VERIFIGLOBAL NEWSLETTER

Comprehensive performance verification with global market reach

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Join VerifiGlobal at TechConnect World Innovation - Boston USA June 17-19, 2019

The TechConnect World Innovation Conference and Expo in Boston represents the world's largest gathering of commercialization-focused innovators from US agencies, laboratories, corporate technology developers, and start-ups. With 4,000 attendees from over 40 countries supporting the development, commercialization, and manufacturing of new innovations, TechConnect provides an opportunity to access corporate executives, researchers, engineers and funding leaders that are accelerating the market deployment of innovative technologies.

VerifiGlobal and **Southern Research** are sharing a booth in the TechConnect Expo and, as part of the Conference, are convening a 90-minute Panel Session on the ISO 14034 Standard which will include industry-led case studies.

Key reasons for participating at TechConnect 2019 include:

(a) Promoting awareness and encouraging broad adoption and use of the ISO 14034 ETV standard as a tool to assist both users and the developers of innovative solutions in addressing technical, environmental and socio-economic challenges via the provision of high quality data and ISO based measurement and verification;

(b) Helping accelerate market adoption of innovative, eco-efficient solutions across different markets in a comprehensive integrated way with global market reach; and

(c) Highlighting the range of ISO 14034 services available to technology developers, technology users and investors interested in funding various clean technology verifications.

TechConnect also includes an Innovation Showcase featuring innovative technology solutions that are ready for licensing, corporate partnering, or investment, which can be pitched to corporate science and technology prospectors.

Read more about TechConnect 2019 and related side events in this Newsletter, or contact:
Tim Hansen: thansen@southernresearch.org
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MARCH 2019

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TechConnect WORLD INNOVATION CONFERENCE & EXPO JUNE 17-19, 2019 BOSTON, MA

CleanTech Performance Assessment and Verification Workshop at Battelle (Norwell MA) June 20, 2019

A number of side events during the week of June 17, 2019 have been organized to coincide with the TechConnect Conference and Expo, including the VerifiGlobal Alliance General Assembly Meeting and a site visit to the Massachusetts Alternative Septic System Test Center (MASSTC) in Barnstable, Massachusetts.

The principal side event will be a Cleantech Workshop on June 20 hosted at the Battelle Memorial Institute's Norwell Facility. The objective of the workshop is to generate interest and build momentum around the adoption and use of innovative technologies and the application of the ISO 14034 ETV standard to verify the performance of these technologies.

Targeting technology managers, regulators, agencies, and performance testing/verification organizations, the Cleantech Workshop will provide a platform for discussing the key features of the ISO 14034 standard, as well as some key challenges, including:

(a) How ISO 14034 can facilitate market acceptance and adoption of innovative technologies;

(b) How ISO 14034 verification can support transparent, evidence-based decisions and value-based investment and procurement;

(c) How stakeholder expectations can be managed to achieve positive performance verification outcomes; and

(d) How to share data regarding technology evaluations and best practices amongst ISO 14034 verifiers and the public.

Recognizing that an innovative technology may not have a track record of performance, it is reasonable to assume that the deployment of effective innovative technologies and infrastructure solutions benefits from comprehensive approaches that incorporate evidence-based performance benchmarking and verification. Through this collaborative workshop, important lessons will be shared regarding the technical and market challenges for acceptance, adoption and use of innovative technologies, and the role of reliable measurement, analysis and feedback.

CLEANTECH PERFORMANCE ASSESSMENT AND VERIFICATION WORKSHOP
BATTELLE (NORWELL)
JUNE 20, 2019

WORKSHOP AGENDA

10:00 -10:15 Workshop Background and Introductions

10:15 – 11:15 Session 1: Use of Independent Technology Verification to Reduce Risk and Increase Positive Impacts of Buying and Financing Innovative Clean Technologies

11:15 – 12:15 Session 2: ISO 14034 and the Sustainability Decision Support Toolbox

12:15 Lunch and Brief Presentation on the Battelle's Background and Experience

13:00- 13:30 Session 3: Facilitated Round Table Discussion on Recent Experiences and Future Opportunities Using Independent Verification

13:30-14:15 Session 4: Cleantech Data and Technology Assessment Clearinghouse

14:15 Summary of Actions Required and Next Steps to Increase the Uptake and Utilization of Independent Performance Verification

14:30 Workshop Adjournment and Departure for MASSTC Site Visit - US EPA Advanced Septic System Nitrogen Sensor Challenge

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VerifiGlobal

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Tim Hansen: thansen@southernresearch.org
John Neate: jhneate@verifiglobal.com

ISO 14034 Panel Session at TechConnect on June 17, 2019 Boston USA

TechConnect 2019
Panel Session on ISO 14034 Environmental Technology Verification
Presented by VerifiGlobal and Southern Research

Background: The ISO 14034 Environmental Technology Verification (ETV) standard defines a framework and a quality-assured process for independent, third-party evaluation of innovative environmental technologies. Use of the standard by qualified verifiers facilitates effective engagement of interested parties and stakeholders, with greater potential for reciprocity and acceptance of impact parameters, test procedures and performance verification results across multiple jurisdictions. This provides credibility and legitimacy to the environmental technology performance claims of technology developers and reduces the risks to technology users, purchasers, investors and policy-makers. It also facilitates the evaluation of technologies at pre- and early commercial stage, before other relevant standards or assessment protocols are established, leading to accelerated market adoption of verified technologies by a broader range of users across different sectors, nationally and internationally.

