



NETCASTPL4.0

- NETWORKING -

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Funded by
the European Union

NetCastPL4.0

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Deliverable 2.2 – School on perspective & business

Funding Scheme: Coordination and Support Action

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Partners contribution:	All Partners
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Dissemination level		
PU	Public	☒
SEN	Sensitive	☐

NetCastPL4.0 aims to enhance excellence and innovation capacity at AGH, putting AGH in a leading position to nuclei the Networking Pole for Castings Foundry Innovation and Sustainability to face the strategic challenges of Poland and EU foundries and of lightweight components end-user industry. It also aims to engage the country in pan-European collaborative efforts on this topic twinning with the Consiglio Nazionale delle Ricerche (Italy) and AALTO University (Finland). It will put AGH This will be achieved through realization of following specific objectives implemented via 7 WPs:

1. Improving the overall capacity and resources at AGH in advanced lightweight castings science & technology and in emerging Industrial Sustainability assessment and management practices and tools.
2. Conducting exploratory research on “High-tech cast iron and Al alloys for lightweighting castings for the medium and heavy-loaded conditions produced by green molding materials” demonstrating enhanced capacity in novel lightweight materials and components fabrication, modelling and characterization.
3. Establishing an AGH European Networking Pole on Lightweight Castings Innovation and Sustainability. This will enhance the replication potential developed at AGH, creating strategic partnerships with Research organizations, Universities, Foundries, Industry, Public and Governmental Organizations, and Agencies in light-weighting casting components and Technologies for casting foundries 4.0 development.
4. Providing new results and experiences analyzing 3 case-studies in production of light-weight castings components in medium and heavy loaded conditions and automotive for the preparation of a Guide Document on Best Available Practices in the Green Foundries Industry.
5. Leveraging the NetCastPL4.0 partnership at a European level and creating the enabling conditions for a long-lasting joint collaboration.
6. To arrange schools and training workshops in partner countries for scientists and for potential follower foundries and other relevant stakeholders.
7. Raising mobility (internal and external) of scientists and staff in green molding/casting science and technologies.
8. Improving the research management and administration skills at AGH, by creating the Department of European cooperation within AGH.
9. Fostering gender equality issues at AGH and in the castings foundry through implementation of the action plan for Equality, Inclusion, and Diversity.



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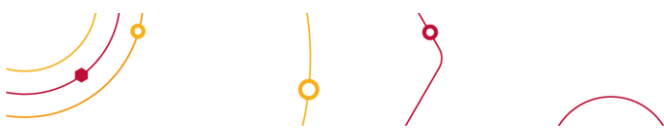
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Table of Contents

1. Scope of the Deliverable	5
2. Organization of the School on perspective & business	10
2.1 Organizational matters	10
2.2 Agenda of the School on perspective & business	13
2.3 Participants of the School on perspective & business– statistics and analysis	16
3. Scientific and technical content of the School on Perspective & Business	20
4. Assessment of the feedback received	24
Attachment 1 School evaluation survey report	26



1. Scope of the Deliverable

As part of the activities under Deliverable 2.2, a training session entitled “School on perspective & business” was held. This event constituted the second planned training sessions within Work Package 2 (WP2) – Training. One of the key objectives of WP2 is the organisation of both virtual and in-person thematic training sessions, which facilitate the exchange of knowledge in the field of modern foundry technologies and contribute to the development of competences and human resources.

The training took place from 25 June to 26 July 2026 at the Faculty of Foundry Engineering of AGH University of Kraków. The event was organised in close collaboration between three consortium partners of the NetCastPL4.0 project: AGH (Poland), CNR (Italy), and AALTO (Finland).

Participants included representatives from academic institutions – doctoral candidates, early-stage researchers (postdoctoral fellows), and academic staff – as well as experts from the foundry industry in Poland and Central Europe, including representatives of industrial companies that are members of the NetCastPL4.0 project network (<https://netcastpl4-0.agh.edu.pl/network-partners/>) (Fig. 1).







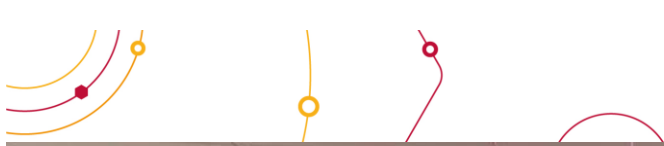
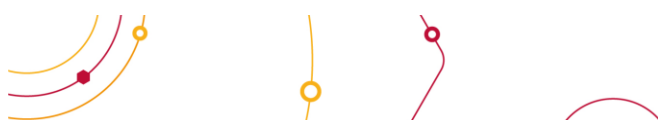


Fig. 1. Selected pictures from School on perspective & business

The second edition of the NetCastPL4.0 training, entitled “*School on Perspective & Business*” was focused on advanced topics related to the strategic development of the foundry industry, business planning, process digitalisation, and the application of digital technologies in the context of Industry 4.0.

Organisational details and the training programme are available on the project website at: <https://netcastpl4-0.agh.edu.pl/schools-and-workshops/school-on-perspective-business/> (Fig. 2.)






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[School](#)

School on perspective & business

June 25-26, 2026
AGH University of Krakow, Poland

Targeted audience: researchers and experts from network partners.

To **REGISTER** contact:
netcastpl40@agh.edu.pl
mgorny@agh.edu.pl

Green castings manufacturing is an objective that must be supported by excellent science and adopted by all foundries/industries with a view to reducing the environmental impact of product and production processes. With increasingly stringent environmental regulations, there is a growing need for efficient production planning models that consider the trade-off between technology return and environmental costs. One of the key ideas of NetCastPL4.0 is knowledge exchange. Through the Knowledge Exchange Pillar actions, experts and partners reinforce human capital through training and cross-fertilization, implement skills and enhance the know-how, as well as create new professional skills. The 2026 NetCastPL4.0 summer school focuses on 'Perspectives and Business' of green casting manufacturing.

The two-day school deals with the following topics

- Fundamentals & Strategic Framework
- Future Horizons – Innovation, Business & Research Pathways

Experts from the project partners and the wider network welcome you to the event.



Check next School:

School on S&T mechanics, metallurgy & green processing.

[Read more](#) →

Fig. 2. Information about the training on the NetCastPL4.0 project website



2. Organization of the School on perspective & business

2.1 Organizational matters

The preparation of the “School on perspective & business” took seven months and included the following activities:

Date	Activity
08.12.2025 (Project Management Unit Meeting)	K. Jalava presented the preliminary topics to be covered during the School on Perspective & Business.
15.12.2025 (Project Partners Meeting in Milan)	The preliminary concept of the School programme, its duration, delivery format, and the possibility of recording selected sessions were discussed. It was agreed that the programme would be further consulted with the Network Partners during the Network Partners Meeting on 20 February 2026. The interdisciplinary nature of the event and the importance of addressing the needs of industry stakeholders were emphasised
09.01.2026 (Project Management Unit Meeting)	The process of inviting speakers was initiated.
02.02.2026 (Info Day)	M. Górny promoted the School during his presentation during “Info Day”
20.02.2026 (Network Partners Meeting)	During the Network Partners Meeting in Kraków, K. Jalava presented the preliminary programme and thematic scope of the School on Perspective & Business. The proposed programme was discussed with the Network Partners, and the event dates (25–26 June 2026) were confirmed.
30.03.2026 (WP Leaders and Project Management Unit Meeting)	The results of the survey conducted among the Network Partners regarding the expected School topics were analysed. Based on the feedback received, work commenced on the preparation of the detailed programme.
16.04.2026 (Project Management Unit Meeting)	It has been confirmed that K. Jalava confirmed the detailed program regarding the School on Perspective & Business.



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20–22.04.2026

(Współpraca
2026 Conference)

M. Górny promoted the School during his presentation in the "NetCastPL4.0 Project Conference Opening" session.

07.05.2026

(63rd

Metallurgical

Student Scientific

Circles

Conference)

M. Górny promoted the School during his presentation entitled "NetCast40-PL Project".

25.05.2026

(Project Partners
Meeting in Espoo)

K. Jalava presented the final version of the School programme, incorporating the agreed amendments. The programme was discussed and approved by the project partners.

29.05.2026

M. Kawalec and M. Górny distributed invitations to the School to all Network Partners.

12.06.2026

Participant registration officially closed.

16.06.2026

Promotional materials for the event were ordered.

17–24.06.2026

Participation confirmation emails were sent to registered participants from netcastpl40@agh.edu.pl.

22.06.2026

Name badges and certificates of participation were prepared and printed.

24.06.2026

The final version of the event information leaflet, including the event schedule, was distributed to all participants.

24.06.2026

Information posters promoting the School on Perspective & Business were displayed throughout the Faculty of Foundry Engineering ahead of the event to increase its visibility.

25–26.06.2026

The School on Perspective & Business was successfully held.



Moreover, the School on perspective & business” was advertised via the project website and social media channels (Fig.3).

Social media	Number of posts related to the event	Activities
YouTube	26	Documenting the preparation, implementation, and outcomes of the event
LinkedIn	2	A post announcing that the topic of “School on Perspective & Business” was discussed at the Network Partners Meeting in Kraków, and a post-event update
„X” platform	1	A post-event update
Facebook	2 + Event	A post announcing that the topic of “School on Perspective & Business” was discussed at the Network Partners Meeting in Kraków, a post-event update, and a Facebook event published prior to the event

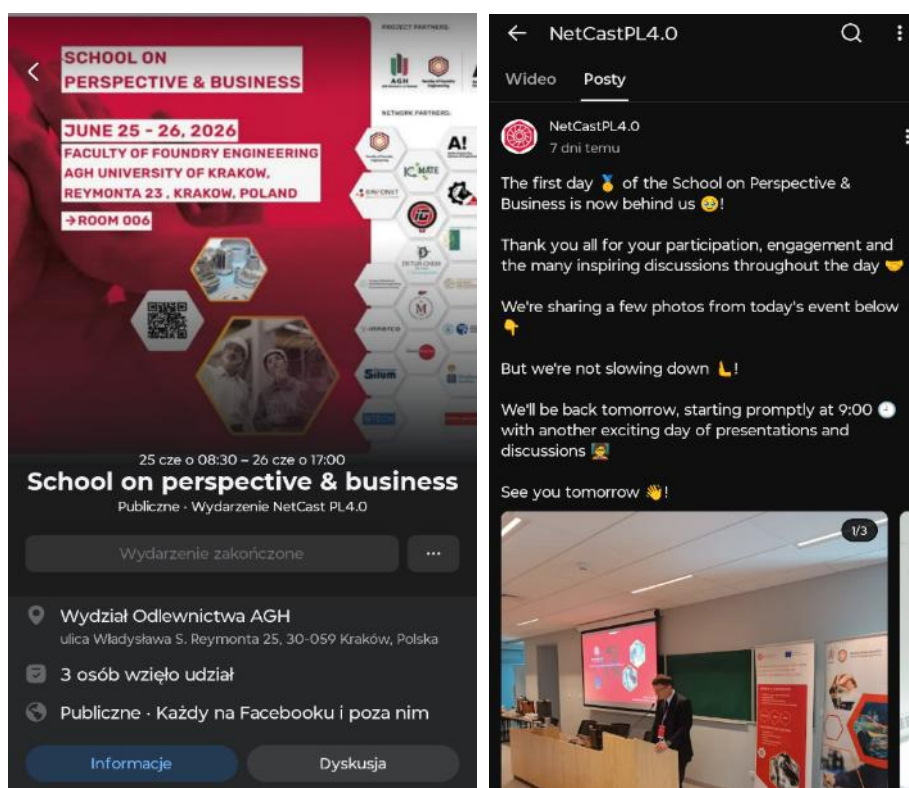
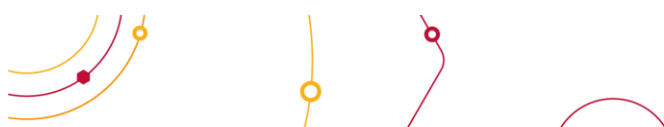


Fig. 3. Sample posts promoting the School on perspective & business



2.2 Agenda of the School on perspective & business

The programme of the “School on perspective & business”, which took place at the Faculty of Foundry Engineering on 25-26 June was jointly developed by the project partners and carried out as Figure 4.



**SCHOOL ON
PERSPECTIVE & BUSINESS**

JUNE 25 - 26, 2026

**FACULTY OF FOUNDRY ENGINEERING
AGH UNIVERSITY OF KRAKOW,
REYMONTA 23, KRAKOW, POLAND**

→ ROOM 006

PROJECT PARTNERS:

NETWORK PARTNERS:

JUNE 25, 2026 | FUNDAMENTALS & STRATEGIC FRAMEWORK

09:00	09:10	Welcome & Agenda of the School
09:10	10:00	Life Cycle Assessment (LCA) – Theory, Standards & Terminology (Stefania Flamińska - CNR-ICMATE)
10:00	10:10	Short break
10:10	11:00	LCA Tools & Databases for Metallurgy and Casting Industry (Stefania Flamińska - CNR-ICMATE)
11:00	11:10	Short break
11:10	11:45	Closed-Loop Economy in Metals – Extraction to End of Life: Concepts, definitions and current European challenges (Kalle Jalava - Aalto University)
11:45	12:30	Foundry 4.0: Data and machine learning applied to casting processes (Nicola Gramaglia - SINFONET)
12:30	13:30	Break
13:30	14:00	Business Models for Circular Metallurgy: 'Fastest Foundry' concept (Ville Mäkelä - Hietec Oy)
14:00	14:45	Industrial discussion part 1: Strategic Drivers for Sustainability in Metallurgy & Processes
14:45	15:00	Coffee break
15:00	15:30	Design and manufacturing lessons – lightweight housing for a compressor (Krzysztof Sikora - DESMI Sp. z o.o.)
15:30	16:15	Industrial discussion part 2: Industry Perspectives on Scrap Quality & Specifications
16:15		Conclusion of the day

JUNE 26, 2026 | FUTURE HORIZONS - INNOVATION, BUSINESS & RESEARCH PATHWAYS

09:00	10:00	Emerging Trends in Sustainable Materials & Lightweighting
Presentations from the NetCastPL4.0 team		
10:00	10:10	Short break
10:10	11:00	The impact of European environmental regulations on the foundry sector: from the 2019 Green Deal to the present (Roberto Lanzani - ASSOFONDI)
11:00	11:45	Ethical conundrums using AI models (Philippe De Brouwer, Head of Model Risk Management Poland & Head Academic Partnerships Poland)
11:45	12:30	Scaling Research to Commercial Practice – Barriers & Solutions (Wojciech Roszczyński - Centre for Cooperation and Technology Transfer, AGH Kraków)
12:30	13:30	Break
13:30	14:15	Potential of AI in Industry and Business (Joanna Jaworek-Korjakowska - Center of Excellence in Artificial Intelligence, AGH Kraków)
14:15	15:00	Notified, Designated, Assessment Body for Structural Railway Subsystems including Independent Safety Assessment activities for railway systems or components with a Safety Integrity Level, ISALAB
15:00	15:15	Coffee break
15:15	15:45	AI for Non-Destructive Engineering (Gonçalo Sorger - Trueflaw)
15:45	16:15	Industrial discussion part 3: Vision 2035 – Research to Business, Circular Metallurgy & Foundry 4.0
16:15		Closure of the school

School on Perspective & Business

Green castings manufacturing is an objective that must be supported by excellent science and adopted by all foundries/industries with a view to reducing the environmental impact of product and production processes. With increasingly stringent environmental regulations, there is a growing need for efficient production planning models that consider the trade-off between technology return and environmental costs.

