

VerifiGlobal Newsletter

December 2020



WHY ETV IS IMPORTANT

Environmental technology verification (ETV) contributes to the attainment of environmental objectives by facilitating the effective demonstration, deployment and market acceptance of innovative technology-based solutions.

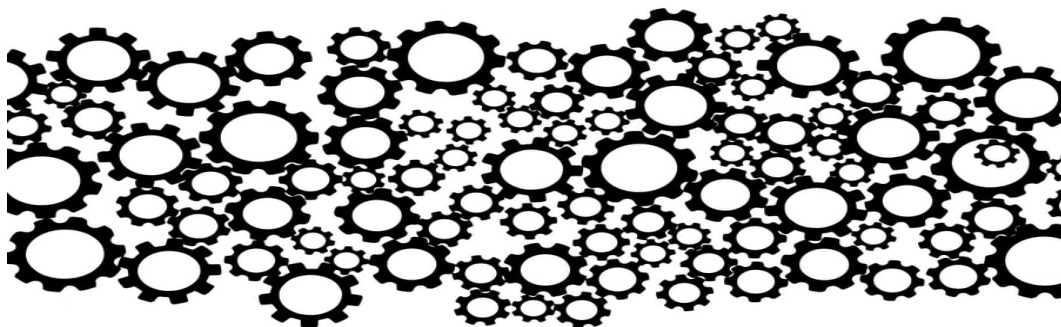
The ETV process supports informed decision-making by providing high-quality data on the environmental performance of innovative technologies, and providing a credible, impartial account of their performance. This includes pollution prevention, control and remediation technologies with more beneficial or less adverse environmental impacts, as well as environmental monitoring and surveillance technologies.

Verified technology performance information helps businesses, communities, regulators, and other decision makers respond more effectively to challenges and opportunities, assisting them in identifying solutions to the environmental problems and issues they face, such as water quality, air pollution, greenhouse gas emissions, resource recovery and soil contamination.

Performance verification also helps identify reliable and effective monitoring technologies for measuring contaminants in air, water, and soil, thereby facilitating the implementation of integrated strategies to address complex issues such as nutrient management, resource optimization and climate change resiliency.

ETV process is effective for verifying the performance of technologies with innovative features or technical and/or environmental benefits that may not be fully reflected in existing product standards.

The use of ETV as part of performance-based procurement (i.e., 'value-based' versus 'lowest cost') can help achieve sustainability goals by increasing demand for environmentally sound technologies. Performance benchmarking and verification help mitigate risk, facilitating investment and early adoption of innovative technologies, thereby improving the probability of market success and the growth of competitive environmental technology companies.



HOW THE ISO 14034 ETV STANDARD IS ADDRESSING ENVIRONMENTAL CHALLENGES

Published in 2016, the ISO 14034 ETV Standard provides a quality-assured process for independent confirmation of the performance of environmental technologies based on objective evidence. Three key features help ensure that ISO 14034 verifications are performed and reported accurately in a manner that is useful to stakeholders:

Flexibility in specifying relevant performance parameters and test methods.



Credibility in generating reliable performance data using robust, quality-assured test procedures and competent performance testing and verification organizations.

Transparency in assessing the evidence and verification results in reports that are clear, complete, and objective.



An overarching objective moving forward is integration of the ISO 14034 ETV standard within a comprehensive suite of environmental management standards and best practices. This requires effective stakeholder engagement and dialogue to build greater understanding and acceptance of ISO 14034 ETV as a decision support tool that is responsive to market needs. Underpinning this is four-point plan for improving market uptake of ISO 14034 ETV, which includes increased demand-side and supply-side marketing and promotion, plus greater emphasis on market receptor capacity and performance benchmarking:

1. Early Adoption

Support to corporations and governments as first purchasers and early adopters of verified technologies, thereby stimulating demand for innovative environmental technologies.

Requires clear policies with the commitment, leadership and resource support of top management.