ISO 14034 Panel Session Objectives:
- Outline the purpose and key features of the ISO 14034 standard, including principles, procedures and benefits of independent, third-party environmental technology performance verification;
- Demonstrate how ISO 14034 can facilitate the use and market acceptance of innovative technologies, by providing end user and technology developer perspectives on the benefits of ETV and its impacts on their activities.

Target Audience:
- Technology vendors, solution providers
- Clean-tech investors and financers
- Technology buyers/users, managers, regulators, and agencies
- Performance testing and verification organizations.

Meet with VerifiGlobal and Southern Research at the 2019 TechConnect World Innovation Conference and Expo
Visit us at Booth #312

For more information and a complementary TechConnect Expo pass, contact:
Tim Hansen: thansen@southernresearch.org
John Neate: jhneate@verifiglobal.com

ISO 14034 Panel Session Outline:

1. Introduction to ISO 14034 and its Benefits –
Tim Hansen (Southern Research)
- What is independent technology performance verification and how does it differ from other technology evaluation processes?
- What is the ISO 14034 standard and why is it useful? How can ISO 14034 verification be used to support transparent, evidence-based decisions and value-based investment and procurement?
- How can ISO 14034 verification assist in gaining market acceptance and approval? How can ISO 14034 help technology companies access international markets?

2. ISO 14034 Process Requirements –
Thomas Bruun (VerifiGlobal and ETA-Danmark)
- Who conducts performance testing and verification and what are the specific roles and responsibilities? What are the requirements and qualifications for verifiers when conducting performance testing and verification in accordance with ISO 14034?
- What needs to be considered when specifying the performance parameters for a verification plan in accordance with ISO 14034? What needs to be considered when conducting performance testing in order to generate verifiable performance data?
- How can stakeholder expectations be managed to achieve positive performance verification outcomes and broader market acceptance?

3. Implementation of ISO14034
Case Study #1 – EPA Nitrogen Sensor Challenge
Maggie Theroux (US EPA) and Gail DeRuzzo (Battelle)
The objective of the US EPA Advanced Septic System Nitrogen Sensor Challenge is to identify, test, and verify the performance of low-cost nitrogen sensor packages that can continuously monitor the performance of advanced nitrogen removal septic systems. The intent is to provide a practical measurement system that would lead to increased acceptance and utilization of advanced and innovative nitrogen reducing septic systems.

The Challenge was developed by the US EPA with assistance from the Nature Conservancy, state regulators, the University of Rhode Island, the Massachusetts Alternative Septic System Test Center (MASSTC) and the Department of Health Services in Suffolk County, New York. EPA's Office of Water and Office of Research and Development have funded the Challenge since its launch.

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In addition, EPA is providing project leadership and policy guidance, assistance with the design of screening and field tests, and logistical and technical support. Battelle Memorial Institute is providing support in the planning, development and implementation of the performance testing and verification aspects of the Challenge. Testing of the sensors is being conducted at MASSTC in Barnstable, Massachusetts. Sensor developers whose sensors reach the end of a 6-month test and meet the specified performance goals will have the option of obtaining verification of their test results through the VerifiGlobal ISO 14034 ETV process, provided in the form of a Verification Report and Verification Statement. Following the completion of the verification reports, the Nature Conservancy will review the results and award funding for an order of 200 units to the best performing sensor that completes the 6-month field performance test and meets or exceeds the performance goals.

Case Study #2 – Performance Verification of Stormwater Technologies
Greg Williams (Good Harbour Laboratories) and Dave Scott (Hydro International)
Defining performance objectives for innovative stormwater technologies and verifying their performance helps municipalities, utilities and other water sector stakeholders make informed choices, and at the same time benefits technology companies seeking market acceptance of their innovative solutions. Recognizing that an innovative technology may not have a track record of performance, it is reasonable to assume that, in the absence of a performance track record, the deployment of effective innovative infrastructure solutions would benefit from comprehensive approaches that incorporate evidence-based performance benchmarking and verification.

VerifiGlobal and Good Harbour Laboratories are collaborating on performance benchmarking, testing and verification of stormwater technologies, following the requirements of the ISO 14034 ETV standard. A key challenge is generating the type and quality of data that decision makers need when evaluating and selecting innovative stormwater treatment technologies. This includes how the results of performance testing and verification are reported and interpreted by stormwater technology end users and whether or not these technologies comply with water quality objectives. Through this collaboration, important lessons are being learned regarding the technical and market challenges for acceptance, adoption and use of innovative stormwater technologies, as well as the importance of reliable measurement, analysis and feedback.

