OSU Oregon State University

Questions

DIRECTIONS: Please numerically identify your level of agreement with the following barriers and solutions to sustainable manufacturing. The format of your response will use a Likert scale from 1 to 7, with 1 indicating you "strongly disagree" and 7 indicating you "strongly agree."

An open comment section is provided below each statement that you may use for providing additional information regarding your level of agreement. Please do not include details in any open comment section that may be linked to your identity.

You may choose to not respond to any statement, or to leave any open comment section blank.

We thank you for your time spent taking this survey.

Your response has been recorded.

Do you agree with the following suggested solutions to overcoming barriers in sustainable metric and indicator selection?

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Orient standard metrics to explicitly state cost value to appeal to high level management	○	○	○	○	○	○	○
Make metrics and indicators standard industry wide	○	○	○	○	○	○	○

Comments

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Do you agree with the following identified barriers to adopting sustainable metrics and indicators?

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Sustainability metrics included in standards do not explicitly address quality	○	○	○	○	○	○	○
Identify environmental impact drivers using on-the-line data	○	○	○	○	○	○	○
Demonstrate an allocation method for system-level indicators	○	○	○	○	○	○	○

Comments

Do you agree with the following suggested solutions to overcoming barriers in adopting sustainable manufacturing tools at the system level?

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Engage shop floor personnel by showing real-time feedback on the sustainability performance metrics	○	○	○	○	○	○	○
Incorporate process modeling into the manufacturing step of LCA	○	○	○	○	○	○	○
Plan for the introduction of new top-down regulations and their impact on product manufacturing	○	○	○	○	○	○	○
Future standards development should integrate UMP models back into LCA methods and tools	○	○	○	○	○	○	○
Make models and data generated by a standard or government accessible to all	○	○	○	○	○	○	○

Comments

Do you agree with the following suggested solutions to overcoming barriers in adopting sustainable manufacturing tools at the system level?

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Engage shop floor personnel by showing real-time feedback on the sustainability performance metrics	○	○	○	○	○	○	○
Incorporate process modeling into the manufacturing step of LCA	○	○	○	○	○	○	○
Plan for the introduction of new top-down regulations and their impact on product manufacturing	○	○	○	○	○	○	○
Future standards development should integrate UMP models back into LCA methods and tools	○	○	○	○	○	○	○
Make models and data generated by a standard or government accessible to all	○	○	○	○	○	○	○

Comments

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Current tools do not emphasize usability with their steep learning curves	○	○	○	○	○	○	○
No standard method exists for combining process and system level indicators	○	○	○	○	○	○	○
Current tools and methods do not always show immediate practical change	○	○	○	○	○	○	○
Recertification of a manufacturing process after modification is a financial barrier to wider standards adoption	○	○	○	○	○	○	○
Companies and suppliers hesitate to share sensitive process data or models	○	○	○	○	○	○	○
Incorporating new methods, tools, or standards requires large time investments before showing practical results	○	○	○	○	○	○	○
Current research lacks a cohesive theory on how to evaluate and close the design-for-manufacturing gap	○	○	○	○	○	○	○

Comments

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Make tools with an easy entry version to highlight small improvements	○	○	○	○	○	○	○
Any sustainable manufacturing tool should be usable on current equipment	○	○	○	○	○	○	○
Create a "light" version focusing only on primary process drivers to alleviate initial investment concerns	○	○	○	○	○	○	○
Develop a library of materials and UMPs to aid design-for-manufacture decision making	○	○	○	○	○	○	○

Comments

Do you agree with the following identified barriers to adopting sustainable manufacturing tools at the unit process level?

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Tools and methods will not be widely adopted if they require the upgrade or replacement of analogue machinery	○	○	○	○	○	○	○
Regulatory change inhibits adoption	○	○	○	○	○	○	○
Commercial software packages are costly and fragmented	○	○	○	○	○	○	○
Proposed process models risk sub-optimization occurring	○	○	○	○	○	○	○
Standards cannot readily address the difficulty of sharing process models and linking them	○	○	○	○	○	○	○

Comments