One of the key ideas of NetCastPL4.0 is knowledge exchange. Through the Knowledge Exchange Pillar actions, experts and partners reinforce human capital through training and cross-fertilization, implement skills and enhance the know-how, as well as create new professional skills. The 2026 NetCastPL4.0 summer school focuses on 'Perspectives and Business' of green casting manufacturing.

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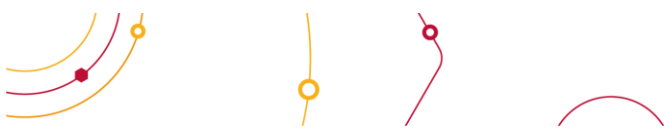
Experts from the project partners and the wider network welcome you to the event.

Registration for Network Partners only.

To register, please email
✉ netcastpl40@agh.edu.pl
✉ mgorny@agh.edu.pl

More info:
www.netcastpl4-0.agh.edu.pl/network-partners

Fig. 4. Event Schedule – School on perspective & business (25 June – 26 July 2026)



Each day of the school, prior to the commencement of lectures, participant registration was conducted. This process included the distribution of personalised name badges and promotional materials related to the NetCastPL4.0 project (Fig. 5).



Fig. 5. Registration stand with visible promotional materials of the NetCastPL4.0 project - fudge candies, pencils, notebooks, leaflets, and badges

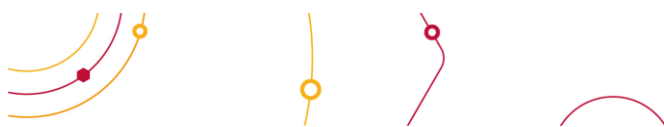
All participants were required to review and sign documents concerning personal data protection (in accordance with GDPR regulations).

Upon completion of the training, participants received certificates of attendance (Fig. 6).



Fig. 6. Certificate of Participation in the School on perspective & business

The Erasmus for Young Entrepreneurs (EYE) programme was promoted during the NetCastPL4.0 Summer “School on perspective & business” to raise participants' awareness of the opportunities it offers for aspiring entrepreneurs. Participants received information about international exchanges, learning from experienced entrepreneurs, and building international business networks. Figure 7 presents the promotional leaflet used during the event.



Erasmus for Young Entrepreneurs

What is EYE?

An international business exchange programme by the European Commission that connects:

NEW ENTREPRENEURS

With experienced entrepreneurs abroad

- Work together from 1 to 6 months
- Receive financial support
- Build real business experience

Who can join?

ASPIRING OR NEW ENTREPRENEURS

- With a business idea or plan
- Or less than 3 years of experience

EXPERIENCED ENTREPRENEURS

- Owners/managers of SMEs
- At least 3 years of experience

Open to EU & partner countries

No age limit – No sector limits

**GO ABROAD. LEARN BY DOING.
GROW YOUR BUSINESS.**

Local contacts – Krakow

MOST Foundation – erasmus@fundacjamost.pl

Krakow Technology Park – apietras@kpt.krakow.pl

Apply now!

www.erasmus-entrepreneurs.eu



Why participate?

FOR YOU:

- Learn directly from real businesses
- Gain entrepreneurial skills
- Build an international network
- Access new markets and opportunities

FOR HOSTS:

- Get fresh ideas & innovation
- Connect with new talent
- Develop cross-border partnerships

A WIN-WIN, PEER-TO-PEER EXCHANGE
(not an internship!)

How it works?

1. Apply online
2. Get matched with a host entrepreneur
3. Plan your exchange
4. Collaborate abroad
5. Grow your business idea

APPLY ANYTIME – NO DEADLINES!

www.erasmus-entrepreneurs.eu

Why EYE matters?

- Supports entrepreneurship & SMEs
- Creates new businesses & jobs
- Boosts innovation & skills
- Strengthens European collaboration

EYE is also promoted by the
NetCastPL4.0 project:



read more:
www.netcastpl4-0.agh.edu.pl



Fig. 7. Certificate of Participation in the School on perspective & business

2.3 Participants of the School on perspective & business– statistics and analysis

The training was attended by **76 participants**, including 4 who joined remotely. Among the participants were experts from the foundry industry representing NetCastPL4.0 network partners, as well as researchers, PhD students, and administrative staff representing companies and research institutions from Poland, Finland, Italy and Germany. (Fig. 8).

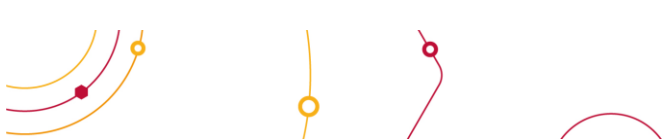


Fig. 8. Training participants in the lecture hall



Institutions	Representatives	
Associations		4
Foundry Chamber of Commerce in Poland	1	
SINFONET	1	
Model Risk Management Poland	1	
ASSOFOND	1	
Enterprises		
Innerco sp. z o.o.	4	18
Detru Chem Sp. z o.o.	1	
Foseco	1	
Teksid Iron Poland	1	
Consolidated Precision Products Poland Sp. z o.o.	3	
Prec-Odlew Sp. z o.o.	1	
KGHM ZANAM	1	
Hetitec Oy	1	
Nemak Poland Sp. z o. o.	1	
Brembo	1	
DESMI Sp. z.o.o.	1	
Trueflaw	1	
SPECODLEW Sp. z o.o.	1	
Research Units		
AGH University of Kraków	43	54
Aalto University	1	
Rzeszow Univerty of Technology	2	
Silesian University of Technology	2	
Wrocław University of Science and Technology	1	
Gießerei-Institut der TU Bergakademie Freiberg	1	
CNR-ICMATE	4	
	All	76

Fig. 9. Number of Participants from Each Participating Organisation

The charts present a schematic distribution of the training participants by professional role, gender, and nationality (Fig. 10-11). A significant proportion of the attendees were affiliated with the academic sector, with university teaching staff constituting the majority within this group. In total, 76 individuals took part in the training, which may be regarded as a satisfactory outcome. A considerable share of the participants were male, accounting for 64% of all attendees.

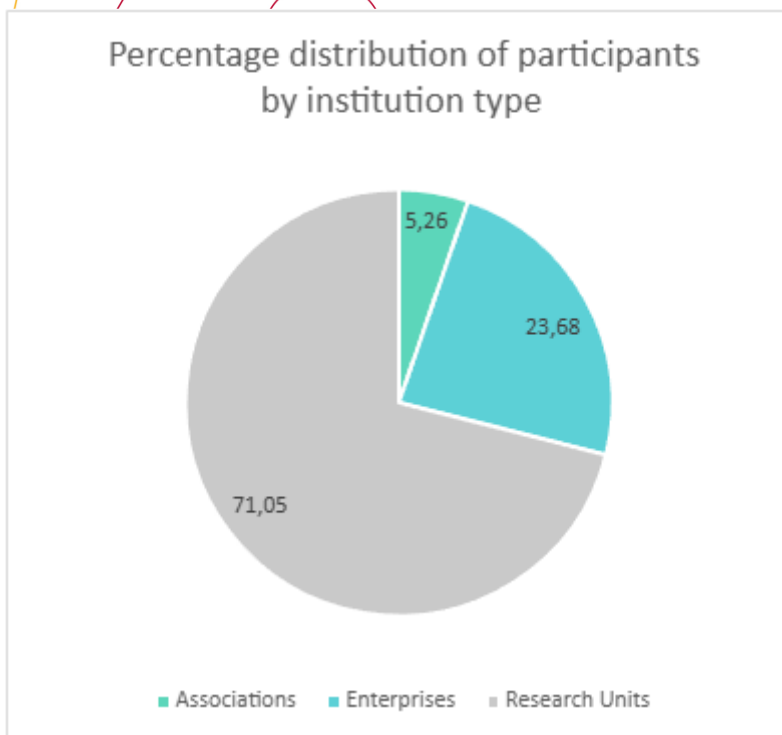


Fig. 10. Training participants by type of institution represented.

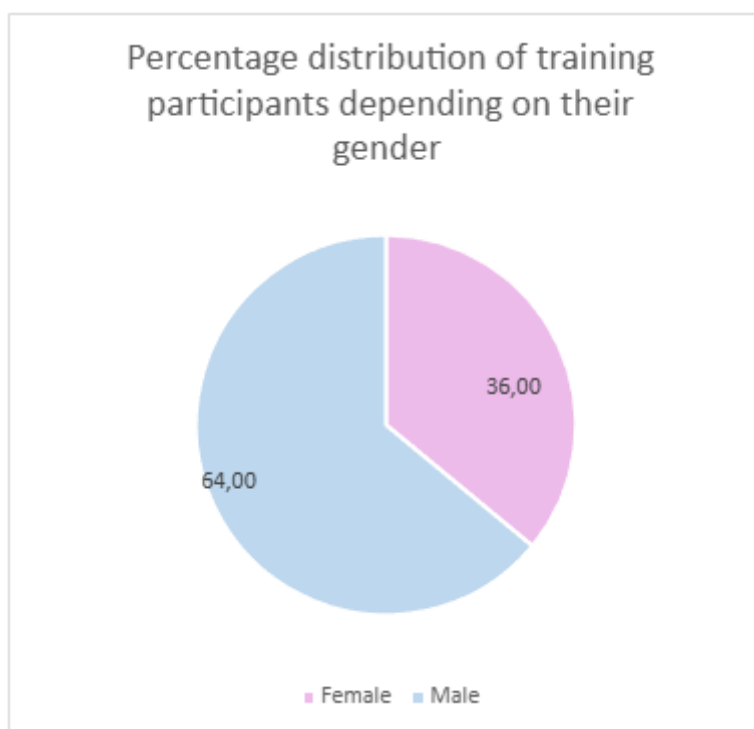


Fig.11. Percentage distribution of training participants depending on their gender



3. Scientific and technical content of the School on Perspective & Business

Day 1 – Fundamentals & Strategic Framework

Welcome & Agenda of the School

The School was opened with a short introduction to the objectives of the event and the agenda of the two training days. The participants were introduced to the main thematic blocks: sustainability assessment, circular metallurgy, Foundry 4.0, business models, industrial case studies, AI-based tools and research-to-business pathways. The opening also positioned the School as an activity supporting the exploitation, networking and knowledge-transfer objectives of the NetCastPL4.0 project.

Life Cycle Assessment (LCA) – Theory, Standards & Terminology (Lecturer Stefania Fiameni, CNR-ICMATE)

The lecture introduced Life Cycle Assessment as a scientific and standardized tool supporting circular economy and sustainability-oriented decision-making. The presentation explained the relationship between LCA and circular economy, including the extension of product life, reuse, repair, recycling and reduction of environmental impacts. The participants were familiarized with the basic LCA framework according to ISO 14040 and ISO 14044, including goal and scope definition, life cycle inventory, life cycle impact assessment and interpretation. Particular attention was paid to the definition of functional unit, system boundaries, data quality and the practical role of LCA in R&D projects, supply chains and strategic management.

LCA Tools & Databases for Metallurgy and Casting Industry (Lecturer Stefania Fiameni, CNR-ICMATE)

This lecture focused on the practical application of LCA in the foundry sector. A case study concerning cast iron production was used to demonstrate how environmental performance can be assessed from raw material acquisition to foundry-gate output. The presentation discussed the use of primary industrial data and secondary database data, including ecoinvent, as well as the role of software tools in transforming inventory data into impact assessment results. The lecture also explained how LCA supports the identification of environmental hotspots, process improvement, environmental reporting and market differentiation through tools such as Product Carbon Footprint and Environmental Product Declarations.

Closed-Loop Economy in Metals – Extraction to End of life: Concepts, definitions and current European challenges (Lecturer Kalle Jalava, Aalto University)

The lecture addressed the life cycle of metallic materials from extraction to end-of-life, with emphasis on the growing role of secondary raw materials. The discussion covered the future availability and quality of steel scrap and secondary aluminium, as well as the problem of residual elements such as Cu and Sn in recycled streams. The presentation highlighted that future foundry production will increasingly depend on scrap quality, purchasing power, regulatory pressure and competition with large steel and aluminium producers. The main conclusion was that closed-loop metallurgy is not only an environmental concept but also a major technological and strategic challenge for European foundries.

Foundry 4.0: Data and machine learning applied to casting processes (Lecturer Nicola Gramegna, SINFONET)

The lecture presented digitalization as a key component of modern smart manufacturing and zero-defect manufacturing in foundry production. It discussed the use of data integration, process monitoring, quality mapping and machine learning for predicting casting quality. Special attention was paid to data-driven digital twins for HPDC production lines, where process parameters, sensor signals and quality indicators can be



integrated to support supervision, diagnosis and process optimization. The lecture showed that digital tools can help reduce scrap, improve traceability and support more robust control of complex casting processes.