Panel Session Contact: John Neate, VerifiGlobal (jhneate@verifiglobal.com)

TechConnect WORLD INNOVATION CONFERENCE & EXPO JUNE 17-19, 2019 BOSTON, MA

In addition to the ISO 14034 Panel Session, VerifiGlobal Alliance Members will be making two presentations as part of the TechConnect Conference in Boston:

13:30 Monday, 17 June 2019
"Pilot Scale Demonstration of Carbon Utilization Technologies for the NRG COSIA Carbon XPrize"
T. Hansen, Southern Research

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13:30 Wednesday, 19 June 2019
"Stormwater Technology Performance Verification"
G.R. Williams, Good Harbour Laboratories

Good Harbour Laboratories

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Technology Focus: ISO 14034 and Technology Readiness
Understanding what is verifiable under the ISO 14034 Standard

A frequently raised question regarding the scope and application of the ISO 14034 ETV standard is:
What technologies can be verified using the ISO 14034 standard?

In addressing this question, it is useful to understand the stages of technology development and the terminology used to define commercially-ready technologies.

A **prototype** is an early sample, model, or release of a product built to test a concept or process or to act as a thing to be replicated or learned from. A **commercially viable product or technology** is capable of not only generating market interest and acceptance, but also realizing successful market deployment and growth. In product development terms, viability means that a product not only gets purchased, but it performs well enough to be recommended to others, and its popularity spreads.

Innovation often trades-off performance along one dimension for performance along another. The key is to know which trade-offs buyers or consumers are willing to make. Once a truly disruptive product or service takes root in simple applications at the bottom of a market segment it can move rapidly up market, eventually displacing established competitors.

Defining **technology readiness levels (TRLs)** through a technology readiness assessment is a way of estimating technology maturity in the context of user needs, technology requirements and demonstrated technology capabilities. Defining the TRL of a technology can help manage risk, provide a common understanding of technology status, and inform decisions concerning the development and transitioning of the technology. An assessment of technology readiness can also assist in determining the useful scope of an ISO 14034 technology verification for specific applications and targeted outcomes.

Guidance on the development status and readiness for market of a technology proposed for verification is provided in the ISO 14034 standard, which states that a technology proposed for verification shall be either already available on the market or available at least at a stage where no substantial change affecting its performance will be implemented before market entry.

For the most part, this means that the technology and all its components (apparatus, processes, products) are full-scale and commercially available, and data supplied to the verifier is from the use or demonstration of a commercial unit with a unique identifier (e.g. registered commercial name of the technology). In some cases, the technology could be a final prototype design prior to the manufacture or supply of commercial units (i.e., the technology to be verified is a representative pre-commercial unit). There may also be instances where the technology is a pilot scale unit used to provide data which, when implemented with demonstrated scale up factors that do not influence its performance, proves that the commercial unit satisfies a performance claim.

Broad definitions of the nine technology readiness levels (TRLs) are provided on the next page. Within the verification community it has been suggested that the following European Union (EU) interpretations could be applied when justifying a decision to proceed with verification of an environmental technology under the ISO 14034 standard:
- TRL 7 – System prototype demonstration in operational environment
- TRL 8 – System complete and qualified
- TRL 9 – Actual system proven in operational environment.

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Contact VerifiGlobal to find out how VerifiGlobal Alliance members are supporting performance verification and market acceptance of innovative technologies and best practices

Technology Readiness Level (TRL) Definitions

TRL 1 Basic Research: Initial scientific research has been conducted. Principles are qualitatively postulated and observed. Focus is on new discovery rather than applications.

TRL 2 Applied Research: Initial practical applications are identified. Potential of material or process to solve a problem, satisfy a need, or find application is confirmed.

TRL 3 Critical Function or Proof of Concept Established: Applied research advances and early stage development begins. Studies and laboratory measurements validate analytical predictions of separate elements of the technology.

TRL 4 Lab Testing/Validation of Alpha Prototype Component/Process: Design, development and lab testing of components/processes. Results provide evidence that performance targets may be attainable based on projected or modeled systems.

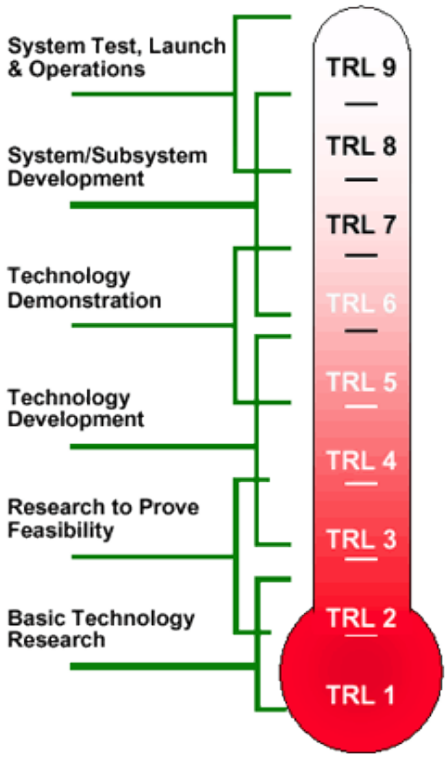
TRL 5 Laboratory Testing of Integrated/Semi-Integrated System: System component and/or process validation is achieved in a relevant environment.

TRL 6 Prototype System Verified: System/process prototype demonstration in an operational environment (beta prototype system level).

TRL 7 Integrated Pilot System Demonstrated: System/process prototype demonstration in an operational environment (integrated pilot system level).

