



GO-VIKING

Research and Innovation Action (RIA)

This project has received funding from the Euratom
research and innovation programme 2021-2025 under
Grant Agreement No 101059603

Start date : 2022-06-01 Duration : 48 Months



Educational material for FIV

Authors : Mrs. Lilla KOLOSZAR (IVKDF), Philippe Planquart, Jure Oder, Jean Muller

GO-VIKING - Contract Number: 101059603

Project officer: Panagiotis MANOLATOS

Document title	Educational material for FIV
Author(s)	Mrs. Lilla KOLOSZAR, Philippe Planquart, Jure Oder, Jean Muller
Number of pages	9
Document type	Deliverable
Work Package	WP6
Document number	D6.2
Issued by	IVKDF
Date of completion	2023-07-28 09:55:00
Dissemination level	Public

Summary

Description of the educational material made available for the partners

Approval

Date	By
2023-07-28 09:55:39	Dr. Philippe PLANQUART (IVKDF)
2023-07-28 10:03:22	Dr. Papukchiev ANGEL (GRS)



D6.2 - Educational material for FIV

Description of the proposed material

Version N°1
July / 2023



Philippe Planquart¹, Jure Oder¹, Jean Muller¹

¹von Karman Institute for Fluid Dynamics



Funded by
the European Union

Disclaimer

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Atomic Energy Community. Neither the European Union nor the granting authority can be held responsible for them.

Document information

Grant Agreement / Proposal ID	101060826
Project Title	Gathering expertise On Vibration ImpaKt In Nuclear power Generation
Project Acronym	GO-VIKING
Scientific Coordinator	Angel Papukchiev, mailto:Angel.Papukchiev@grs.de , GRS
Project starting date (duration)	1st June 2022 – 31st May 2026 (48 Months)
Related Work Package	WP6
Related Task(s)	Task 6.1 Education
Lead Organisation	VKI
Contributing Partner(s)	VKI, NRG, ENEN, TUD
Due Date	2023-05-31
Submission Date	25/07/23
Dissemination level	Public

History

Date	Version	Submitted by	Reviewed by	Comments
25/07/23	1	Ph. Planquart		

Table of contents

1. Introduction	6
2. Educational material identified	6
3. Conclusion.....	8

List of tables

Table 1: List of proposed Lectures, presentation, and report	6
Table 2: List of proposed videos.....	7

Abbreviations and Acronyms

Acronym	description
WP	Work package
GO-VIKING	Gathering expertise On Vibration ImpaKt In Nuclear power Generation
FIV	Flow-Induced-Vibration
VKI	von Karman Institute

Summary

The GO-VIKING consortium will develop and make available educational material explaining the basics and the challenges of flow-induced vibration (FIV) phenomena relevant to nuclear power reactors. The material will be made available online using the latest online tools.

Education, training, and dissemination activities are developed within WP6.

This deliverable synthesizes the educational material, identified during the first project years by the main contributors to the educational task (task 6.1), but also from the experts of the GO-VIKING consortium.

Keywords

Education, training, FIV, videos, Powerpoint presentation

1. Introduction

We develop educational material for the GO-VIKING project. The aim of the educational material is to introduce the young generation the phenomena of flow-induced vibration, usually named FIV, relevant to nuclear power reactors, as well as present the current challenges.

Education, training, and dissemination activities in the GO-VIKING project are developed within WP6.

This deliverable synthesizes the educational material identified during the first years of the project, contributed by the partners involved in Task 6.1 “Education”, as well as by the experts of the GO-VIKING consortium. The relevant questions were confirmed during the stakeholders meeting held at EDF Chatou in the beginning of 2023.

Contributions from the different partners of the project have been requested to enlarge the database of available educational material as much as possible. A dedicated space is in preparation by ENEN to host the all the material online.

2. Educational material identified

Table 1 lists the lectures, presentations and reports, proposed by different partners of the project. Six educational activities/materials are proposed so far. It cannot be excluded that further activities/materials will be provided by the project partners within the project duration.

Table 1: List of proposed lectures, presentations, and reports

Item	Organization	Main author	Type	Description
1	TUD	Richard Dwight	Lecture	Lectures from Master course
2	TUD / NRG	Alexander Van Zuijlen / Kevin Zwijsen	Literature report	State-of-the art review prepared in academic program
3	UGENT	Joris Degroote	Powerpoint Presentation	General academic introduction on FIV
4	VATTENFALL	Hans Lindqvist	Powerpoint Presentation	General presentation during the progress meetings
5	VTT	Antti Timperi	Presentation	Commented PowerPoint

6	FRAMATOME	Hidajet Hadžić	Lecture – Presentation	FIV in Reactor Fuel Assembly
---	-----------	----------------	------------------------	------------------------------

Table 2 lists the different videos that are already available or that will be prepared by the partners. This list may be extended during the project.

The numerical results (CFD) will illustrate the main phenomena of FIV with different animations of CFD and CSM (Computational Structure Mechanics) results. Moreover, water experiments in single phase and/or in two-phase with optical access will be used to generate educational videos with emphasis on Flow-Induced-Vibration. The complementation between numerical and experimental material will permit to create a coherent and complete education database for European scientists.

For the different videos, LGI will provide an introductory and a closing sequence with reference to the GO-VIKING project.

Table 2: List of proposed videos

Item	Organization	Main author	Type
1	GRS	Angel Papukchiev	Numerical results
2	NRG	Kevin Zwijsen	Numerical results
3	VKI	Jean Muller	Experimental results
4	CEA	Lucas Prevost	Experimental results
5	EDF	William Benguigui	Experimental results
6	Canadian Nuclear Labs	Salim El Bouzidi	Numerical results

3. Conclusion

A total of 12 activities/materials are currently being proposed as educational material to be provided by the GO-VIKING project to the wide public. These have been briefly described in this deliverable. These deliverables were identified with the partners to bring a complete education material on FIV to the European community. The material will be based on experimental and numerical work, as well as on literature reviews. The next step is to make this material publicly available, and this task will be performed during the second year of the project.

Bibliography

