART (VKI); Paul SCHUURMANS (SCK CEN); Margot DEGREVE (SCK CEN)- of the newsletter is also mentioned in the last page.



Figure 2: ANSELMUS Project Consortium

### 3) Newsletter dissemination

The electronic newsletters will be issued periodically to keep informed the interested audience about the project's evolution and progress.

The project newsletters will be disseminated:

- via links on social media (LinkedIn);
- via direct emails to professional contacts of the project partners;
- via the project website ([www.anselmus.eu](http://www.anselmus.eu)).

A "Subscribe" option for newsletter is available on the public section of the website in order to progressively extend the distribution list ([Newsletters](#)).

The ANSELMUS project community, the PASCAL project community, the ENEN2PLUS project community, and the relevant stakeholders (the list will be updated along all the project period) will be informed about the posting of the newsletter on the ANSELMUS website.

The WP leaders are kindly asked to inform about the newsletter issue all the stakeholders to whom have connections.

The full version of the articles in the newsletter are available on the ANSELMUS website: [Newsletters](#)