Business Models for Circular Metallurgy: “Fastest Foundry” concept (Lecturer Ville Moilanen, Hetitec Oy)

This lecture introduced the business perspective of circular metallurgy by discussing how foundries can respond to market pressure for faster, more flexible and more sustainable manufacturing. The “Fastest Foundry” concept was presented as a model linking agile production, rapid response to customer needs, digital process control and efficient use of resources. The topic connected technological flexibility with business competitiveness, showing that circularity must be supported not only by metallurgy, but also by new service models, shortened development cycles and closer cooperation between customers, designers and foundries.

Industrial discussion – Part 1: Strategic Drivers for Sustainability in Metallurgy & Processes (Moderator Kalle Jalava, Aalto University)

The first industrial discussion focused on the strategic factors forcing the metallurgical and foundry sectors to transform. Participants discussed regulatory pressure, decarbonization, customer expectations, energy and raw-material costs, recycling targets and the increasing need for transparent environmental data. The discussion connected the scientific content of the LCA and circular metallurgy lectures with practical industrial requirements, especially in relation to competitiveness, certification and long-term resilience of the foundry sector.

Design and manufacturing lessons – lightweight housing for a compressor (Lecturer Krzysztof Sikora, DESMI)

The industrial case study presented design and manufacturing lessons learned during the development of a lightweight compressor housing. The lecture showed how cost reduction shifted risk from the product geometry to the HPDC process, where flow balance, die thermal conditions and porosity control became critical. The case demonstrated the importance of combining functional zoning, simulation, customer approval loops and defect acceptance criteria based on local stress requirements rather than uniform global limits. The presentation also discussed dimensional stability problems, NVH testing and the role of process variability and heat treatment in component performance.

Industrial discussion – Part 2: Industry Perspectives on Scrap Quality & Specifications (Moderator Kalle Jalava, Aalto University)

The second industrial discussion addressed the practical consequences of increasing scrap use in foundry production. The participants considered the need for clearer scrap specifications, improved traceability and better control of residual elements and contamination. The discussion emphasized that circular metallurgy requires a balance between environmental targets and the strict metallurgical requirements of high-performance castings. The topic was particularly relevant for thin-walled and lightweight castings, where compositional instability and inclusions may directly affect defect formation, microstructure and mechanical properties.



Day 2 – Future Horizons: Innovation, Business & Research Pathways

Emerging Trends in Sustainable Materials & Lightweighting – presentations from the NetCastPL4.0 team (Giuliano Angella, CNR-ICMATE Milan, Marcin Górny AGH Krakow, Jan Marosz AGH Krakow, Katarzyna Major Gabryś AGH Krakow)

The NetCastPL4.0 team presented the main trends and research pathways related to lightweight castings, including Al-Cu alloys, ADI, IDI, Si-Mo and Ni-resist cast irons, as well as sustainable moulding materials. The session linked laboratory-scale research with the roadmap for industrial exploitation of lightweight castings. The presentations emphasized that thin-walled casting production remains a strategic development area, but its scale-up requires better control of castability, microstructure, scrap-derived contamination, process defects and digital tool implementation.

It has been showed that Green Deal-related requirements are forcing the replacement or modification of conventional moulding technologies, including furan sands, cold-box systems, ethyl silicate systems and alcohol-based coatings. The research presented included sodium-silicate systems with improved collapsibility, moulding sands with better reclaim quality, ablation casting sands, ecological organic binders, reduced-harm green sands and inorganic binders for 3D printing. The conclusion was that environmentally friendly binder systems can partially replace organic technologies while maintaining the technological quality needed for thin-walled castings.

The roadmap presentation summarized the exploitation-oriented perspective of NetCastPL4.0. It focused on bridging the gap between laboratory-scale prototypes and future industrial production of innovative lightweight castings. The lecture identified four main action areas: high-performance Al-Cu and ductile irons, digital tools for engineering lightweight castings, secondary metallurgy and scaling of lightweight casting technologies. Particular attention was paid to hot tearing in Al-Cu alloys, contamination and tramp elements in secondary metallurgy, the use of SHSB-TiC technology for grain refinement and microstructural homogenization, and the need to move selected solutions toward higher TRL levels.

The impact of European environmental regulations on the foundry sector: from the 2019 Green Deal to the present (Lecturer Roberto Lanzani – ASSO FOND)

The lecture discussed how European environmental policy has affected the foundry sector since the introduction of the European Green Deal. The presentation addressed the increasing importance of decarbonization, energy efficiency, circular economy, environmental reporting and recycled content in industrial production. The foundry sector was presented as an industry under strong regulatory and market pressure, but also as a key enabling sector for sustainable manufacturing, transport, infrastructure and energy systems. The lecture helped participants understand that compliance with environmental policy is becoming directly linked with competitiveness, investment decisions and access to future markets.

Ethical conundrums using AI models (Lecturer Philippe De Brouwer, Head of Model Risk Management Poland & Head Academic Partnerships Poland HSBC Service Delivery)

This lecture addressed the ethical and organizational challenges related to the use of artificial intelligence in business, research and industrial decision-making. The discussion focused on the risks of opaque models, biased data, insufficient human oversight and excessive reliance on automated recommendations. The



lecture emphasized that AI implementation requires not only technical performance, but also explainability, responsibility, model governance, risk management and traceability. The topic was directly relevant to industrial AI applications, where incorrect model outputs may influence quality control, safety, production planning or strategic decisions.

Scaling Research to Commercial Practice – Barriers & Solutions (Lecturer Wojciech Roszczynialski – Centre for Cooperation and Technology Transfer, AGH Krakow)

The lecture introduced technology transfer and commercialization as key mechanisms for moving research results from universities to industrial practice. It clarified the difference between broad technology transfer and more specific commercialization pathways, including direct commercialization through sale or licensing and indirect commercialization through spin-off companies. The presentation also discussed commissioned research, access to infrastructure, joint ventures, IP management, TRL development and the role of TTO units in supporting researchers and industrial partners. The lecture was particularly relevant for NetCastPL4.0 because exploitation of project results requires not only technical validation, but also appropriate legal, business and institutional pathways.

Potential of AI in Industry and Business (Lecturer Paweł Skruch AGH Krakow)

The lecture presented the potential of AI through the example of autonomous systems and software-defined control systems. It explained how sensing, perception, planning and control are integrated in autonomous technologies and why real-world deployment requires much more than laboratory model performance. The presentation discussed data generation, cloud versus edge execution, data quality, representativeness, safety, robustness, cybersecurity, human oversight and traceability. It also connected AI deployment with regulatory requirements, including high-risk AI systems and machinery safety, showing that industrial AI must be treated as a controlled engineering system rather than only a software tool.

Notified, Designated, Assessment Body for Structural Railway Subsystems including Independent Safety Assessment activities for railway systems or components with a Safety Integrity Level – ISALAB (Lecturer Ernest Glyndwr Isalab)

This lecture introduced the role of independent assessment, certification and safety evaluation in railway systems and components. The presentation addressed the function of notified, designated and assessment bodies in verifying conformity with relevant technical and safety requirements. The topic also included Independent Safety Assessment activities for systems and components with defined Safety Integrity Levels. The lecture demonstrated how formal assessment procedures, documentation, traceability and independent verification support safe implementation of technical solutions in regulated transport sectors.

AI for Non-Destructive Engineering (Lecturer Gonçalo Sorger – Trueflaw Oy)

The lecture presented the use of artificial intelligence in non-destructive engineering and inspection. The topic covered how AI can support defect detection, signal interpretation, image analysis and decision-making in NDT workflows. The presentation showed that AI can increase inspection efficiency and consistency, particularly when large volumes of inspection data must be processed. At the same time, the lecture emphasized that AI-based NDT requires high-quality training data, validation, traceability and careful integration with existing engineering standards and expert assessment.



Industrial discussion – Part 3: Vision 2035 – Research to Business, Circular Metallurgy & Foundry 4.0 (Moderator Kalle Jalava, Aalto University)

The final industrial discussion summarized the main messages of the School and placed them in a long-term perspective. Participants discussed how the foundry sector may evolve by 2035 under the combined influence of circular metallurgy, digitalization, AI, environmental regulation, new business models and the need for faster research-to-market pathways. The discussion highlighted that future foundries will need to combine metallurgical expertise with data-driven process control, sustainable materials, validated AI tools and stronger cooperation between academia, technology-transfer units and industrial partners. The session closed the School by linking scientific excellence with practical exploitation and business-oriented implementation.

4. Assessment of the feedback received

After the training concluded, participants completed an anonymous evaluation survey. The purpose of the survey was to gather feedback on the event and to identify the needs and challenges currently faced by the foundry industry.

The survey was prepared in English and was structured into four sections:

1. Overall Evaluation,
2. Assessment of Individual Sessions,
3. Impact of the School,
4. Networking and Collaboration.
5. Future Needs of the Network
6. Open Questions
7. Participant Profile (Optional)

In total, the survey contained 20 questions.

The main findings from the feedback are as follows:

The evaluation survey confirmed a very positive reception of the School on Perspective & Business. In total, 45 participants answered the general evaluation questions. The overall organisation of the School was assessed very highly: 64.4% of respondents rated it as “very good” and 26.7% as “good”, giving a total of 91.1% positive ratings. The School also met participants’ expectations to a high degree: 42.2% declared that their expectations were fully met, while 40.0% indicated that they were met to a large extent. The thematic relevance was also strong, with 42.2% of respondents describing the topics as highly relevant and 31.1% as extremely relevant to their professional activities. In addition, 91.1% of respondents declared that they would probably or definitely recommend the School to colleagues.

The assessment of individual sessions showed consistently high satisfaction with both usefulness and presentation quality. Most lectures and discussion panels received predominantly “good” and “excellent” scores. Particularly strong evaluations were observed for sessions related to circular economy, industrial discussions, lightweight casting case studies, AI for non-destructive engineering, business models for circular metallurgy and Foundry 4.0. The industrial discussions were also highly appreciated, indicating that



participants valued the direct exchange between academia, research organisations and industry representatives.

The School had a clear educational and strategic impact. The topics that most strongly contributed to participants' knowledge development were Foundry 4.0 and digitalisation, LCA, circular economy, artificial intelligence, sustainability regulations and technology transfer. For most of these areas, the majority of respondents declared that the School improved their understanding either moderately or significantly. In the open answers, the most valuable topics repeatedly indicated by participants included circular economy, LCA, technology transfer, AI, Foundry 4.0/digitalisation, recycling and scrap quality, and AI-based non-destructive engineering.

The survey also confirmed the networking value of the event. A large share of respondents indicated that the School provided opportunities to establish new professional contacts, and 36.4% identified potential partners for future collaboration, while a further 52.3% answered "possibly". The most attractive future forms of collaboration were joint R&D projects, industrial implementation projects, Horizon Europe proposals, training and education, and technology transfer. Interest in further NetCastPL4.0 Network Partner activities was very high, with 57.8% of respondents declaring "definitely yes" and 35.6% "probably yes".

Regarding future needs, participants indicated that upcoming NetCastPL4.0 events should prioritise Foundry 4.0 and digitalisation, artificial intelligence in foundry applications, technology transfer, circular economy, recycling and scrap quality, sustainable materials, funding opportunities, and non-destructive testing. The preferred event formats were summer schools, industrial workshops and site visits to industrial partners, which confirms that participants expect both knowledge transfer and practical exposure to industrial challenges.

The open comments were generally positive. Participants appreciated the organisation, atmosphere, international character, quality of presentations, direct conversations, and the exchange of knowledge between scientific and industrial partners. The main suggested improvements concerned better technical conditions for online presentations, shorter presentations, more time for discussion, clearer identification of participants' institutions, wider dissemination before the event, and more practical industrial examples. Overall, the survey results demonstrate that the School successfully addressed current industrial and research challenges and contributed to strengthening the NetCastPL4.0 network.



Attachment 1 School evaluation survey report

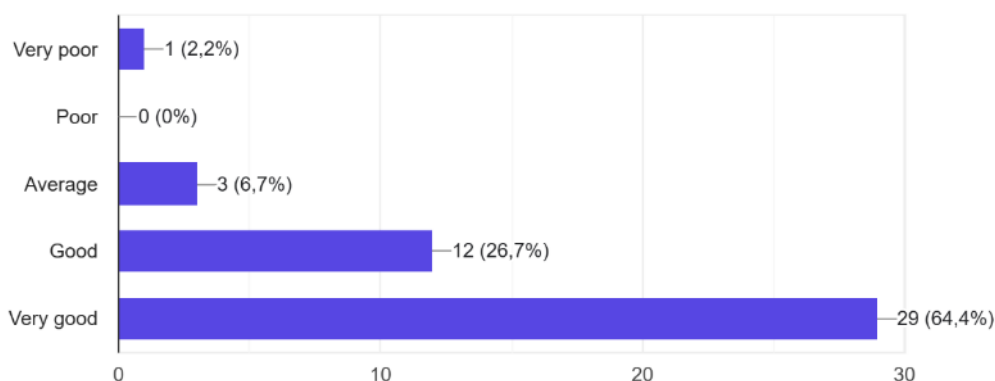
NetCastPL4.0 Evaluation Survey: School on perspective & business

Total number of respondents: 45

Section 1. Overall Evaluation

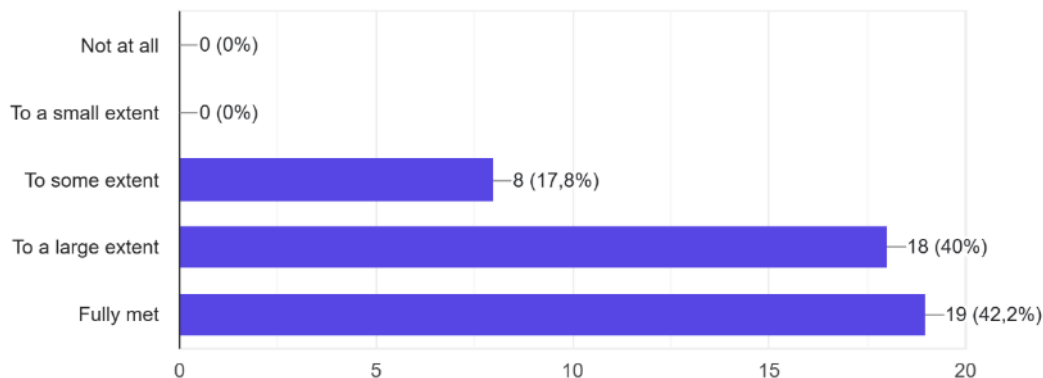
1. How would you rate the overall organization of the School?