TRL 8 System Incorporated in Commercial Design: Actual system/process completed and qualified through test and demonstration (pre-commercial demonstration).

TRL 9 System Proven and Ready for Full Commercial Deployment: Actual system proven through successful operations in operating environment, and ready for full commercial deployment.



VerifiGlobal is committed to encouraging broader market acceptance of innovative clean technologies and strengthening the business case for investment and implementation of these technologies.

VerifiGlobal Alliance members are qualified and well positioned to demonstrate and verify the performance of innovative clean technologies and management options, thereby assisting technology users, operators, regulators and investors in selecting and implementing solutions that are viable and sustainable into the future.

Contact VerifiGlobal to find out how VerifiGlobal Alliance members are supporting performance verification and market acceptance of innovative technologies and best practices

ADVANCED SEPTIC SYSTEM NITROGEN SENSOR CHALLENGE - UPDATE

The US EPA Advanced Septic Sensor Nitrogen Sensor Challenge (ASSNSC) provides a credible platform for sensor developers to improve and optimize their technologies. The ASSNSC project is positive on multiple fronts, including:
- Stakeholder-driven identification and refinement of sensor performance goals;
- Further development and optimization of innovative nitrogen sensor technology performance;
- Further development and improvement of the nitrogen sensor testing Test/Quality Assurance Plan (T/QAP);
- Recognition and oversight of the Massachusetts Alternative Septic System Test Center (MASSTC) as a credible sensor test facility;
- Validation of the 'challenge model', together with the Nature Conservancy (TNC), as a mechanism to actively engage stakeholders and interested parties and to reward top performers;
- Enhanced potential for global acceptance of verified nitrogen sensor performance by following the International Organization for Standardization Environmental Technology Standard (ISO 14034 ETV).

As the project progresses from technical validation of innovative prototype sensors to verification and market acceptance of commercially viable technologies, it remains important to continue to explore and better understand operational requirements and functionality in relation to performance expectations and the intended market deployment of these technologies.

BATTELLE

This project is being conducted by Battelle Memorial Institute (Battelle) for the US EPA under contract #EP-C-16-014

For more information contact Gail DeRuzzo at: sensorchallenge@battelle.org

MASSTC
The Massachusetts Alternative Septic System Test Center

For more information about MASSTC, Contact George Heufelder, at: gheufelder@barnstablecounty.org

Funding for the ASSNSC testing program is provided by the US EPA Office of Research and Development and the Office of Water/Wastewater Management.

EPA selected Battelle as the primary contractor to support the ASSNSC project and oversee performance testing of the nitrogen sensors. This included the development of a T/QAP and Verification Plan based on the ISO 14034 ETV standard.

The Massachusetts Alternative Septic System Test Center (MASSTC), operated by the Barnstable County Department of Health and Environment, is responsible for conducting the performance testing. As a National Sanitation Foundation (NSF) certified test facility, MASSTC performs testing on products that remove contaminants contained in domestic wastewater. The MASSTC facility can accommodate over 20 concurrent tests, allowing companies to conduct research and development on their products, as well as testing using a variety of standardized test protocols

Once preliminary screening tests have been successfully completed, developers whose sensors meet the basic ASSNSC performance goals will be invited to participate in an extensive 6-month field performance test. Battelle will verify the results of the field performance tests based on the T/QAP requirements, the VerifiGlobal Performance Verification Protocol and the requirements of the ISO 14034 ETV standard. EPA will award ISO ETV verification reports and statements for sensors that successfully complete the six-month field testing and meet the minimum performance goals.

Following the release of the verification reports and statements anticipated in 2020, an external technical panel and TNC will review the results. TNC and others are seeking funding for an order of 200 deployable septic sensor units, not to exceed a total cost of $300,000. The order may be presented in 2020 to the best performing sensor(s) that complete the 6-month field performance test and meet or exceed the performance goals.

Conserving Biodiversity Conference - Red Tide Impacts in the Gulf

Florida Gulf Coast University - March 14, 2019

Harmful algal blooms such as red tide occur when microscopic algae multiply to higher than normal concentrations, often discoloring the water. High concentrations can be toxic to fish, marine mammals and birds. Human impacts include respiratory distress, especially for people with pre-existing respiratory conditions.

The massive 2017-2018 red tide outbreak on Florida's Gulf Coast caused extensive damage to ecosystems, with marine life washing ashore dead or imperiled. The biological impacts of this phenomenon and what they could mean for the future were discussed with scientists, policymakers and educators at the "Conserving Biodiversity Conference", which took place at Florida Gulf Coast University (FGCU) on March 14, 2019.

The main goal of the conference was to obtain a clearer picture of how the algal blooms affect the Gulf of Mexico's biodiversity and the food chain in coastal ecosystems. The morning session of the conference addressed the scientific evidence of red tide's impacts on species and ecosystems, including how such outbreaks affect coastal biodiversity. The afternoon sessions explored gaps in scientific knowledge, as well as the policy, community engagement and educational aspects related to this pervasive issue.

FGCU faculty were joined by representatives of organizations such as the Florida Fish and Wildlife Conservation Commission, Calusa Waterkeeper, Center for Biological Diversity, Conservancy of Southwest Florida, Sanibel-Captiva Conservation Foundation and the Clinic for the Rehabilitation of Wildlife.