2. Investment

Engagement with clean technology equity investors, financial services companies, major buyers, institutional funders and strategic partners that require independently verified performance information.

Requires meaningful dialogue with key organizations, including industry associations whose members can benefit from verified technologies and complementary best practices.

3. Regulatory Support

Alignment of ETV as a regulatory decision-support tool for government departments and agencies to address environmental priorities, such as clean air, soil and water, and climate change.

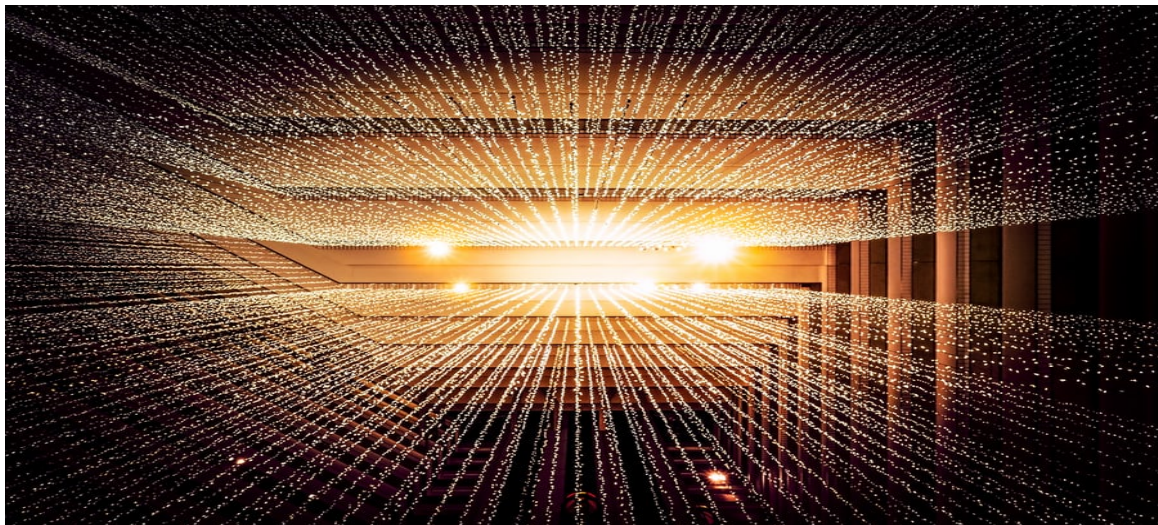
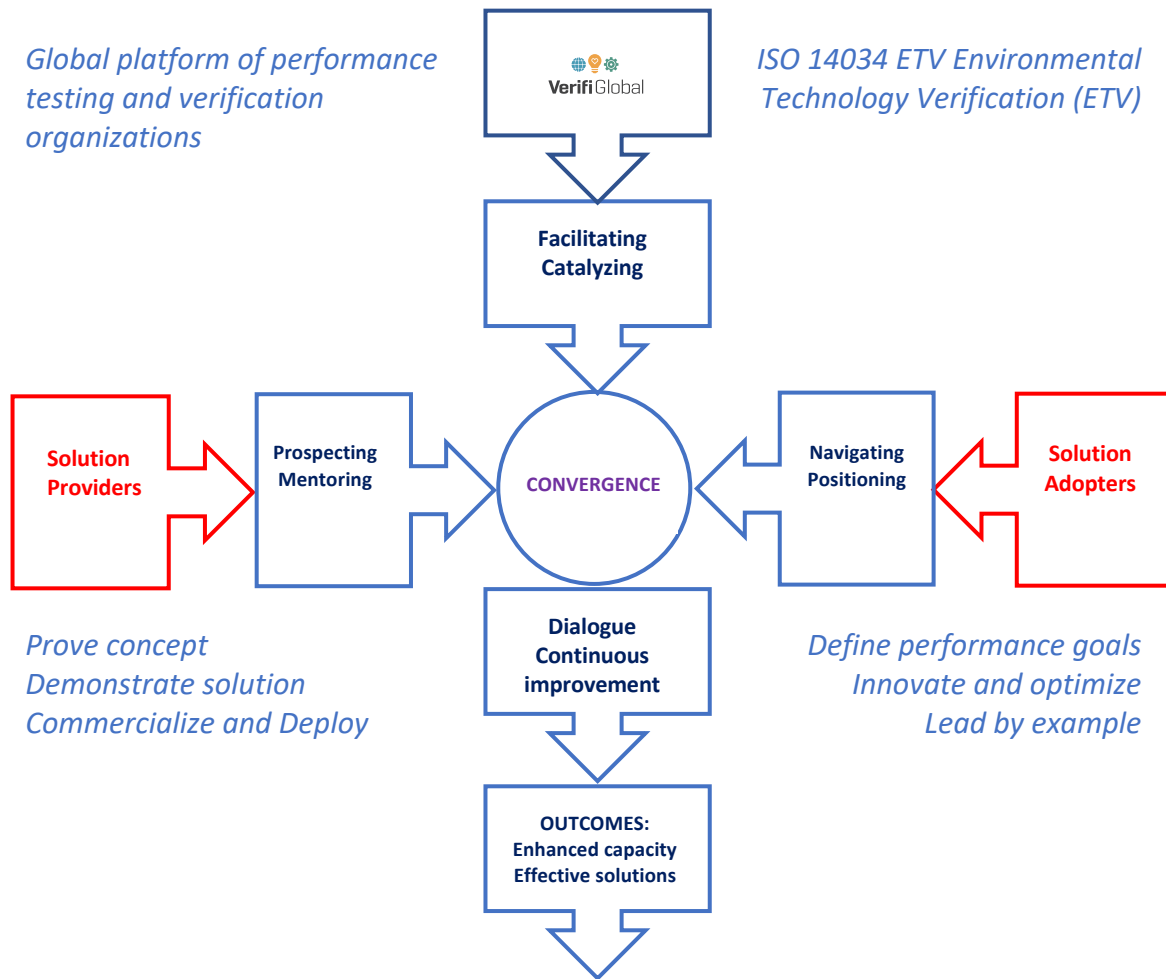
Requires credible performance testing, measurement and verification protocols and a network of demonstration sites to verify innovative environmental technologies.