45 odpowiedzi



2. To what extent did the School meet your expectations?

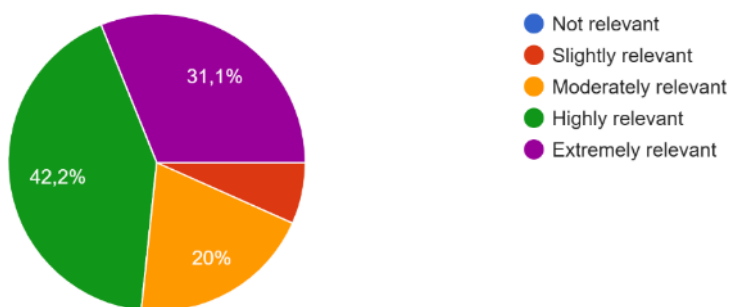
45 odpowiedzi





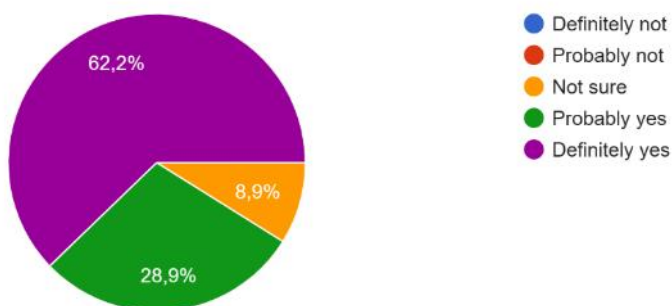
3. How relevant were the topics presented to your professional activities?

45 odpowiedzi



4. Would you recommend this School to colleagues?

45 odpowiedzi



Section 2. Assessment of Individual Sessions

Please rate each session regarding:

U = Usefulness

Q = Presentation Quality

Scale:

1 = Very poor

2 = Poor

3 = Average

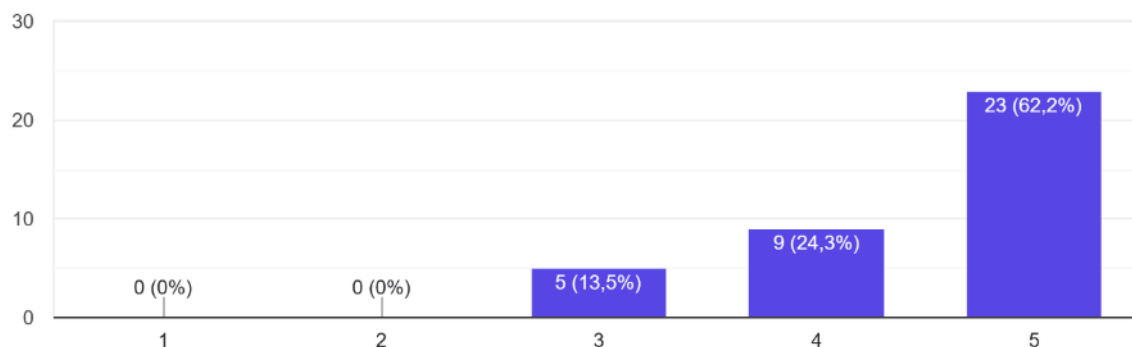
4 = Good

5 = Excellent



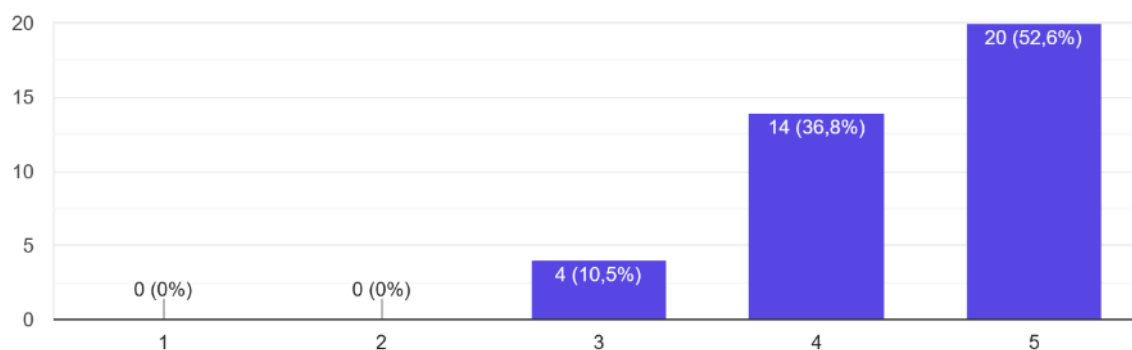
LCA – Theory, Standards & Terminology Please rate each session regarding: U = Usefulness

37 odpowiedzi



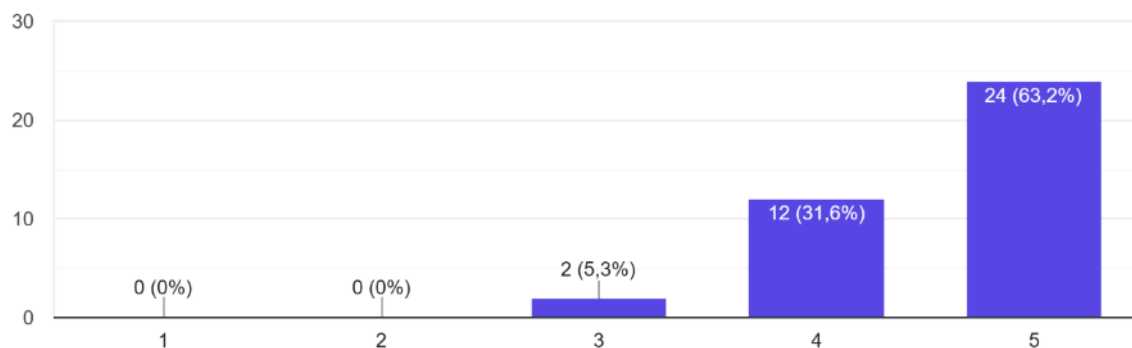
LCA Tools & Databases for Metallurgy and Casting Industry Please rate each session regarding: U = Usefulness

38 odpowiedzi



Closed-Loop Economy in Metals Please rate each session regarding: U = Usefulness

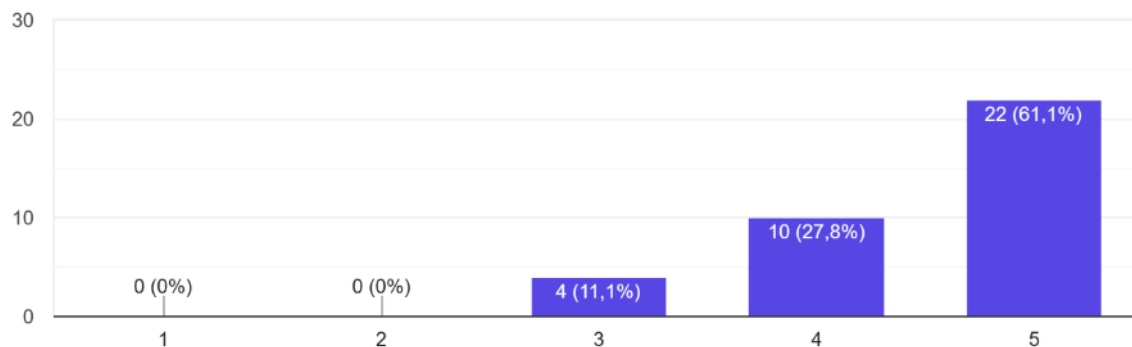
38 odpowiedzi





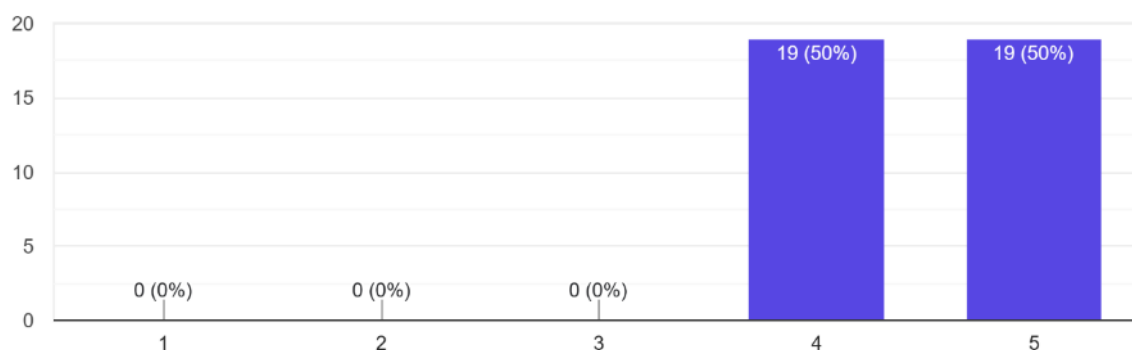
Foundry 4.0: Data and Machine Learning Applied to Casting Processes Please rate each session regarding: U = Usefulness

36 odpowiedzi



Business Models for Circular Metallurgy Please rate each session regarding: U = Usefulness

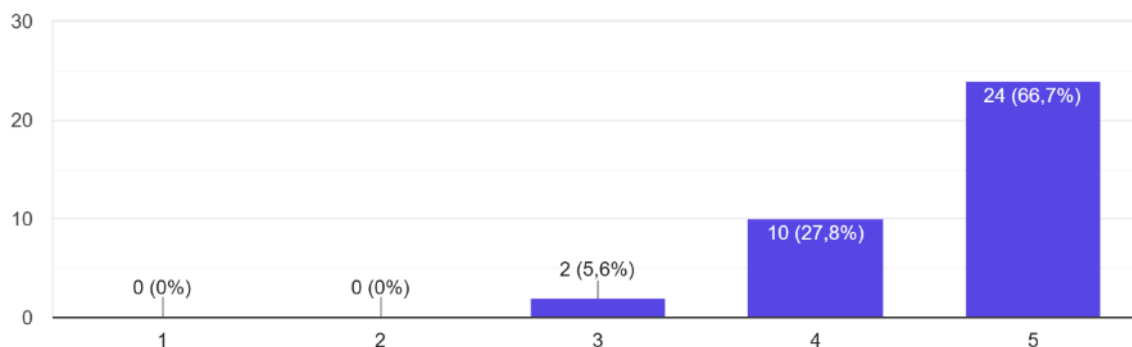
38 odpowiedzi





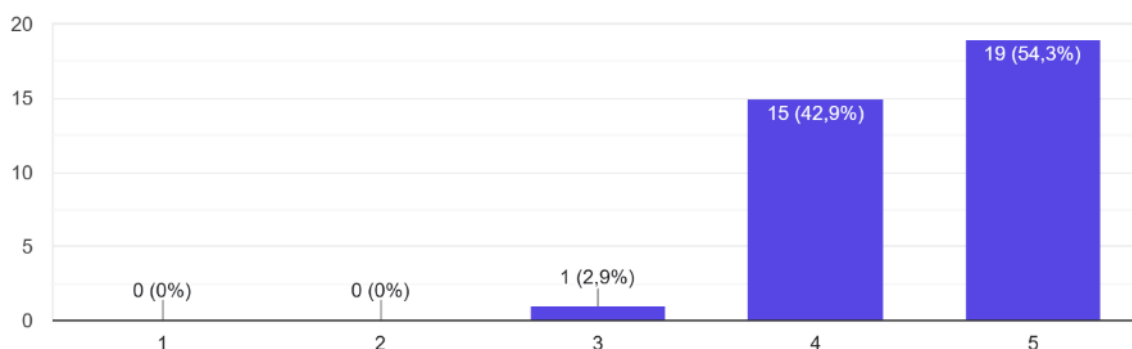
Industrial Discussion Part 1 Please rate each session regarding: U = Usefulness

36 odpowiedzi



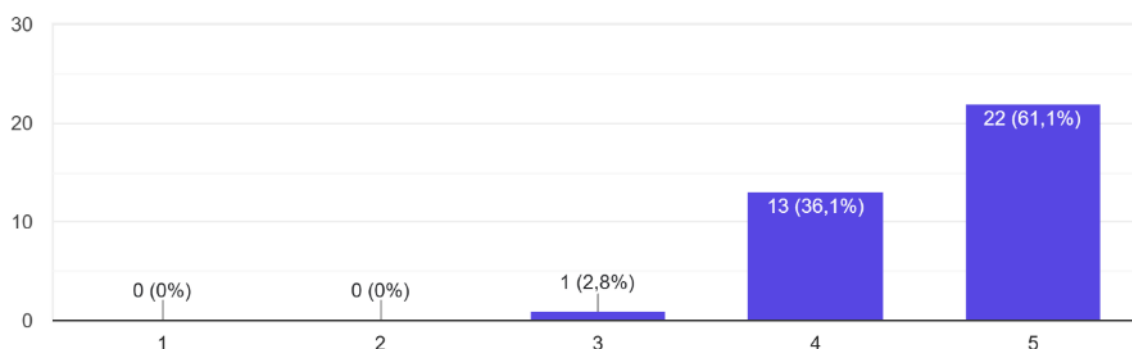
Design and Manufacturing Lessons – Lightweight Housing Please rate each session regarding: U = Usefulness

