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2024/25 Ottonel Popesco Student Challenge by PEMA

2024/25 Topic:

Innovative ways to use the container supply chain to move bulk cargoes

In this document:

PEMA

1. Challenge and Project

The container supply chain was primarily intended to move packaged goods and other unitised items that can be loaded on pallets, or individually using forklifts and other machinery. One of the major problems in the global container supply chain is that imbalances in global trade mean a large volume of empty containers need to be reposited back to exporting countries carrying nothing but air.

At the same time, there is a large trade in bulk free-flowing commodities that is moved in the same direction as these empty containers, but is not currently containerised. This includes grain and other agricultural crops, ores and minerals from the mining industries, and new materials such as plastic and wood pellets.

Despite the opportunities that exist it has proved a challenge to load and unload these bulk products into standard ISO containers in a cost effective and safe way.

This year's PEMA student challenge invites participant teams to design a supply chain, including equipment, for containerised bulk materials. The supply chain needs to include a method of loading and unloading bulk material into standard containers, including new types of loading equipment and methods if required.

Alternatively, teams can develop a proposal that uses a completely new or modified container to improve the loading and/or unloading process, as long as the container fits within the outside dimensions of a standard ISO container, including high-cube containers.

Proposals need to consider the economics of the supply chain for the bulk material they select. This means calculating the volume of bulk goods that can be loaded into individual containers, the approximate number of containers per shipment and the loading and unloading method.

Where proposals select to develop a new and innovative container concept consideration needs to be given to approximate cost of the design and its suitability for carrying cargo in both directions to avoid empty containers needing to be transported on vessels.

The project study should consider the following approach:

1. Analysis of the commodity/product selected, including its value, production location and export markets and the volume of the commodity traded.
2. Assess the potential to integrate the commodity/product into the container supply chain.
3. Analyse the obstacles that need to be overcome to containerise the commodity/product.
4. Develop new ideas for container equipment and/or a loading/unloading equipment to facilitate cost effective processes.
5. Identify the points in the supply chain where commodity/product will be loaded into a container, and where it will be unloaded.
6. Assess the overall economic viability of the proposal.
7. Assess and measure the sustainability benefits (including possible CO2 reduction) of the method proposed.

The intent of the competition is to challenge the participants to look beyond the solutions currently being applied in the sector and to identify, propose and challenge the industry with futuristic, innovative, and even radical concepts. These could include an entirely new design of shipping container.

The proposals must be supported by relevant scientific and technical data. Creativity and innovative solutions will be key metrics in the evaluation process.

In the first stage, teams are requested to submit a 2-page (A4), preliminary abstract of their proposed solution to info@pema.org before the deadline 21st March 2025.

Please see below for the full timeline of events.

2. How To Enter

Initial stage:

1. Form a team of students from your university - MSc, BSc or diploma students. You as a team formulate an answer to address the challenge given above. You do the work on the challenge as a team. You can invite one university staff member to provide you with advice. Ensure that you have submitted your team sheet before the initial deadline.
2. **By 21st March 2025, 16:00 CET**: Submit a 2-page (A4) preliminary abstract on your proposed solution and completed team sheet.

Finalists:

3. **By 29th March: Finalists will be notified** and provided with a full briefing and allocated a date within 2 weeks of notification to make a detailed presentation to the judging pane via Teams or equivalent Media. 30 minutes will be reserved for each presentation (including 5 minutes for questions).
4. A panel of experts will judge your solution based on the following criteria:
   - Innovation potential of the ideas presented.
   - The practicability of the solution – could your ideas be implemented in the real world?
   - Academic value of the ideas presented.

3. Winner Information

The winning team will be announced on 10th May.

The winning team may be invited to present their solutions at the TOC Europe conference or similar exhibition or conference. (To be confirmed)

The winning team prize is €2000 (shared between teammates), plus certificates for the winning team and runners-up. There will also be publicity via PEMA and TOC websites and social media channels, plus other media coverage.

We look forward to your participation in the 2024/25 PEMA Student Challenge.