In his opening remarks, FGCU President Dr. Mike Martin emphasized the importance of solving problems at two levels – science and policy – based on what he described as "induced technological scientific innovation".

Florida Secretary of Environmental Protection, Noah Valenstein, emphasized the importance of working together and learning from the community. He also outlined a strategic plan for action based on three "columns" – (1) Effective enforcement through the application of existing legislative tools; (2) Establishing a holistic "hub of information" that recognizes the vital role of ecosystems and their importance for the future of Florida's natural resources; and (3) Addressing the impacts of urbanization on watersheds through joint programs and cooperative funding.

VerifiGlobal attended the conference and will be following up further on the concept of "induced technological scientific innovation to solve problems", as well as the potential opportunity for Florida to be a leader in low-impact development through the demonstration and performance verification of advanced monitoring technologies and cost-effective point source and non-point source mitigation technologies. The possibility of establishing a nutrient management challenge, as other parts of the US have done, also exists.

The conference was organized by the Biodiversity Group, an association of FGCU faculty, staff and students as well as community partners, formed in 2016. Recognizing that biodiversity loss is one of the major global impacts of human activity, the group is working to advance understanding and protection of regional biodiversity through research, education, resource management and public policy.

For more information, contact:
fgcubiodiversity@gmail.com

Conserving Biodiversity: Red Tide Impacts in the Gulf

Florida Gulf Coast University

Strategic Framework for Sustainable CleanTech Solutions

There is a need to improve and strengthen the capacity of decision-makers in local authorities, institutions, and the private sector to identify, assess, evaluate and select environmentally sound 'clean' technologies and infrastructure. This includes know-how, operating procedures, goods and services, and equipment, as well as organizational and managerial procedures.

Facilitating stakeholder involvement in the development and application of environmentally sound management approaches requires a strategic framework for promoting sustainable solutions and a process for assessing the environmental characteristics, benefits and risks associated with technologies and infrastructure.

There are four basic elements (or stages) of a strategic framework for promoting sustainable solutions.

Stage 1: Defining Baseline Conditions – The establishment of baselines, benchmarks, and codes of practice is essential for assessing the performance of infrastructure solutions and for modifying future strategies and approaches. This involves conducting inventories, studies, audits, and assessments, as well as implementing performance targets and performance measurement systems.

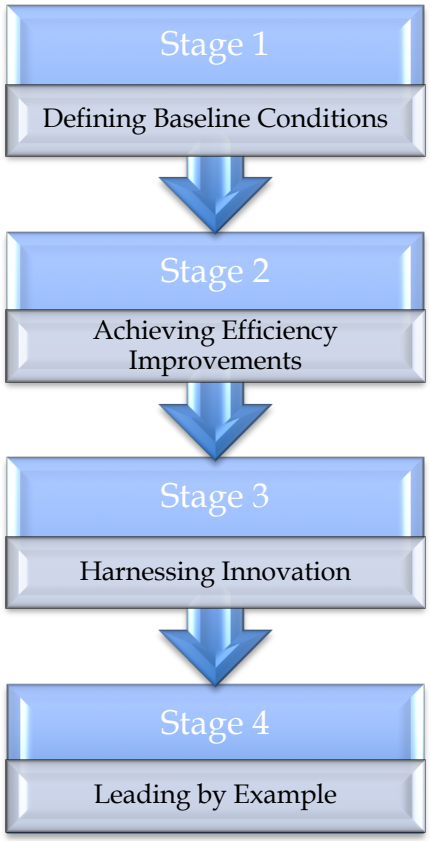
Stage 2: Achieving Efficiency Improvements – Once an understanding of baseline conditions has been established, leverage can be obtained through the effective application of knowledge, leading to technology, process, and system efficiency improvements. The opportunity exists at this stage to optimize supply chains.

Stage 3: Harnessing Innovation – Harnessing innovation involves leveraging strategic advantages, demonstrating results, and disseminating solutions to increase the market penetration of environmentally sound 'clean' technologies and approaches. At this stage, the potential also exists to address upstream industrial transformation opportunities.

Stage 4: Leading by Example – The fourth element of the strategic framework involves proactively influencing market conditions through fully integrated solutions and ultimately being better positioned to achieve sustainability. At this stage the opportunity exists to lead and shape market realities.

Contact VerifiGlobal to find out how VerifiGlobal Alliance members are supporting the development and implementation of sustainable solutions.

Key elements (or stages) of a strategic framework for promoting sustainable solutions



Southern Research CleanDaTa Initiative

Solving the world's hardest problems.

VerifiGlobal Alliance member, Southern Research (SR) is a 501c3 not for profit research institute with expertise in technology evaluation. SR's Energy and Environment Division is focused on research, development and evaluation of innovations to address environmental challenges, ranging from air pollution to climate change.

SR has launched a new initiative – CleanDaTA (Cleantech Data and Technology Assessment) to aggregate information on the performance and impacts of various cleantech innovations from disparate information resources (e.g., technology evaluation and demonstration programs), extract and independently evaluate data from published reports, providing this data in an open access format to the public. Historically, this has been a gap in the cleantech world, requiring interested parties to independently research, extract, and evaluate technologies at various stages throughout the decision-making process.