35 odpowiedzi



Industrial Discussion Part 2 Please rate each session regarding: U = Usefulness

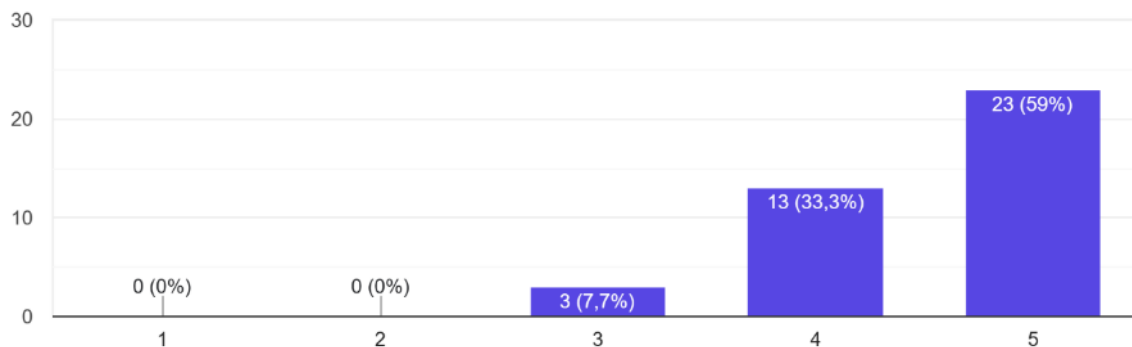
36 odpowiedzi





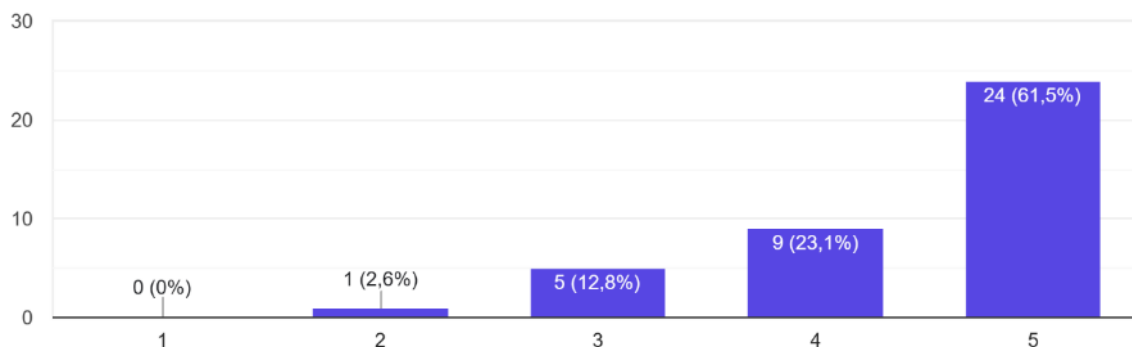
Emerging Trends in Sustainable Materials & Lightweighting Please rate each session regarding: U = Usefulness

39 odpowiedzi



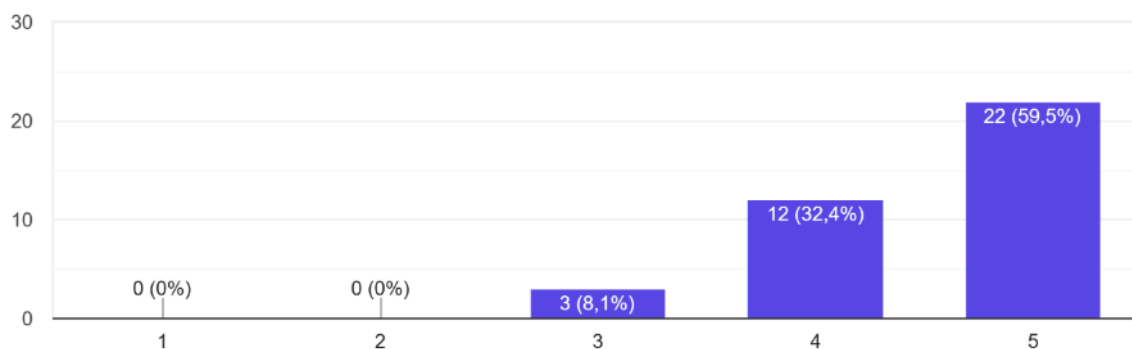
European Environmental Regulations and Foundries Please rate each session regarding: U = Usefulness

39 odpowiedzi



Investment & Financing Strategies for Circular Innovation Please rate each session regarding: U = Usefulness

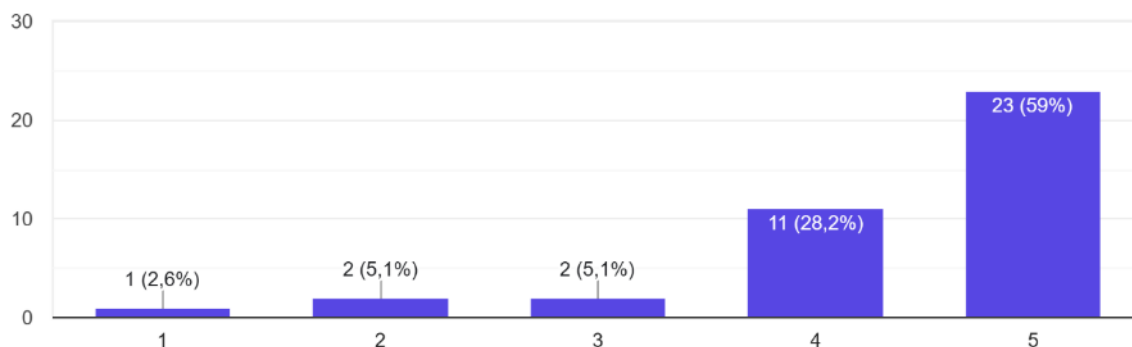
37 odpowiedzi





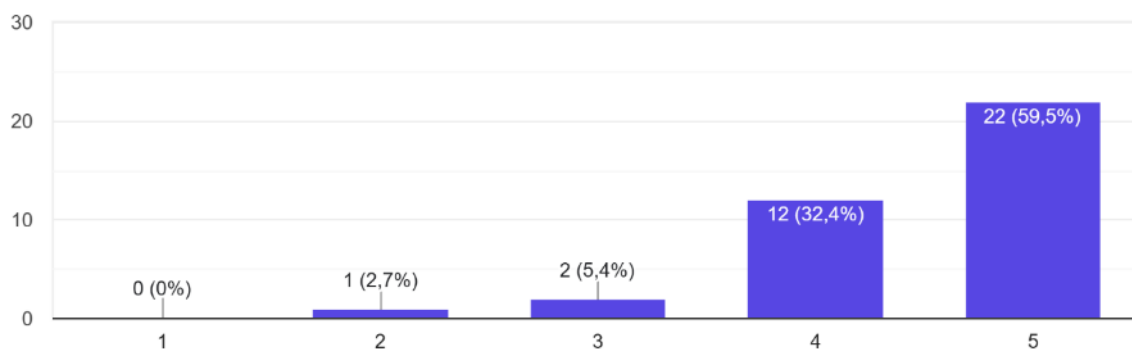
Scaling Research to Commercial Practice Please rate each session regarding: U = Usefulness

39 odpowiedzi



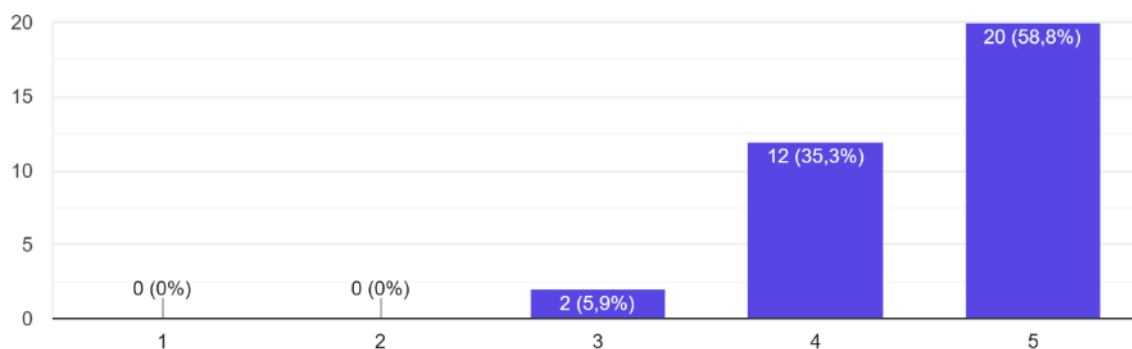
Potential of AI in Industry and Business Please rate each session regarding: U = Usefulness

37 odpowiedzi



ISALAB Presentation Please rate each session regarding: U = Usefulness

34 odpowiedzi





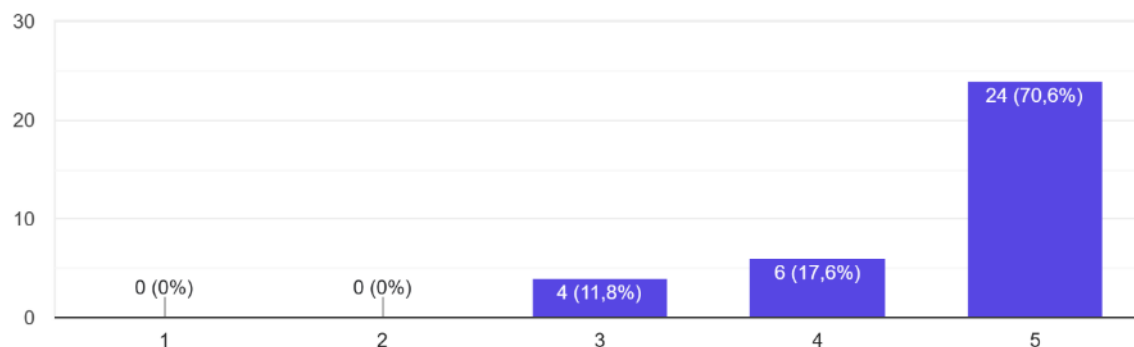
NETCASTPL4.0
- NETWORKING -



Funded by
the European Union

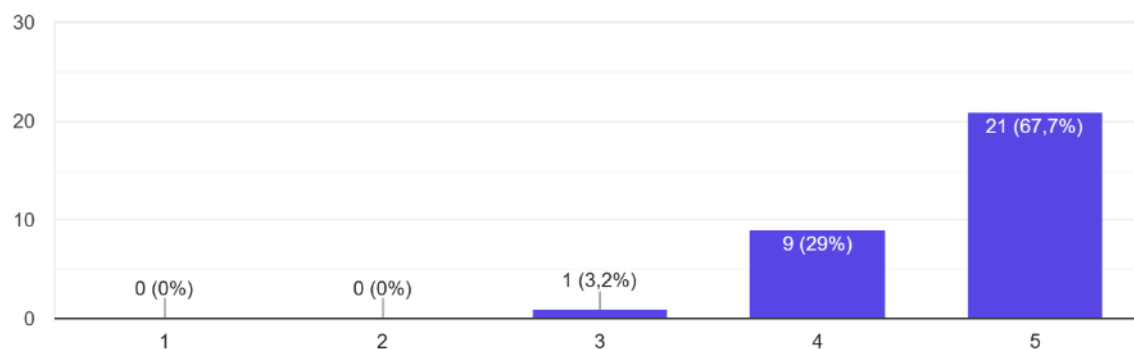
AI for Non-Destructive Engineering Please rate each session regarding: U = Usefulness

34 odpowiedzi



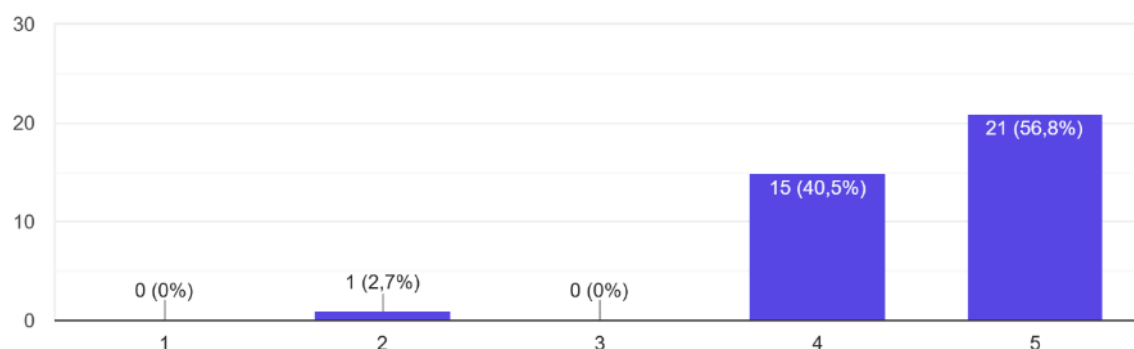
Industrial Discussion Part 3: Vision 2035 Please rate each session regarding: U = Usefulness

31 odpowiedzi



LCA – Theory, Standards & Terminology Please rate each session regarding: Q = Presentation Quality