4. Development Assistance

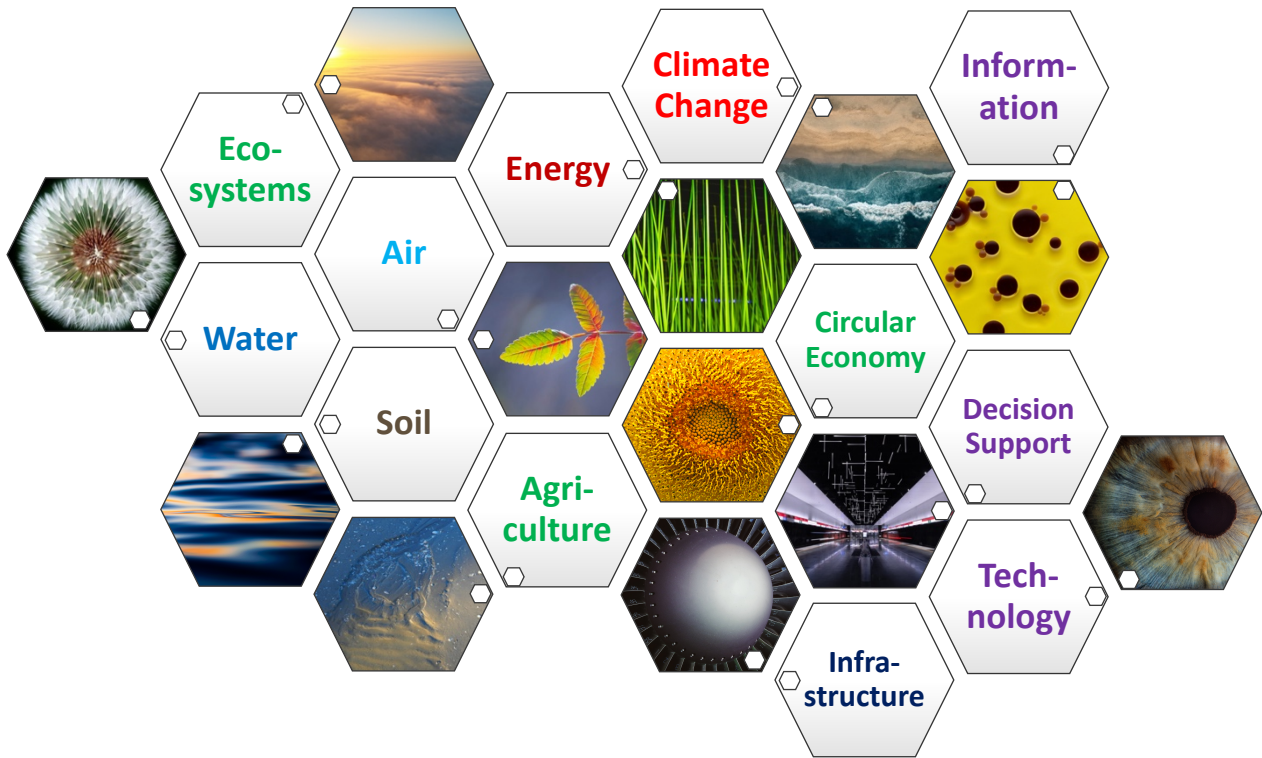
Collaboration with national and international organizations in addressing global environmental challenges through the use of verified environmental technologies.

Requires engagement with development agencies to encourage the use of independent performance verification as a decision-support tool.

Building Market Acceptance of Innovative Technologies: Linking Technology Providers & Solution Adopters

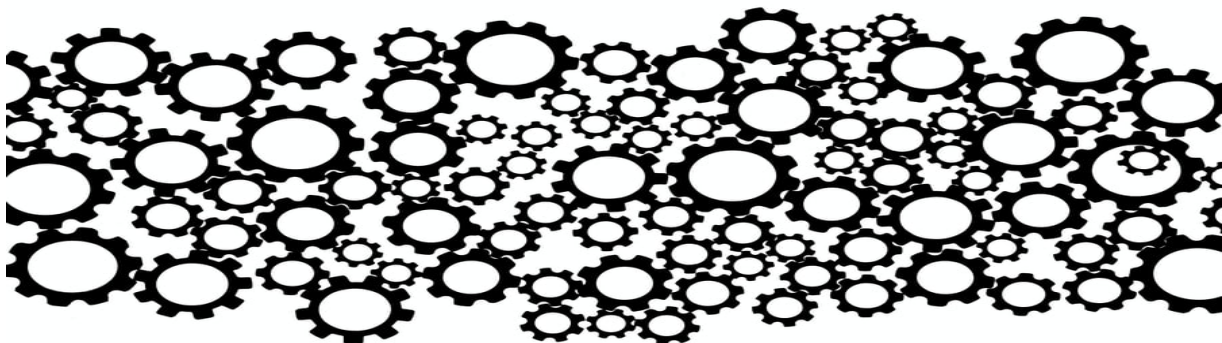


Looking Forward to 2021: 12 Priorities to Consider



Looking forward with optimism has become increasingly important during these difficult times. Harnessing humanity's capacity to learn, adapt and apply knowledge opens the door for innovation leading to actionable, sustainable solutions.

INNOVATIVE SOLUTION PROVIDERS ARE RISING TO THIS CHALLENGE.



