Horizon 2020
Programme

GENIORS

Research and Innovation Action (RIA)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 755171.

Start date : 2017-06-01 Duration : 48 Months
http://geniors.eu/

GENIORS

organisation of the think-tank event

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GENIORS - Contract Number: 755171

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Document title	organisation of the think-tank event
Author(s)	Pr. Hanson BRUCE, Bruce Hanson
Number of pages	5
Document type	Deliverable
Work Package	WP12
Document number	D12.2
Issued by	Leeds University
Date of completion	2019-05-22 11:12:23
Dissemination level	Public

Summary

D422 Organisation of the think-tank event The aim of this task is to move beyond the traditional chalk and talk workshop or single topic training event and focus on the critical thinking skills of the early career researchers. This will be achieved by participating a group exercise (a Think Tank) that evaluated a high level technical challenge linked to the GENIORS programme. By focussing on a high level technical challenge, researchers will have the opportunity to learn and expand their knowledge of separation science around their personal areas of interest. In the SACSESS programme, NNL produced a safety evaluation of a number of candidate flowsheet, produced through a consultation. The Think Tank will expand on this by evaluating the safety and technical issues behind the implementation of a reprocessing facility using the Euro-Ganex process.

Approval

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2019-05-22 11:12:33	Pr. Hanson BRUCE (Leeds University)
2019-06-17 18:38:31	Mr. Stéphane BOURG (CEA)
2019-06-17 18:38:40	Mr. Stéphane BOURG (CEA)

GENIORS

GEN IV integrated oxide fuels recycling strategies

D422 Organisation of the think-tank event

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Version: 0 issued on 07/09/2018

Work Package 12: Training and Education

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Work contribution to the following Domains and Work-Packages

☐ DOMAIN 1 WP1	☐ WP2	☐ WP3	☐ WP4
☐ DOMAIN 2 WP5	☐ WP6	☐ WP7	
☐ DOMAIN 3 WP8	☐ WP9	☐ WP10	

DOMAIN 4

☐ WP11 X WP12 ☐ WP13

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INTRODUCTION

The aim of this task is to move beyond the traditional chalk and talk workshop or single topic training event and focus on the critical thinking skills of the early career researchers. This will be achieved by participating a group exercise (a Think Tank) that evaluated a high level technical challenge linked to the GENIORS programme. By focussing on a high level technical challenge, researchers will have the opportunity to learn and expand their knowledge of separation science around their personal areas of interest.

In the SACSESS programme, NNL produced a safety evaluation of a number of candidate flowsheet, produced through a consultation. The Think Tank will expand on this by evaluating the safety and technical issues behind the implementation of a reprocessing facility using the Euro-Ganex process.

AGENDA FOR THE THINK TANK EVENT

The Think Tank will be divided into two sessions.

Session 1 (day 1) will have the aim to identify the main hazards and technical issues associated with the Euro-Ganex process. The output from the session will be a register of issues, prioritise as to their importance or degree of effect. The hazards will be evaluated against a set of criteria normally used for industrial safety assessments.

Session 2 (day 2) will use the output from session 2 and evaluate how the issues can be addressed and what R&D may be required. The output from the session will be a list of R&D/design tasks and their expected impact on the issues. The output will be taken on for further development by NNL in their safety assessment of the Euro-Ganex process.

The agenda for the event is as follows:

1. **Day 1**
2. **Introduction to the Think Tank process (all)**
    a. Objectives and outputs of the exercise
    b. The process that will be used
    c. Identification of the evaluation groups
3. **Information share on Euro-Ganex (all)**
    a. Hazard criteria and their meaning
    b. Technical criteria and their meaning
    c. Technical information available to the evaluation groups
4. **1st breakout group session (facilitated discussion)**
    a. Brainstorm hazards, issues and their effects
    b. Group and collate

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   c. Prioritise
   d. Prepare feedback to whole group
5. **Collate and feedback (all)**
   a. Feedback from group representative
   b. Collate common output and agree priorities
6. **Day 1 end**

1. **Day 2**
2. **Introduction to day 2 objectives (all)**
   a. Refresh on objectives and outputs of the exercise
   b. The process that will be used
3. **Information share day 1 (all)**
   a. Refresh on day 1 output of common output and agreed priorities
4. **2nd Group session (facilitated discussion)**
   a. Brainstorm on R&D/design to eliminate/reduce hazards, issues and their effects
   b. Group and collate
   c. Prioritise
   d. Prepare feedback to whole group
5. **Collate and feedback (all)**
   a. Feedback from group representative
   b. Collate common output and agree priorities
6. **Conclusions from Think Tank (all)**
7. **Feedback from participants (all)**
8. **Think Tank end**

TECHNICAL CHALLENGE TO BE EVALUATED

Two documents produced for the SACSESS programme (D31.1b SACSESS safety assessment methodology and D31.3 full safety of a demonstration Euro-Ganex plant) set out a description of a reprocessing flowsheet based on the Euro-Ganex process and some of the potential hazard scenarios. At the start of any design process, the safety is assessed and technical challenges are identified that need to be addressed before the flowsheet can be confirmed and used as a basis for an engineering design. Normally this process is a detailed and lengthy one, involving all disciplines.

The objective of this Think Tank is to allow researchers on GENIORS to practice this type of exercise. In this case, we will only consider the 1st and 2nd separation stages of the overall process (as shown in D31.3, page 6).

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To do this and to direct the evaluation, the output from the initial safety review carried out in SACSESS (detailed in D31.3) will be used as a starting point. This presented a number of recommendations that can be converted into criteria:

1. Explosion/flammability of materials (recommendation 1)
2. Toxicity of materials (recommendation 2)
3. Effects of radiolysis (recommendation 4)
4. Effects of hydrolysis, degradation of other chemical reactions (recommendation 4)
5. Effects of contaminated solvents (recommendation 5 & 6)
6. Extent of NOx (and other hazardous gases) production (recommendation 7)
7. Effects of operating outside of the defined flowsheet envelope, e.g. temperature (recommendation 8 & 10)

For each criteria, participants will asked to develop a list of hazards or safety issues that could result and also what the technical risks to a flowsheet are.

For the purposes of the Think Tank, the following compounds will be considered:

- DEHiBa - N,N-di-2-ethylhexyl-isobutyramide
- DMDOHEMA - N,N'-dimethyl-N,N'-dioctylhexyloxyethyl malonamide
- TODGA – N,N,N',N' tetra octyl diglycolamide
- Nitric acid
- Hydrazine

PREPARATION AND BRIEFING MATERIALS

Before the meeting, participants should familiarise themselves with the Euro-Ganex flowsheet.

All the necessary information can be found in D31.1 and D31.3 reports from SACSESS, as well as GENIORS report PD06 deliverable 8.1.

If participants have access to any information from their personal projects that will support the identification and evaluation, it would be helpful if they could provide a short (1 page) handout to be distributed on the day.

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