37 odpowiedzi





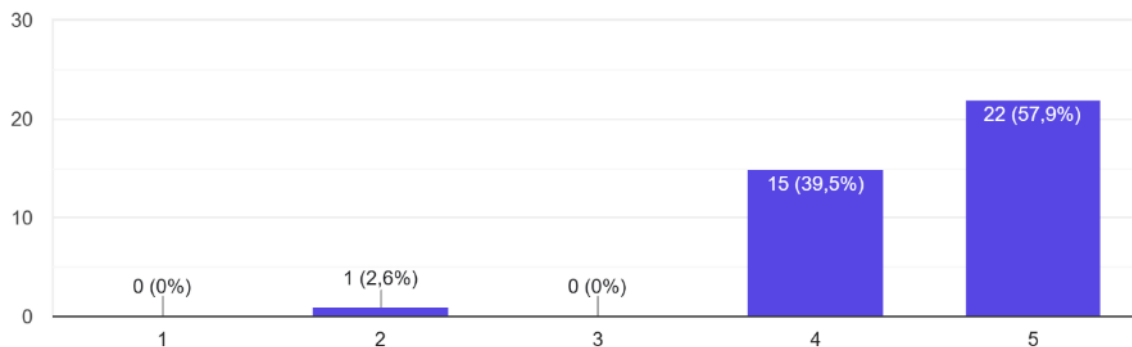
NETCASTPL4.0
- NETWORKING -



Funded by
the European Union

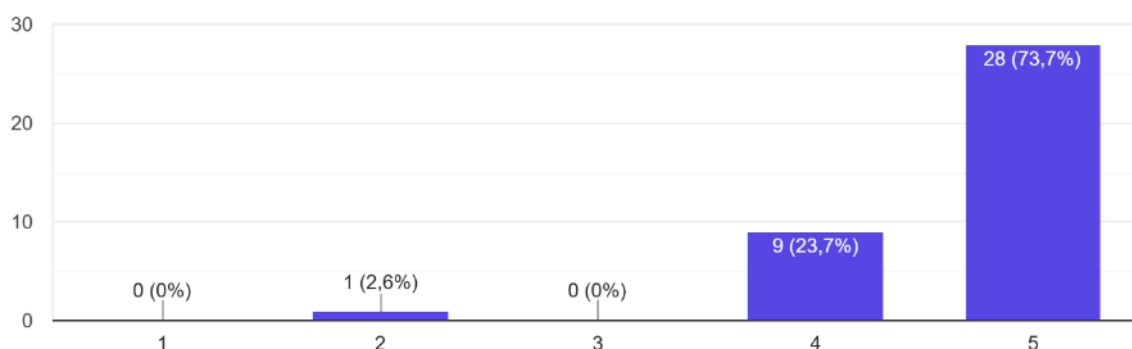
LCA Tools & Databases for Metallurgy and Casting Industry Please rate each session regarding: Q = Presentation Quality

38 odpowiedzi



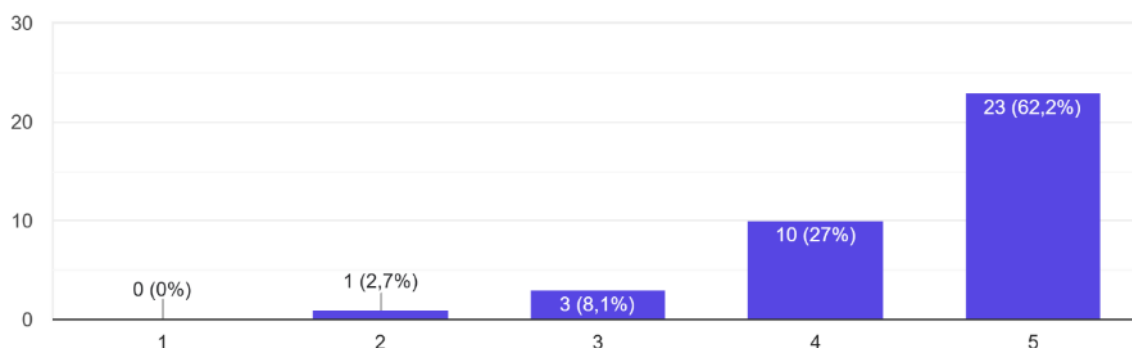
Closed-Loop Economy in Metals Please rate each session regarding: Q = Presentation Quality

38 odpowiedzi



Foundry 4.0: Data and Machine Learning Applied to Casting Processes Please rate each session regarding: Q = Presentation Quality

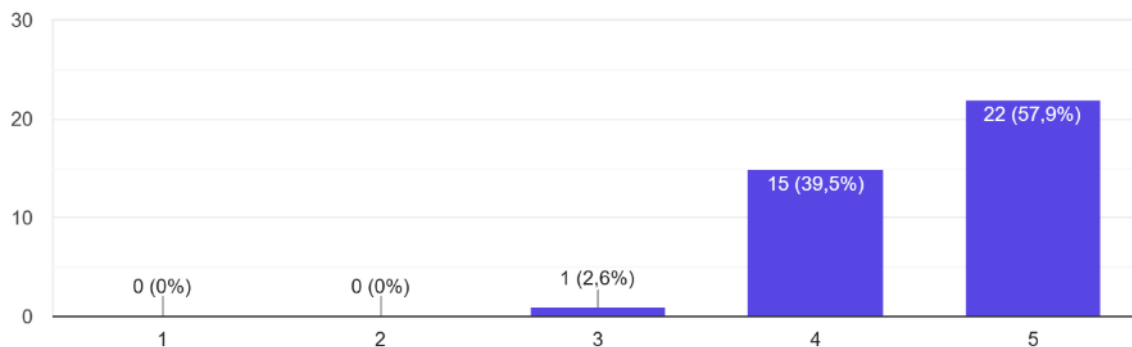
37 odpowiedzi





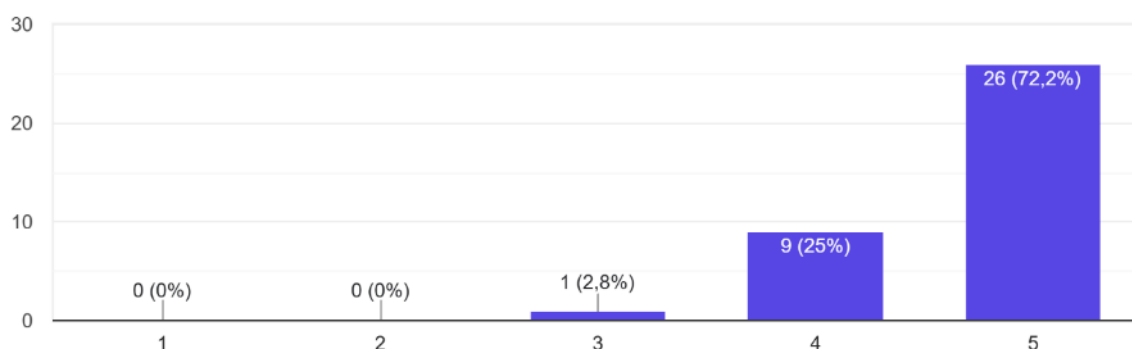
Business Models for Circular Metallurgy Please rate each session regarding: Q = Presentation Quality

38 odpowiedzi



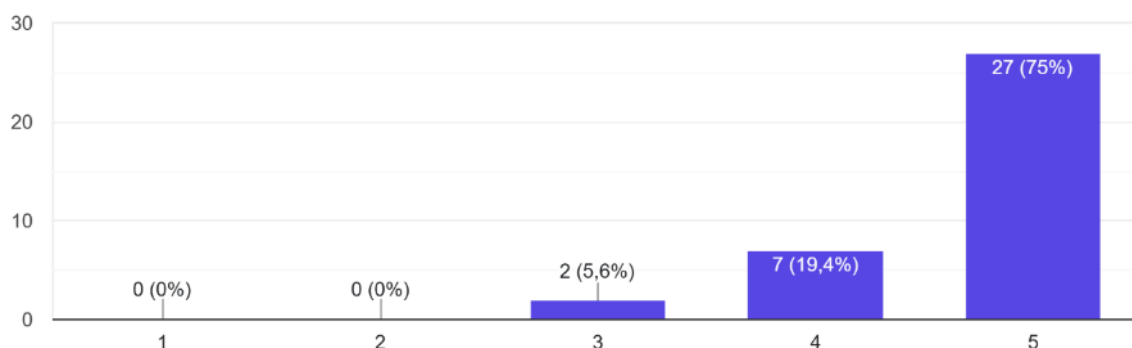
Industrial Discussion Part 1 Please rate each session regarding: Q = Presentation Quality

36 odpowiedzi



Design and Manufacturing Lessons – Lightweight Housing Please rate each session regarding: Q = Presentation Quality

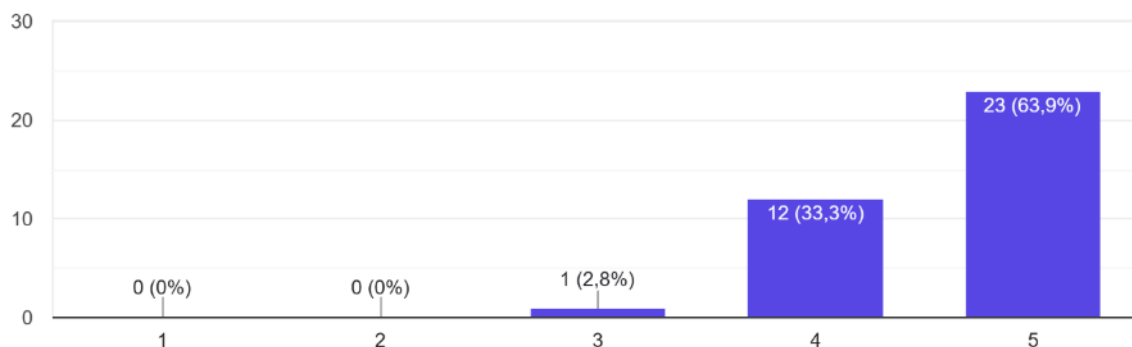
36 odpowiedzi





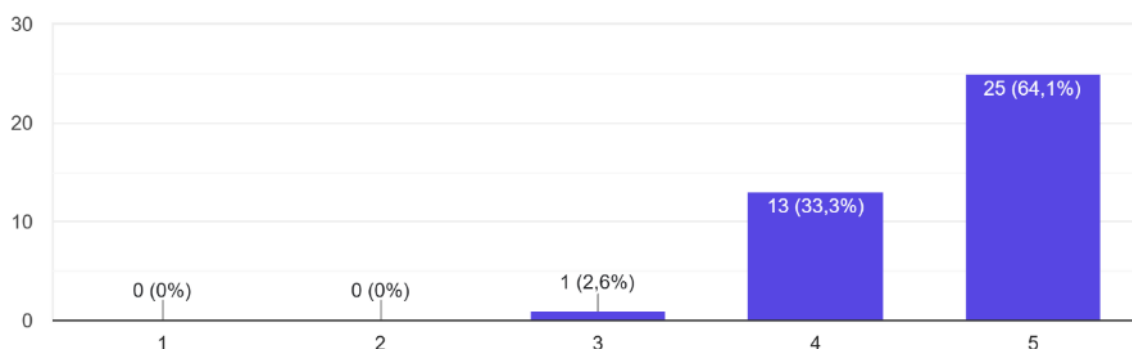
Industrial Discussion Part 2 Please rate each session regarding: Q = Presentation Quality

36 odpowiedzi



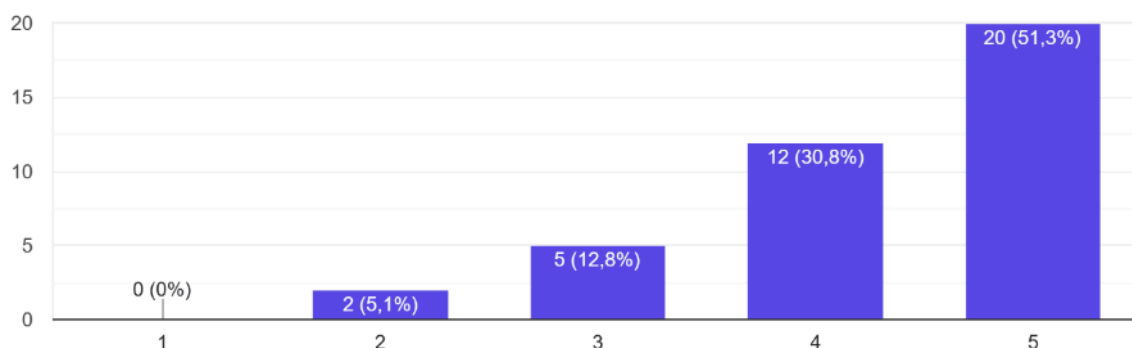
Emerging Trends in Sustainable Materials & Lightweighting Please rate each session regarding: Q = Presentation Quality

39 odpowiedzi



European Environmental Regulations and Foundries Please rate each session regarding: Q = Presentation Quality

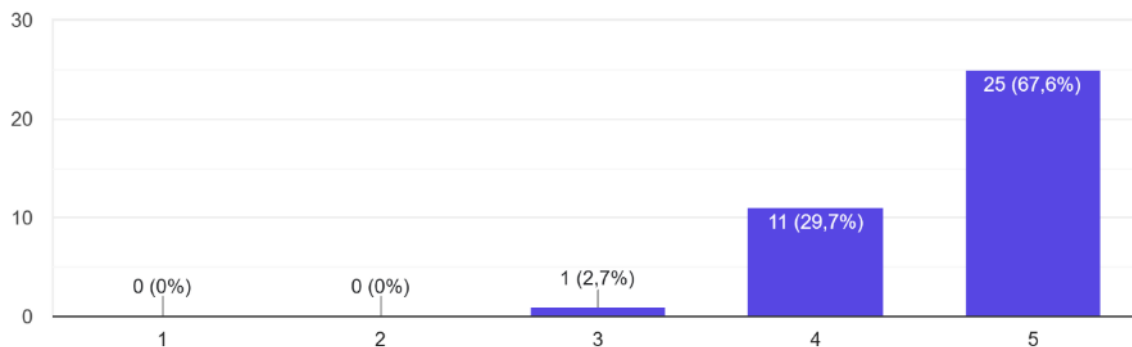
39 odpowiedzi





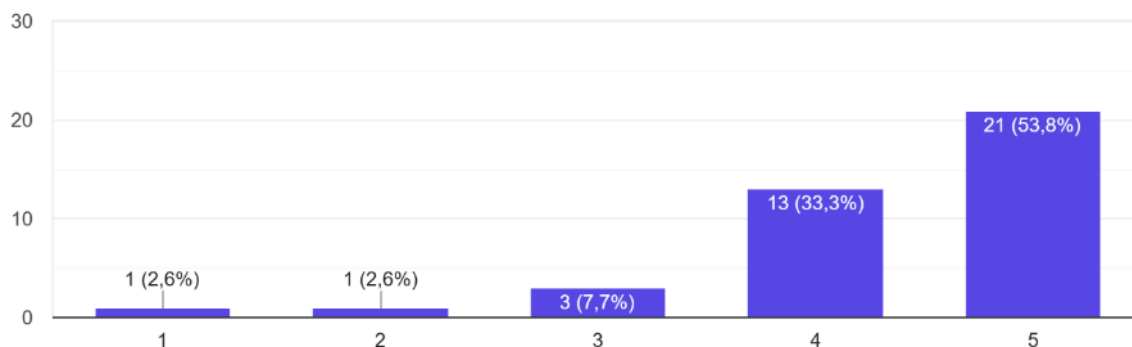
Investment & Financing Strategies for Circular Innovation Please rate each session regarding: Q = Presentation Quality