The goal of CleanDaTa is to provide ready access to information about emerging solutions to sustainability issues – primarily climate change and energy consumption, so that investors, end users, regulators, and others can make intelligent decisions, reduce risk associated with implementing new technologies, and, ultimately, achieve greater positive impact. In addition, as more cleantech data is obtained and understood, there is significant potential for data analyses to evaluate aggregate sustainability impacts of new cleantech implementation and investment, as well as impacts on markets and regional economics.

The fundamental aspects of CleanDaTa (e.g., data collection) are underway using internal funds and SR is now seeking: (a) partners and funding to support long term development, and (b) community inpur regarding critical data needs.

For more information, contact:

Tim A. Hansen, P.E.
Director, Cleantech Verification & Sustainability
Southern Research Energy & Environment Division
Email: thansen@southernresearch.org
https://southernresearch.org/eande/clean-technology-sustainability/

Applying Performance Benchmarking and Verification to Encourage Clean Technology Investment

Sustainable development is a challenge for individuals, businesses, industries and governments. It requires voluntary approaches and a regulatory framework that allows businesses to innovate and take responsibility.

Increased public awareness of the environment requires that industry place greater priority on how its products are produced, marketed, used and disposed. Industries based largely on natural resources are particularly vulnerable to tighter environmental regulations and public scrutiny. With effective management, businesses can turn what may seem like a burden into an opportunity that can satisfy both environmental and economic concerns. These and other stakeholders are therefore seeking greater clarification of existing environmental rules and regulations, as well as better coordination and harmonization with international standards.

The global market for environmental technologies and services currently exceeds $1 trillion per year. It is therefore important to strengthen the capacity of decision-makers to identify, assess, evaluate and select 'clean' technologies and service solutions.

The overall objective of accredited third-party verification is to determine the performance of a technology, or suite of technologies, through a comprehensive assessment based upon established criteria and rigorous technical analysis using scientifically and statistically valid protocols. Verifying the performance of technology options against criteria that reflect stakeholder needs and expectations leads to informed decision-making and creates a level playing field for solution providers, solution adopters and other stakeholders. This in turn facilitates the development and implementation of cost-effective environmental solutions.

Contact VerifiGlobal to find out how VerifiGlobal Alliance members are applying performance benchmarking and verification to encourage clean technology investment.

Update: ISO 14034 Technical Report

Innovative environmental technologies provide technical solutions to specific environmental challenges such as:

- Pollution prevention, control and remediation;
- Efficient resource utilization, recovery and recycling;
- Climate change resiliency, adaptation and mitigation; and
- Environmental monitoring and surveillance.

The solutions these technologies provide result in an environmental added value with more beneficial or less adverse environmental impacts relative to other technologies.

The ISO 14034 standard provides a process for verifying the performance of such technologies and charts a path for technology performance assessments where sustainability and innovation are inextricably linked.

The ISO working group responsible for development of the ISO 14034 ETV standard is nearing completion of a Technical Report (TR) intended to clarify and improve a common understanding of the requirements for independent verification. The TR will provide guidance for the implementation of ISO 14034 as well as define the specific roles and responsibilities of the entities involved in the environmental technology verification process in accordance with the standard.

Although the TR is primarily intended for verifiers using the ISO 14034 standard, the guidance it will provide may also be useful for environmental technology suppliers, technology users, policy makers and other organizations interested in understanding how the ISO 14034 standard can be used and how qualified, competent verifiers can be engaged.

It should be noted that the ISO 14034 Technical Report will not include any further requirements beyond those contained in the ISO 14034 standard.

Find out more at:
https://committee.iso.org/home/tc207sc4

ISO 14034:
Environmental Technology Verification (ETV)

Use of ISO 14034 helps build credibility, increasing market confidence that environmental technology performance claims are true and supported by high quality, independent test data.

ISO TC207 Plenary in Berlin

ISO/TC 207
Environmental Management

The next plenary meetings for ISO Technical Committee TC 207 on Environmental Management have been confirmed to take place in Berlin, Germany from Wednesday, May 29th, to Friday, June 7th, 2019. The Opening Ceremony takes place on Monday, June 3rd.

The host of the meetings is the DIN Standards Committee, Principles of Environmental Protection and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

The meetings will be held at:
DIN Offices (& vicinity),
Am DIN-Platz, Burggrafenstr. 6
10787 Berlin Germany

Parallel meetings throughout the week will involve the following sub-committees:

- ISO/TC 207/SC1 - Environmental management systems
- ISO/TC 207/SC2 - Environmental auditing and related environmental investigations
- ISO/TC 207/SC3 - Environmental labeling
- ISO/TC 207/SC4 - Environmental performance evaluation
- ISO/TC 207/SC5 - Life cycle assessment
- ISO/TC 207/SC7 - Greenhouse gas management and related activities

Although participation in TC 207 plenary meetings is conducted through national delegations, organizations with specific interests and expertise may become involved directly in TC 207 activities by obtaining international liaison status.

