



# AIChE<sup>®</sup> SUSTAINABILITY GUIDE

- Institute for Sustainability
- Center for Sustainable Technology Practices
- Metrics and Assessment of Sustainability
- AIChE Credential for Sustainability Professionals
- IfS Conference Series
- Get Involved with SEF and YCOSST



A CORE BODY OF BENCHMARK KNOWLEDGE



AIChE, which established its first sustainability programs in the early 1990s, is a recognized leader in sustainability among scientific and engineering

organizations. Its sustainability work has been supported by a number of companies in the chemical, energy and related industries, and by the U.S. Environmental Protection Agency, Department of Defense, and Department of Energy, among others. AIChE has identified sustainability as a key driver of the profession's and the Institute's future and one which is aligned with AIChE's emphasis on sound engineering and economics.

AIChE's Institute for Sustainability (IfS) is a network of scientific, engineering, and financial experts who work to develop and deploy new technologies and practices through multidisciplinary collaboration. Member companies (and their individual members) benefit from joint projects and pre-competitive research that keeps them on the cutting edge of sustainability technologies and developments. Through participation, sponsors and members shape these projects and inject scientific rigor and real-world business experience into sustainability discussions. IfS has a mission of developing and implementing cost-effective technologies, processes, and practices needed to meet global challenges. It focuses on industrial ecology, sustainable business practices and international sustainable development. Much of this work is carried out by the IfS Center for Sustainable Technology Practices, a group of companies identifying and promoting best practices and roadmaps for making technically sound sustainability decisions.

Visit the Institute for Sustainability at [www.aiche.org/ifs](http://www.aiche.org/ifs)

# CENTER FOR SUSTAINABLE TECHNOLOGY PRACTICES



The value of sponsorship in the **Center for Sustainable Technology Practices (CSTP)** lies in its interaction and learning opportunities. CSTP members share the costs and benefits of research. Members of CSTP include energy, chemical and pharmaceutical companies, as well as other manufacturers and users of chemicals, and engineering contractors. CSTP is also a resource for smaller companies.

CSTP panels help quantify and develop the business case for sustainability; participate in the development of guidelines; hold meetings, workshops, and education exchanges; receive free copies of CSTP publications, and free access for selected employees to the Sharepoint project development site, and to online reference documents. CSTP sponsors and members also enjoy discounted registration to CSTP sponsored conferences.

Industry representatives in CSTP have developed a guide for implementing sustainability across a company's value chains. The guide maps the workflow of business processes within a company; highlights sustainability decision-points and responsible decision makers; and provides support tools and identifies gaps where future support should be directed.

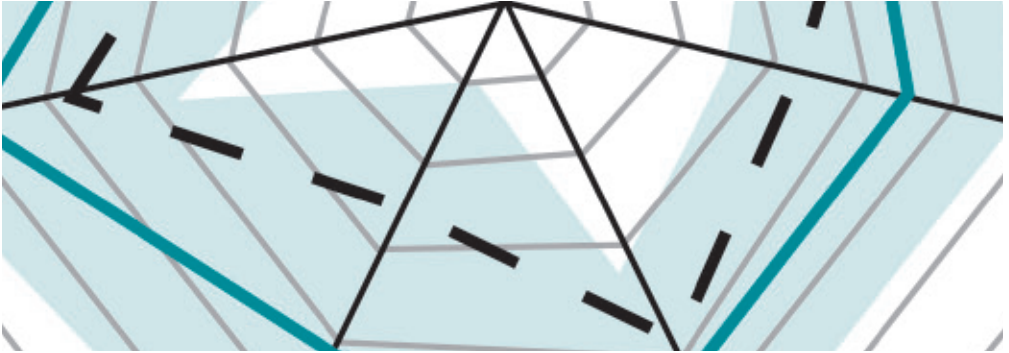
## **Sustainable Packaging Cosmetics Roundtable (SPCR)**

The Sustainable Packaging Cosmetics Roundtable, with members from major cosmetics companies, was established under the Center for Sustainable Technology Practices in 2011. SPCR members come together to work with suppliers, retailers and customers to advance sustainable practices throughout the supply chain for the cosmetics industry.

For more information on CSTP, visit

**[aiche.org/ifs/resources/center-sustainable-technology-practices](http://aiche.org/ifs/resources/center-sustainable-technology-practices)**

# METRICS AND ASSESSMENT OF SUSTAINABILITY



IFS has a history of developing metrics and decision support tools for assessment of sustainability. Some activities include development of Metrics for Biofuel Systems, Total Cost Assessment Methodologies, and Assessment of Green House Gas Measurements.

**AICHe Sustainability Index (AICHe SI)** The AICHe Sustainability Index (SI) [www.aiche.org/ifs/resources/sustainability-index](http://www.aiche.org/ifs/resources/sustainability-index) assesses the sustainability performance of companies from seven perspectives: strategic commitment, environmental performance, safety performance, product stewardship, social responsibility, value chain management, and sustainability innovation. Developed by engineering and scientific experts, it uses publicly reported data to assess sustainability performance at the company and sector level. AICHe SI benchmarks are focused on operations and well-defined performance metrics and indicators.

AICHe SI data is updated regularly and well cited in literature. The AICHe SI provides a compelling, overall picture of an industry's progress toward sustainability.

Companies may subscribe to confidential reports of their performance in the AICHe SI. Subscribers learn sustainability best practices in relevant industries and how their company compares to peers by size, business focus, and many other factors.