37 odpowiedzi



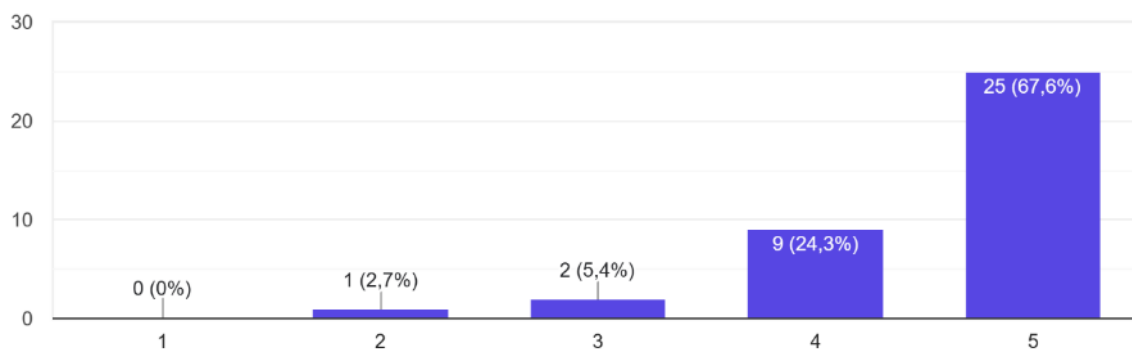
Scaling Research to Commercial Practice Please rate each session regarding: Q = Presentation Quality

39 odpowiedzi



Potential of AI in Industry and Business Please rate each session regarding: Q = Presentation Quality

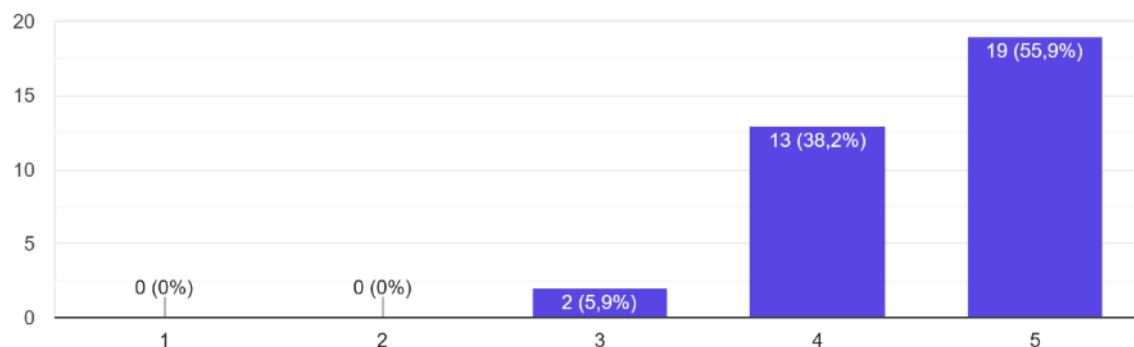
37 odpowiedzi





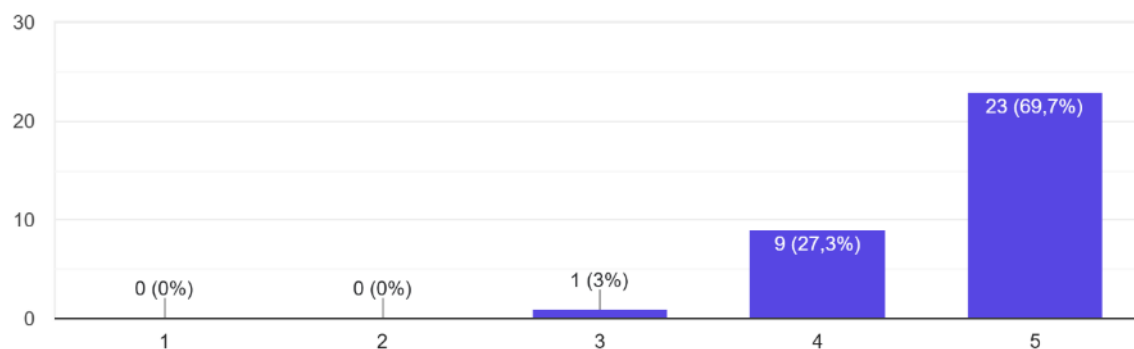
ISALAB Presentation Please rate each session regarding: Q = Presentation Quality

34 odpowiedzi



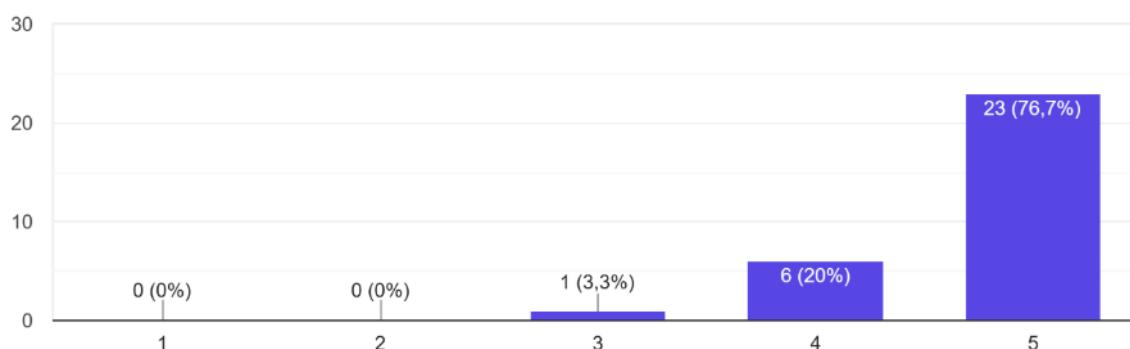
AI for Non-Destructive Engineering Please rate each session regarding: Q = Presentation Quality

33 odpowiedzi



Industrial Discussion Part 3: Vision 2035 Please rate each session regarding: Q = Presentation Quality

30 odpowiedzi



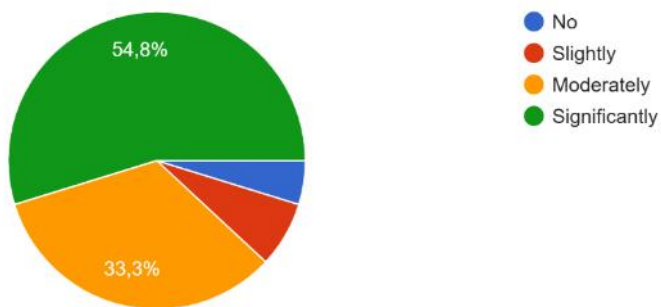
Section 3.

Impact of the School



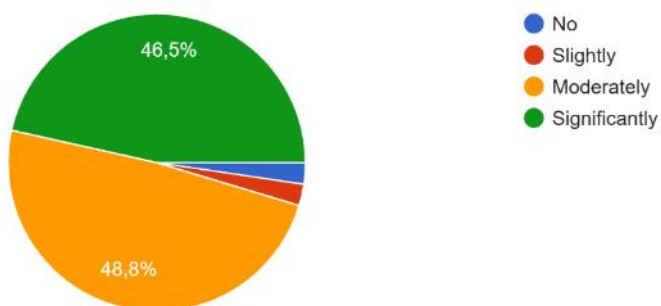
Life Cycle Assessment (LCA)

42 odpowiedzi



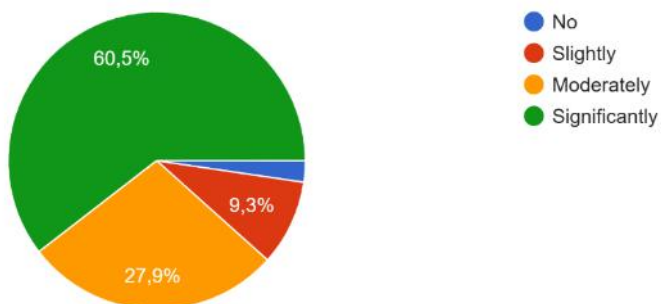
Circular Economy

43 odpowiedzi



Foundry 4.0 & Digitalisation

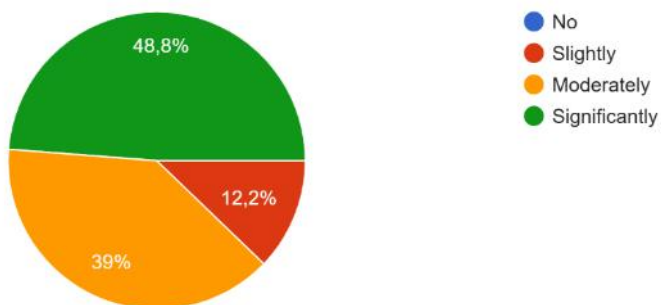
43 odpowiedzi





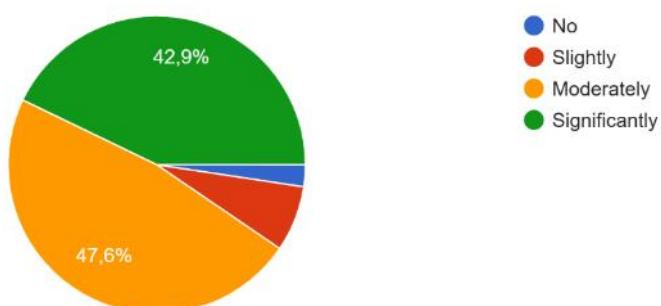
Artificial Intelligence

41 odpowiedzi



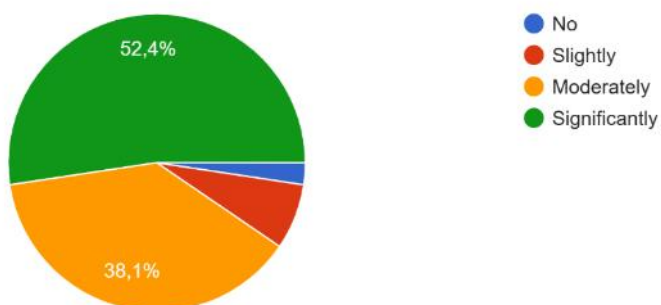
Sustainability Regulations

42 odpowiedzi



Technology Transfer & Commercialisation

42 odpowiedzi



6. Which topic was the most valuable for you? (39 answers)

Circular Economy

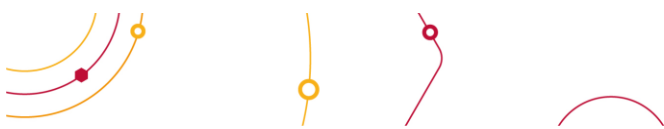
Technology Transfer

AI

Foundry 4.0 and digitalisation

Circular economy

Life Cycle Assessment



All topics were interesting and well presented.

Circular economy, LCA, Technology Transfer

Circular economy

Circular Economy

Foundry 4.0 Digitalisation

Business model for circular metallurgy

Foundry 4.0 digitalisation

Foundry 4.0 & digitalisation

Artificial Intelligence

AI for non-destructive engineering

AI; LCA

In general future improvement in foundry and scrap metallurgy

Design and Manufacturing lesson

Technology Transfer and commercialisation

Artificial Intelligence

Foundry 4.0

Every topic was valuable, but LCA & Sustainability for me the most

Potential of AI in industry and business

Foundry 4.0, Digitalisation, Circular Economy

Recycling and scrap quality (discussion)

Circular Economy, Sustainable Regulation

Life cycle assesment

The presentation focused on results of investigations in the NetCastPL4.0 Project

Foundry Technologies Digitalisation

Every topic was valuable

LCA

Design and manufacturing - lightweight focusing

7. Which topic should receive more attention in future NetCastPL4.0 events? (34 answers)

Foundry 4.0 and digitalisation

More practical examples and case studies

Industrallisation

AI, Data, Computer System

Philippe de Brouwer

Ethic on the Business

Technology transfer

Artificial Intelligence

Strategic of Foundry Business

simulations

AI, Sustainability Materials

In my opinion Foundry 4.0 and digitalisation also metal matrix composites

Foundry 4.0 and Digitalisation

I don't know

Artificial Intelligence

AI for Engineering

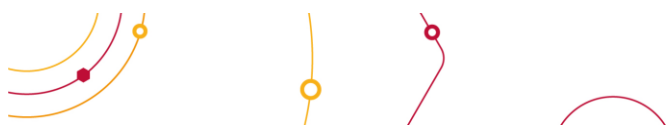
Sustainability regulation

Technology transfer ARO Commercialisation

Digitalisation, Green energy in Foundry

Sustainability & CSRD

Data and mechine learning applied to casting process



Foundry 4.0 & Digitalisation

NDT

Circular economy

Technology Transfer & Commercialization

Foundry 4.0

Artificial Intelligence

AI

AI for Non-Destructiv Eng

I didn't notice any.

Modelling

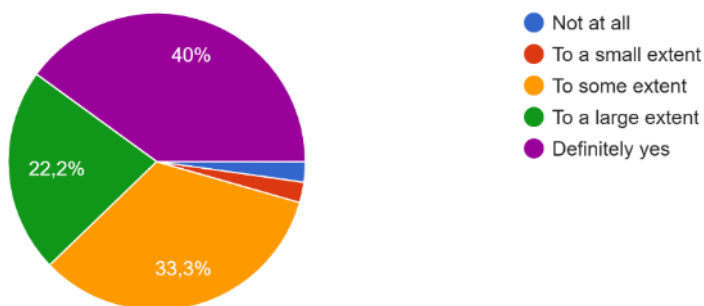
Artificial Intelligne

AI for Non - Destructive Engeneering

Section 4. Networking and Collaboration

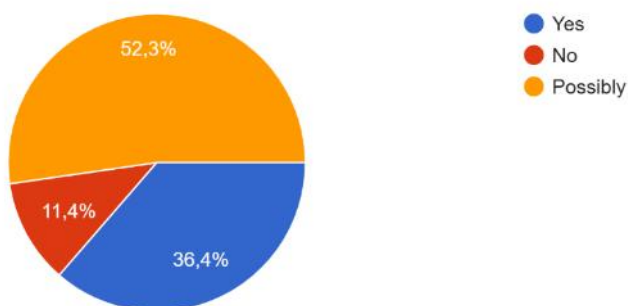
8. Did the School provide opportunities to establish new professional contacts?