For more information contact:
Ms. Vanessa Mitchell, P.Eng.
Secretary, ISO/TC207 – Environmental Management
vanessa.mitchell@csagroup.org

February 2019 World Water-Tech Innovation Summit in London

The 2019 World Water-Tech Innovation Summit took place in London on February 26-27. The annual Summit attracts the global water industry's most innovative utilities and municipalities, industrial end users, engineering firms, technology companies, start-ups, and investors. It offers two days of focused networking and knowledge sharing with clients and partners. Thomas Bruun of ETA-Danmark participated in the summit representing VerifiGlobal.

This year's summit consisted of a mix of presentations, talks, technology showcases, and 1:1 meetings. Some 20 exhibitors around the conference area ranged from utilities, utilities services, design and asset management services, infrastructure services and technology providers.

The presentations and talks revolved around the need for innovations in technologies and asset management both for water supply and for wastewater. Key topics were the use of biological processes for the provision of clean drinking water and the management of wastewater, as well as the application of digital technologies for monitoring and asset management.

For VerifiGlobal, the technology show cases were of particular interest. The concept is well known – the technology manufacturers have 5 minutes to pitch their technology to a panel of "dragons" who then have 2 minutes to challenge. The primary goal for many of the participating technology manufacturers was to attract investors for further development and market deployment of their technologies and services.

Thomas Bruun spoke to a number of the technology companies. While some of these had already heard of ETV, other not yet familiar with ETV appeared to have an appreciation of the added value of ETV and VerifiGlobal's value proposition.

There is a lot of innovation in this field and an outspoken demand for credible documentation to support environmental performance claims. It is clear that utilities and municipalities can benefit greatly from further knowledge and information applying ETV as an effective decision support tool.

To find out more about the Summit go to: https://worldwatertechinnovation.com/

SR and IETU participate at January 2019 Cleantech Forum in San Francisco

Tim Hansen of Southern Research and Izabela Ratman-Kłosińska of IETU attended the January 2019 Cleantech Forum in San Francisco and hosted a workshop, **"Create Value and Reduce Risk - Independent Verification of Your Cleantech Innovations"**. The workshop was well attended by representatives of startup and growth-stage innovation companies, who learned how the ISO 14034 standard can be used as strategic decision support tool to reduce risk and increase market acceptance of their cleantech innovations.

For more information, contact:
Tim A. Hansen at: thansen@southernresearch.org , or **Izabela Ratman-Kłosińska at: i.ratman-klosinska@ietu.pl**

Water Environment Federation (WEF) hosting inaugural Stormwater and Green Infrastructure Symposium in Fort Lauderdale, Florida, 8-10 May 2019

The impacts from extreme weather events (drought, flood, heat) highlight the importance of striving for a flexible and multi-dimensional approach to stormwater management while leveraging the strengths of different stormwater infrastructure design sand operational strategies. Effective stormwater management requires collaboration among design and construction engineers, inspection and maintenance professionals, landscape architects, municipal stormwater program managers, environmental scientists, water resources managers, economists, communications specialists, decision makers and the public. The May 2019 WEF Symposium is seeking to deepen the technical knowledge of professionals involved with stormwater management and to provide a forum where key issues in the sector are discussed.

For more information go to: https://www.wef.org/events/conferences/upcoming-conferences/stormwater-and-green-infrastructure-symposium-2019/

VerifiGlobal Alliance General Assembly Meeting (June 20, 2019)

The primary objectives of the VerifiGlobal Alliance are to enhance and promote the role of independent verification of environmental technology performance worldwide, and to build market confidence in the verifications undertaken by its members.

Members help facilitate the transfer of national technologies to the global marketplace through the performance verification services they provide. This is accomplished through:

- Exchange of information, advice, and experience on the scope and procedures used to verify technology performance in various countries
- Development of a common understanding of the performance testing and verification requirements in members' countries in order to minimize duplication of effort
- Establishment of guidelines for the development and exchange of testing and verification protocols and procedures
- Mutual recognition of test data, inspection schemes and verification procedures (where feasible)

The VerifiGlobal Alliance General Assembly is composed of all members. The General Assembly meets at least once every year. If decisions have to be taken by voting, the following is applicable:

- Changes in the statutes require 2/3 of positive votes of all membership
- Designation of the Advisory Council requires a simple majority of a quorum comprising 2/3 of members present or represented
- All other decisions require a simple majority of those present at the meeting, including proxies.

The Advisory Council, acting on behalf of the General Assembly, manages the administrative activities of the VerifiGlobal Alliance and makes recommendations to the General Assembly for membership nominations. The Advisory Council is appointed from the membership of the VerifiGlobal Alliance by the members of the General Assembly for a period of two years.

For more information contact:
Thomas Bruun - tb@etadanmark.dk

VerifiGlobal Alliance 2019 General Assembly

June 20, 2019
08:00-10:00 am (Eastern Time)

Battelle (Norwell)
Massachusetts Bay Conference Room
141 Longwater Drive, Suite 202,
Norwell, MA 02061 USA

Draft Meeting Agenda

1. Approval of agenda
2. Report of Directors
3. Financial report
4. Membership status
5. Current verifications
6. Review of policies and procedures
7. Promotion and marketing
8. Strategic issues for further development of the organization
9. Other business

Looking forward to connecting with you at forthcoming events

Over the next year VerifiGlobal and its Alliance members will be participating in a number of key events to promote and build greater confidence in the application of ISO 14034 ETV verification.

