

## Retrofitting Equipment for Efficient Use of Variable Feedstock in Metal Making Processes - REVaMP

H2020-NMBP-ST-IND-2018-2020 / H2020-NMBP-SPIRE-2019

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Project Type: Innovation Action

### Final exploitation workshop

Due Date: December 31<sup>st</sup>, 2023Submission Date: November 28<sup>th</sup>, 2023**Work Package: WP 9 – Dissemination, valorisation and exploitation of the project results****Lead Beneficiary: BFI / LSA**

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### Dissemination level

PU public CO Confidential, only for members of the consortium (incl. the Commission Services)

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## 1. About REVaMP

The main objective of the project “Retrofitting Equipment for Efficient Use of Variable Feedstock in Metal Making Processes” (REVaMP) is to develop, adapt and apply novel retrofitting technologies to cope with the increasing variability and to ensure an efficient use of the feedstock in terms of materials and energy.

For this purpose, existing metal production plants shall be retrofitted with appropriate sensors for scrap analysis and furnace operation. Furthermore, the selection of the optimal feedstock in terms of material and energy efficiency shall be improved by application of appropriate process control and decision support tools. Also, a solid scrap preheating system operated with waste derived fuel shall increase the energy efficiency of the melting processes. To monitor and control the process behaviour in an optimal way, model-based software tools will be developed and applied.

The retrofitting solutions will be exemplarily demonstrated within three different use cases from the metal making industry, namely electric and oxygen steelmaking, aluminium refining and lead recycling. The performance of the different technologies will be assessed, and the benefits will be evaluated in terms of economic and ecological effects, as well as cross-sectorial applicability in other process industries.

## 2. Introduction and Summary

The hereby described deliverable D9.3, “Final exploitation workshop” is part of the WP9 “Dissemination, valorisation and exploitation of the project results” within the project. Together with D9.4 “Final dissemination event: joint dissemination workshop with other projects” it is a part of the Task 9.3: “Organisation of Dissemination and Exploitation Events”.

The workshop was planned and prepared in cooperation between Fraunhofer ILT and LSA GmbH, with support from BFI as project coordinator and all other partners.

As part of this hybrid event, the results of the project were presented and discussed with the on-site and on-line participants. After the presentations, the ILT premises and laboratories were visited in a guided tour and the LIBS system was shown as a live demo from the LSA site using a video link.

## 3. Final exploitation workshop

ILT and LSA organized and conducted the workshop in close cooperation with BFI. The workshop was held in a seminar room on the top floor of the ILT site.

On the one hand, there was enough space for those participants physically attending on site, and on the other hand there was the possibility to participate via Teams with a live stream of presentations and videos.

The workshop was advertised in advance by means of the flyer shown in **Figure 1**, which was distributed by all project partners to potentially interested companies and institutions.



SPIRE Project "REVaMP"  
Final Exploitation Workshop  
Thursday, 19.10.2023

Hybrid Workshop at ILT  
Steinbachstraße 15, 52074 Aachen (Germany)

## The Project

In European process industries, a huge amount of energy and resources are utilized to produce large quantities of material yearly. In metal production processes, the recycling of metallic scrap from end-of-life products is environmentally and economically beneficial. The use of recycled materials as feedstock reduces resource consumption and significantly cuts energy consumption and CO<sub>2</sub> emissions in metal ore reduction. However, metal-producing facilities now face increasing variability in secondary raw materials and energy sources. In REVaMP different plant retrofitting solutions have been developed: Scrap analysis sensors for improved in-line analysis of metal scrap, optimal feedstock selection for material and energy efficiency, scrap preheating systems to enhance melting energy efficiency, and model-based software tools for optimal process monitoring and control.

**Save the Date! 19.10.2023**  
Participation is also possible via MS Teams!

## Register:

To attend this free hybrid webinar, registration is required before 10.09.2023:

The registration for the teams participation is valid until 16.10.2023.

<https://www.bfi.de/en/2023/07/31/revamp-final-exploitation-workshop/>

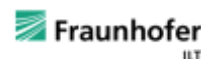


## Agenda:

- 09:00 Welcome address at ILT
- 09:10 General introduction of the REVaMP project
- 09:20 Software solutions for charge mix and process optimisation
- 09:50 Software solutions for process monitoring and control
- 10:20 Discussions & Questions Part I
- 10:30 Coffee Break
- 10:40 Scrap Preheating System
- 11:00 AluQ® Melt Quality Equipment for aluminium alloys
- 11:20 Neutron Sensor for metal scrap analysis
- 11:50 Presentation of LIBS Sensor for metal scrap analysis
- 12:20 Discussions & Question Part II
- 12:30 Lunchbreak
- 13:00 Visit of ILT Laboratories & LIBS Live Demo  
Visitors will be divided in two groups.
- 14:30 End of Workshop



## Consortium:



Location: Fraunhofer-Institut für Lasertechnik ILT | Steinbachstr. 15 | 52074 Aachen

The agenda of the workshop was as follows:

- 09:00 Welcome address at ILT (ILT)
- 09:10 General introduction of the REVaMP project (BFI)
- 09:20 Software solutions for charge mix and process optimisation (RWTH, EUT, BFI)
- 09:50 Software solutions for process monitoring and control (BFI, CAR)
- 10:20 Discussions & Questions Part I
- 10:30 Coffee Break
- 10:40 Scrap Preheating System (REF, GHI)
- 11:00 Alu Q Melt Quality Equipment (AZT)
- 11:20 Neutron Sensor for metal scrap analysis (NCBJ, SYSKON)
- 11:50 Presentation of LIBS Sensor for metal scrap analysis (LSA, ILT)
- 12:20 Discussions & Question Part II
- 12:30 Lunch break
- 13:00 Visit of ILT Laboratories & LIBS Live Demo (ILT, LSA)
- 14:30 End of the Workshop

Each developed solution was presented by the partner who developed it or played a key role in its development. Short discussion rounds were held after each presentation and rounded up by a panel discussion after each thematic block.

The workshop was attended by 15 participants on site, with 4 external participants from industrial companies outside the consortium. In addition, around 35 participants joined the meeting online. **Figure 2** shows a photo of the meeting room during the workshop, with presentation slides and video screen for on-line participants.



**Figure 2:** Meeting room with live presentation and video screen for on-line participation

The slides of the individual presentations were made available as PDF files to interested participants after the event.

#### **4. Conclusions**

Even though the sheer number of participants was not very high, there was a lively discussion after each presentation and many questions were asked and comments made by the interested participants. In particular, the tour of the laboratories and the live demonstration of the LIBS system led to lively conversations and discussions, which were continued also after the laboratory visit. Also, the distribution of the presentation slides allowed to discuss the REVaMP solutions internally within the participating companies and institutions.