## **Smart Manufacturing Sustainability Metrics**

AICHe's Institute for Sustainability and Center for Energy Initiatives are developing a suite of sustainability metrics for manufacturing systems to be implemented in sensor data technologies being developed by the Smart Manufacturing Leadership Coalition (SMLC), and funded by a DOE grant, to achieve energy productivity gains. Efforts are also underway to explore development of education modules with novel approaches using Cloud data storage and apps for real time engineering and process control for manufacturing. Outcomes will include transposable productivity metrics that can be applied to discrete and continuous processes for large, small and medium production operations.

Learn more at <https://smartmanufacturingcoalition.org/>

# AICHE CREDENTIAL FOR SUSTAINABILITY PROFESSIONALS

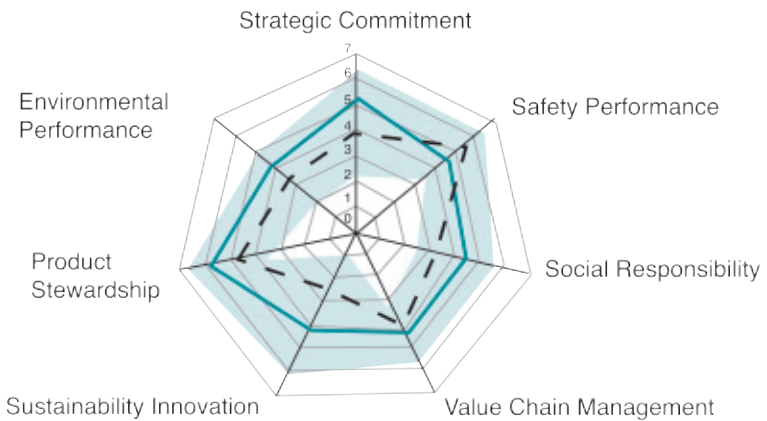


AICHE Credential for Sustainability Professionals

The Institute for Sustainability has launched a program that offers engineers and scientists a specialized course of instruction that will grow competency in knowledge and application of sustainability. A credential will be provided upon completion of the educational program that provides a strong foundation in seven key areas of sustainability “Body of Knowledge.”

The program requires completion of two masters-level classes, selected from among AIChE e-learning courses and an endorsed list of classes at various universities or online, and a group learning capstone course focused on a real world problem. These problems will be submitted by participating firms. The credential will support the development of engineers who aspire to Professional Engineering Licensure. The program is also planned as a way to help companies control training costs by pooling expertise and having resources pre-screened for quality and readily available.

Go to [www.aiche.org/ifs/sustainability-credentials](http://www.aiche.org/ifs/sustainability-credentials) for details and updates on the Credential Program.





## International Congress on Sustainability Science and Engineering (ICOSSE)



**ICOSSE**  
International Congress on  
Sustainability Science & Engineering

Since the First International Congress on Sustainability Science and Engineering Conference in 2009, the Congress has been hosting biennial conferences to provide a common platform for practitioners of

various physical and ecological sciences, engineering fields, economics, and social sciences to exchange emerging ideas about ways and means of protecting the environment and its resources so that humans can achieve sustained economic growth and societal benefits through generations. ICOSSE focuses on scientific and engineering innovations to promote the sustainable management of natural resources and industrial sustainability from a systems perspective.

The International Congress on Sustainability Science and Engineering takes place on odd years, and is held both domestically and overseas to promote global participation. Visit [www.icosse.org](http://www.icosse.org) to view proceedings from past events and participate in the next ICOSSE Congress.

## Sustainable Packaging Symposium (SPS)



The Sustainable Packaging Symposium <http://www.aiche.org/sps14> is held annually by the IFS to advance sustainable supply chains by means of optimizing packaging. Within this overall theme, each symposium focuses on a particular challenge pertinent to the packaging community.

Topics have included:

- Exploring the role of packaging as both a positive input to the sustainable supply chain and as a key solution to the growing problem of product and food waste
- Analyzing the new economics, which reflect the impact of processes on natural resources, and investigating development, consumer attitudes, and venture capital interest in new biopolymers
- Exploring current market and technology drivers with the specific feedstocks for packaging using bio-based replacements for petroleum feedstocks

## GET INVOLVED WITH SEF AND YCOSST



### Sustainable Engineering Forum (SEF)



The mission of the Sustainable Engineering Forum is to promote and accelerate the progression down the path to sustainability and disseminate cutting edge research and educational tools through its network of practicing professionals and educators in the field.

The Sustainable Engineering Forum:

- Sponsors topicals and sessions at the AIChE Spring and Annual meetings
- Presents annual awards to student and professional members
- Hosts regular webinars and develops education modules
- Publishes Newsletter with upcoming SEF and IFS activities

For more information and to get involved, please visit <http://www.aiche.org/sef>

### Youth Council on Sustainable Science and Technology (YCOSST)



The Institute for Sustainability has partnered with SustainUS to form the Youth Council on Sustainable Science and Technology. The Youth Council is an active network of students and mentor partners from numerous disciplines that include engineering, environmental sciences, chemistry, physics, and social sciences.

YCCOST's Mission is to:

- Create an understanding about sustainability issues and principles in all science and engineering research and design
- Raise awareness of the science and technology behind sustainable choices

YCOSST also sponsors awards for undergraduate research, including the EPA P3 YCOSST Award and the Green Chemistry Conference Awards.

Visit <http://www.aiche.org/ifs/students/join-ycosst> to learn about the benefits of belonging to YCOSST and to start a Chapter on your own campus today!

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for **sustainability**  
An AIChE Technological Community



**ICOSSE**  
International Congress on  
Sustainability Science & Engineering



AIChE Credential for Sustainability Professionals

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