For questions please contact the PEMA Student Challenge Coordinator:
Caroline Doyle on **info@pema.org**

4. Rules Of Participation

1. The PEMA Student Challenge competition is open to teams from any university globally.
2. Teams must consist of 3 - 4 participants.
3. All participating students must be aged 18 or over.
4. All participating students must be studying towards an undergraduate or postgraduate degree.
5. All team members must attend the same university but can be studying different subjects.
6. Multiple teams from the same university can enter if they compete as independent teams and there is no overlap of work.
7. Each team is required to nominate their team captain who will act as the primary delegate for PEMA Student Challenge communications.
8. Teams are permitted to have a sponsored lecturer who can act as a consultant but are not allowed to contribute to the production of the preliminary abstract or the final report and presentation.
9. All preliminary abstracts and presentations must be written in English.
10. The winning entry may be invited to attend TOC Europe in Rotterdam on 18/19th June to present their proposal to be decided by the PEMA board giving consideration to applicable restrictions.
11. One lecturer is permitted to accompany the winning team to the TOC Europe.
12. Reasonable expenses incurred by travelling to TOC Europe will be reimbursed by PEMA as outlined in the PEMA Expenses Procedure document.
13. By emailing a sign up sheet to info@pema.org, students confirm their participation in the competition and agreement of the Rules of Participation.
14. By submitting a preliminary proposal, teams agree to their work being published under the Student Challenge page on the PEMA website.
15. All presentations must be in Microsoft Powerpoint format, standard slide ratio (4:3).
16. The teams who qualify for the final stage of the competition agree to the use of their names and images in any PEMA publicity material.
17. The team captain of the winning team will need to provide bank details to transfer the prize money.
18. It is the responsibility of the team captain of the winning team to disseminate the prize money equally among teammates.

The prize is as follows:

19. €2,000 (split between team members, exposure on PEMA website and social media channels and the possibility of their solution being published in a relevant publication.
20. Should students from the winning team be invited to attend TOC Europe, travel and accommodation expenses to be covered by PEMA in line with the Student Challenge Expense Procedure.

Questions on plagiarism, or any other queries must be directed to the PEMA Student Challenge Coordinator: Caroline Doyle on **info@pema.org**

5. Frequently Asked Questions

1. What is the Ottonel Popesco Student Challenge by PEMA?

The Ottonel Popesco Student Challenge by PEMA is an annual competition run by the Port Equipment Manufacturers Association and is open to students studying any relevant degree from universities globally. In the first stage of the competition, teams (comprised of 3 - 4 students) are invited to submit a preliminary abstract, providing their solution to the Student Challenge Question. The question itself constructs a fictional scenario within which there is a real-world operational issue that the Students must solve. The theme of the challenge is always topical focusing on current challenges facing the industry today.

The winning team receives a prize of €2,000 to be shared between team members, the possibility of their solution being published in a relevant publication, as well as an invitation to attend the next TOC Europe event, (to be confirmed) courtesy of PEMA.

2. Who can participate?

Participation in the Ottonel Popesco Student Challenge by PEMA is open to any team of students currently studying towards an Undergraduate or Postgraduate degree. The competition is open to universities globally and students must be aged 18 or over.

3. How many students can be in a team?

Teams must comprise 3 - 4 students, one of whom must be a 'Team Captain' who will act as the main contact for the Student Challenge communications.

4. Can more than one team from the same university participate?

Multiple teams from the same university can participate, so long as they compete independently of each other and there is no overlap of work. Team mates can be studying different degrees but must attend the same university to compete.

5. How can I participate?

To submit a team for the Student Challenge 2024/25, email your completed sign up sheet to **info@pema.org** with the **Subject: Student Challenge Team Sign Up – [UNIVERSITY NAME]**

6. Are travel expenses covered for finalists?

Should the winning team be invited to the TOC, travel and accommodation expenses are covered, in line with the Official Ottonel Popesco Student Challenge by PEMA Expense Procedure which can be found on the Student Challenge section of the PEMA Website.

7. Who do I contact if I have additional questions?

For any questions or queries relating to the Ottonel Popesco Student Challenge by PEMA, please contact PEMA Student Challenge Coordinator, Caroline Doyle on **info@pema.org**

8. What is TOC Europe?

TOC Europe is part of a global portfolio of events that bring together stakeholders of the container supply chain to learn, debate and network

TOC has long been considered best in class by container terminal operators and their suppliers. The TOC of today has evolved into a complete container supply chain event, delivering both technical contents and also offering a platform to the stakeholders across the cargo chain.

9. What is PEMA?

Founded in 2004, the Port Equipment Manufacturers Association, PEMA, provides a forum and public voice for the global port equipment and technology sectors. The Association has seen strong growth in recent years, and now has more than 120 member companies representing all facets of the industry, including crane, equipment and component manufacturers, automation, software and technology providers, consultants and other experts.