45 odpowiedzi



9. Did you identify potential partners for future collaboration?

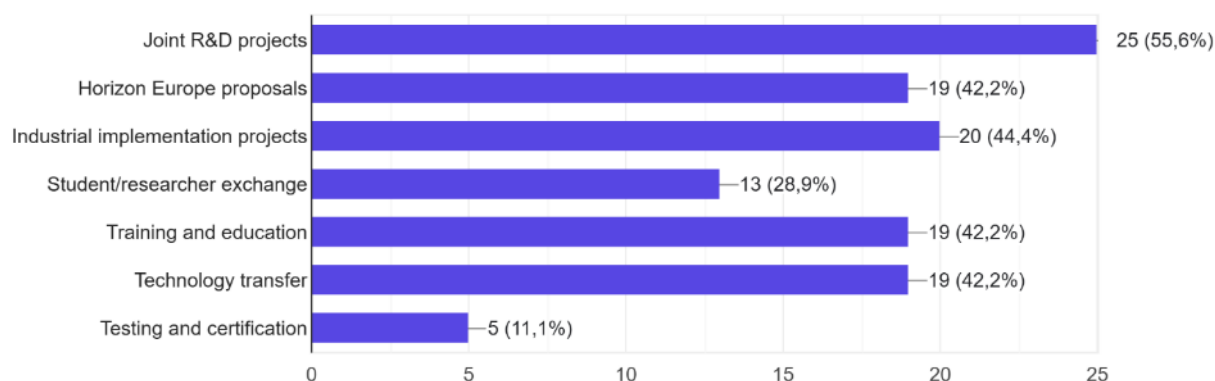
44 odpowiedzi





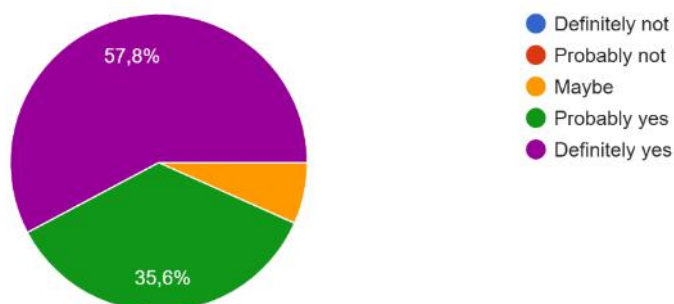
10. Which types of collaboration are most interesting for your organisation?

45 odpowiedzi



11. Would you be interested in participating in future NetCastPL4.0 Network Partner activities?

45 odpowiedzi

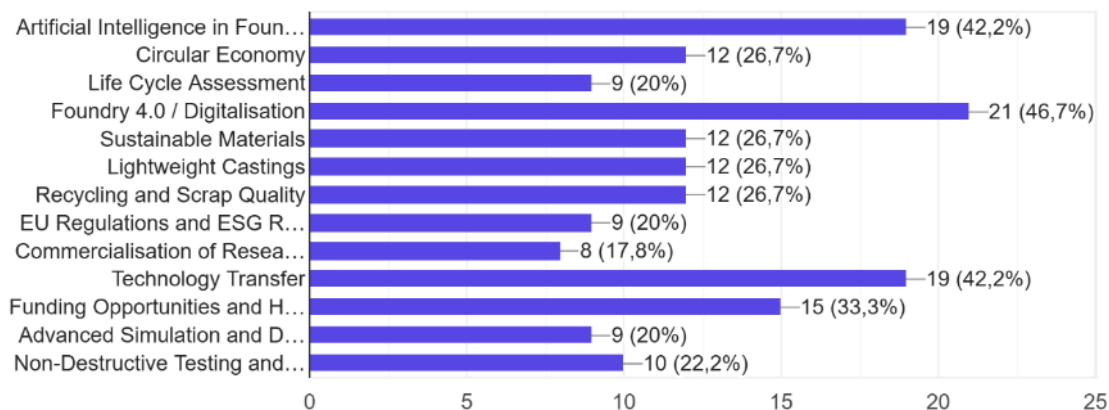




Section 5. Future Needs of the Network

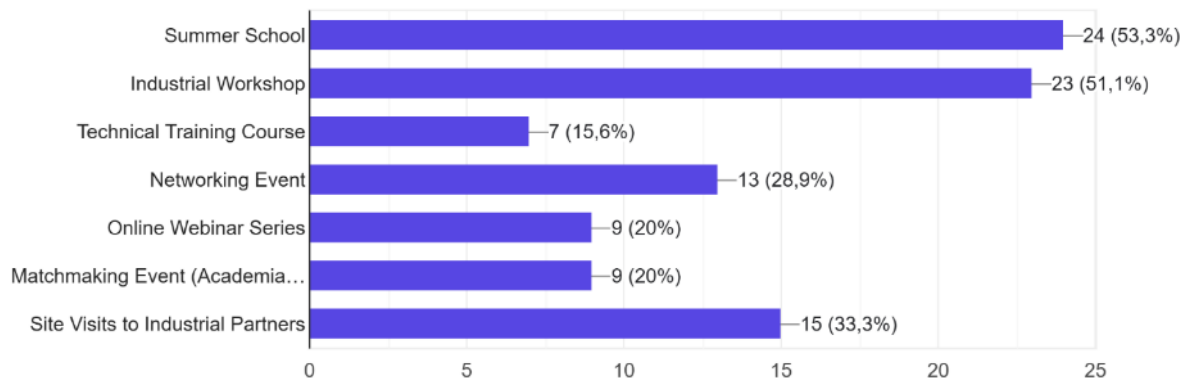
12. Which topics should be prioritized by NetCastPL4.0 in future workshops and schools? (Select up to three)

45 odpowiedzi



13. What format would be most useful for future events?

45 odpowiedzi



Section 6. Open Questions

14. What did you like most about this School? (36 answers)

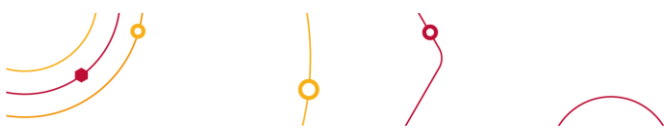
Direct conversations, international meetings

The organisation, the quality of the presentations, and the opportunity to meet professionals from different countries.

Networking, scientific and industry

It's an interesting idea

Topic



Networking with industry

Friendly partners to cooperation and talk, meet.

Organization and atmosphere

Open discussion and view exchange

Organisation

Meeting with other people from industry and universities

Various of topics

Opportunity to take part in discussion with foreign partners

organizations

Atmosphere, cookies, people

Clear presentation of complex topics

Discussion between academic and industrial partners

Exchange of knowledge and experience between industry and universities.

Concept

It was easy to grab a lot of additional knowledge

Presentation about AI and design

Industrial discussions - knowledge exchange between researchers and industry

Meeting with partners from the industry

The opportunity to learn about process at the other foundries and industry trends

The opportunity to expand my knowledge of the presented subject

All good

Cross-cutting nature, showing main directions for development and discussions related to difficulties, international speakers, industrial speakers

Location and organisation

International Meeting and direct conversation

very good organization

School format

The meeting connects parts of science and industry

Overall atmosphere

This is my first time so I can share my thoughts after

topics up-to-date

Industrial Discussion the best!

15. What could be improved? (26 answers)

Nothing

Technology of production lightweight castings

Everything was well organized.

Please put the name of the company / Institute on the cards/

Buffet will be better in hall

More topics about funding opportunities

Better equipment to online transmission, without frequency noises.

quality of online transitions

Focusing on industry issues

Presentations could be squeezed

organization

I would drop remote presentations

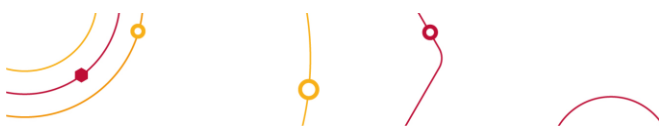
Good school

More time to discuss about the topic

Information about the school - dissemination

Setting up a sound system for an online presentation

Shortly panel-presentation



The presentations could be shorter (e.g. 30 minutes)
buffet, quality of sound during "online" presentations, list of places for lunch, group picture in the agenda
Nothing particular
More information about technology transfer
I didn't notice any parts to improve
Nothing, everything at a high level

16. Which speaker or session inspired you the most and why? (32 answers)

Kalle Jalava
All
Closed-loop Economy - new knowledge and information
All sessions were informative and provided useful insights.
Circular Metallurgy
Dr De Brouwer
Philippe de Brouwer
Discussion pannel about European Strategy for environment.
Stefania Fiameni - I'm interested in this topic
About scrap quality future
discussion 1-D a lot of different points of view from people involved foundry
Closed loop economy in metals - interesting trends shows
Kalle Jalava, he covered very interesting topic for me about scrap materials.
Potential of AI in industry and business
Hard to pick just one, all speakers maintained a solid, professional level
All speakers
J. Marosz - interesting results in the field of thin-walled castings and SHSB method
Session two - I like topics
It was discussion section because it's important to hear Professors' opinions about those important topics.
Nicola Gramegna & Philipe De Brouner
Krzysztof Sikora because he presented an interesting problem for the off-campus R&D department to solve
1 session - technological and useful information
All was inspiring
Philippe De Brouwer, because he had the most interesting way of presenting his topic. His performance included quiz and he encouraged audience to be part of his presentation
Presentation by Krzysztof Skiba, presentation from prof. Górny, ADI, Presentation AI
Kalle Jalava - how he conducted discussion & asked directly academia & business representatives
Closed-loop Economy - I get new information and knowledge
Speakers from industrial, because they showed real problems and technologies from practice
LCA and closed loop economy - very important in projects perspective

17. Additional comments and suggestions (9 answers)

An electronic survey is better than a paper one
Longer perspective for the future. Not enough 5-10 years. We must think about 50 years' perspective.
Results presented on the presentation were too small and it was hard to see it.
Delicious buffet!
I was surprised with the level of presentations. I thought "school" means basics and presentations were pretty advanced (especially one from business) During onsite event presentations should be onsite. It's ok to have 1 online day and 1 onsite day Please consider collecting presentations and sharing with the participants: - LCA - theory (prof. Fiameni) - Emerging trends (D4.2 report) - Closed loop economy (prof. Jalava)



For future initiatives, survey on topics choice should be conducted prior to organisation process. It would attract more participants from the industry.

None

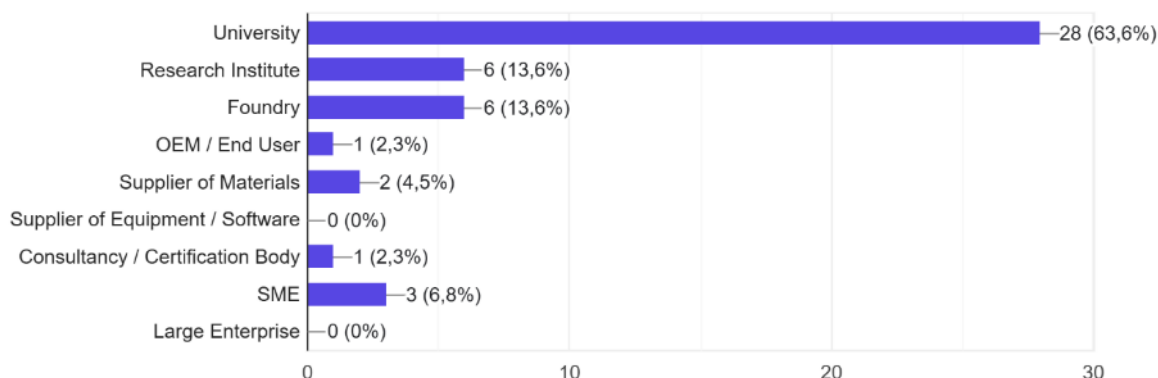
Section 2. Assessment of Individual Sessions - Scaling Research to Commercial Practice – Barriers & Solutions & AI for Non-Destructive Engineering - works only for AGH

Industrial discussion, because broaden horizons

Section 7. Participant Profile (Optional)

18. Your organisation type

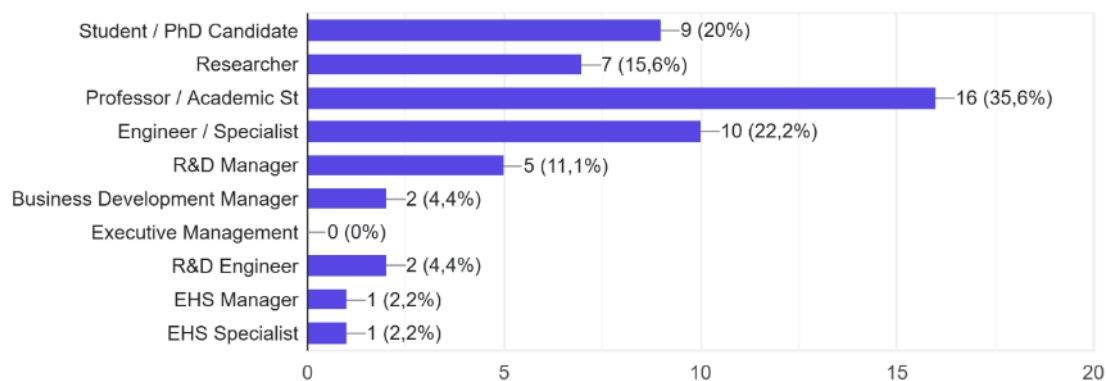
44 odpowiedzi





19. Your role

45 odpowiedzi



20. Country

30 odpowiedzi