March 2019	- Sustainable Innovation 2019, London UK, 4-5 March 2019 - TRIECA Stormwater and Erosion Control Conference (hosted by TRCA), Toronto Canada, 20-21 March 2019 - Americana 2019, Montreal Canada, 26-28 March 2019
April 2019	- WEAO Technical Symposium and OPCEA Exhibition 2019, Toronto Canada, 14-16 April 2019 - 5th International Symposium on Bioremediation and Sustainable Environmental Technologies (hosted by Battelle), Baltimore USA, 15-18 April 2019
May 2019	- Blue Cities Forum 2019, Toronto Canada, 7-8 May 2019 - WEF Residuals and Biosolids Symposium, Fort Lauderdale USA, 7-10 May 2019 - WEF Stormwater and Green Infrastructure Symposium, Fort Lauderdale USA, 8-10 May 2019 - SWAN 2019 Smart Water Networks Forum, Miami USA, 15-16 May 2019
June 2019	- ISO TC207 Plenary, Berlin Germany, 3-7 June 2019 - 2019 Real Property Institute of Canada (RPIC) Federal Contaminated Sites Regional Workshop, Halifax NS Canada, 4-5 June 2019 - BlueTech Forum 2019, London UK, 5-6 June 2019 - ACE 2019 American Water Works Association Conference and Exposition, Denver USA, 9-12 June 2019 - IWA Leading Edge Conference on Water and Wastewater Technologies 2019, Edinburgh UK, 10-14 June 2019 - TechConnect World Innovation Conference and Expo, Boston USA, 17-19 June 2019 - VerifiGlobal Alliance General Assembly, Norwell MA USA, 20 June 2019 - Cleantech Performance Assessment and Verification Workshop, Norwell MA USA, 20 June 2019
July 2019	- U.S. Department of Energy, Advanced Research Projects Agency-Energy (ARPA-E) 10th Annual Energy Innovation Summit, Denver USA, 8-10 July 2019
August 2019	- National Environmental Monitoring Conference, Jacksonville FL USA, 5-9 August 2019 - Stockholm World Water Week, Stockholm Sweden, 26-31 August 2019
September 2019	- Water Reuse Symposium 2019, San Diego USA, 8-11 September 2019 - WEFTEC, Chicago USA, 21-25 September 2019
October 2019	- World Water-Tech North America, Toronto Canada, 23-24 October 2019 - Horizon 19 – Boston USA, October 2019
November 2019	- Aquatech Amsterdam 2019, Amsterdam Netherlands, 5-8 November 2019 - US EPA Advanced Septic System Nitrogen Sensor Challenge Webinar (TBD), Fall 2019 - SRI Sustainable, Responsible and Impact Investing Conference, Colorado Springs USA 11-15 November 2019
January 2020	- Cleantech Forum, San Francisco USA, January 27-29, 2020
February 2020	- World Water-Tech Innovation Summit, London, England, February 25-26, 2020
March 2020	- TRIECA Stormwater and Erosion Control Conference, Toronto Canada, March 2020 - GLOBE, Vancouver Canada, March 2020

VerifiGlobal Alliance Members

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Centre for Advancement of Water and Wastewater Technologies

Solving the world's hardest problems.

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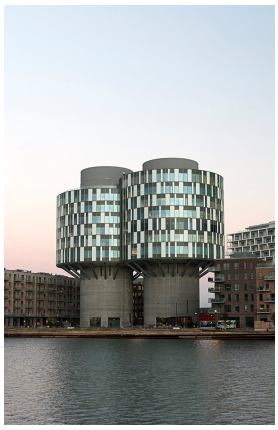
VerifiGlobal is a global network of organizations providing testing and verification services across multiple sectors and areas of expertise. Its mission is to strengthen long term, sustainable performance through improved efficiency, quality assurance and accountability.

The VerifiGlobal Alliance includes 11 member organizations from 8 different countries.

Current VerifiGlobal member organizations are: Battelle (USA), CAWT (Canada), CMI (Australia), ETA-Danmark (Denmark), GHL (Canada), IETU (Poland), KTL (South Korea), RESCOLL (France), Southern Research (USA), TRCA-STEP (Canada), VTT (Finland).



VerifiGlobal Alliance members demonstrate their conformity with the requirements of ISO 14034 and ISO 17020 through a peer assessment process designed in accordance with the requirements of ISO 17040.

The VerifiGlobal peer assessment process provides a flexible mechanism for recognizing competent organizations in countries that do not yet have a national accreditation program for ISO 14034.

ETA-Danmark A/S, a subsidiary of Danish Standards, hosts the VerifiGlobal Secretariat. Accredited by Danish Accreditation (DANAK) in accordance with ISO 17020, ETA-Danmark is the Danish verification body for both ISO 14034 ETV and the EU ETV Pilot Programme. For more information on ETA-Danmark, contact Thomas Bruun: tb@etadanmark.dk

For more information on VerifiGlobal, go to: www.verifiglobal.com