2021 Priorities: Ecosystems



Ecosystems - complex interconnected networks; biological communities with Interacting organisms

Preserve - conserve, protect, perpetuate, prolong, maintain, care, continue; keep alive, safeguard, uphold

Diversify - branch out, vary output, expand, extend, stretch, broaden horizons; adorn, embellish, enhance, enrich

Integrate - combine, amalgamate, merge, unite, join, fuse, blend, mingle, coalesce, consolidate, meld, mix, harmonize, mesh

Sustain – strengthen, support, uphold, affirm; confirm validity



What's Happening ... BATTELLE and NEON

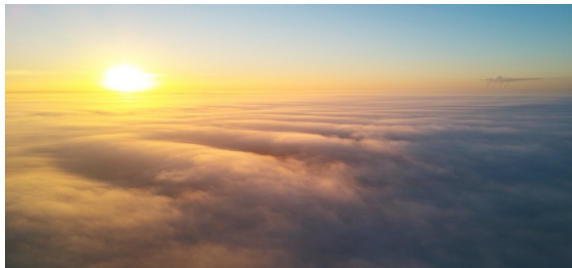
The National Science Foundation's National Ecological Observatory Network (NEON) is a continental-scale observation facility operated by Battelle and designed to collect long-term open access ecological data to better understand how ecosystems are changing.

NEON monitors ecosystems across the United States, including freshwater streams, rivers, and lakes, and terrestrial ecosystems from deserts to tropical forests.

Construction of the Observatory was completed in 2019. It includes 81 field sites and an airborne observation platform as well as the information infrastructure needed to gather data and metadata from sensors and field sampling. Battelle processes the information into data products, ensuring data quality, and delivers those products to users via an online portal.

Find out more at:
<https://www.neonscience.org/about>

2021 Priorities: Energy & Climate Change



Energy - property of matter and radiation manifest as a capacity to perform work; power derived from the utilization of physical or chemical resources,

Climate – weather conditions prevailing in an area in general or over a long period

Change - alteration, modification, variation, conversion, revision, amendment, adjustment, adaptation, reorganization, rearrangement, transformation, transfiguration, translation, evolution, metamorphosis, mutation

Adapt - modify, alter, change, adjust, convert, transform, reorganize; amend, refine, acclimatize, accommodate, habituate, reconcile

Mitigate - alleviate, reduce, diminish, lessen, weaken, lighten, attenuate, allay, ease, relieve, help, soften, temper, moderate, modify, abate, mollify



What's Happening ...

350Solutions – The NRG COSIA Carbon XPRIZE

350Solutions is working with the XPRIZE Foundation to verify the performance and impacts of innovative technologies that capture and convert CO₂ into useful products. These efforts are part of a \$20 million global competition—the NRG COSIA Carbon XPRIZE—to identify and award transformative technologies that can impact our global CO₂ emissions levels through market driven innovation.



350Solutions supported the semi-finals round of the competition, independently evaluating over 20 individual technologies operating at lab or small pilot scale, providing verified performance data to judges. Technologies evaluated converted CO₂ into fuels and chemicals, such as methanol or dimethyl ether, specialty products such as carbon nanotubes, and consumer and industrial products such as concrete blocks and protein supplements.

As the competition enters the finals stage, 350Solutions will be providing measurement and verification services for the ten competition finalists. Testing is taking place at test centers in Gillette, WY and Calgary, AB using real flue gas at scales up to 5 tons/day of CO₂ input. **For more information, go to: <https://350solutions.com/projects/>**

2021 Priorities: Water, Soil & Agriculture



Water - colourless, transparent, odourless liquid that forms the seas, lakes, rivers, and rain and is the basis of the fluids of living organisms.

Soil - upper layer of earth in which plants grow; a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles; earth, loam, sod, ground, dirt, clay, turf, topsoil, humus

Agriculture - the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food and other products.

Grow - sprout, shoot up, spring up, develop, bud, burst forth, germinate, bloom; emerge, arise, spread; flourish, thrive



What's Happening ...

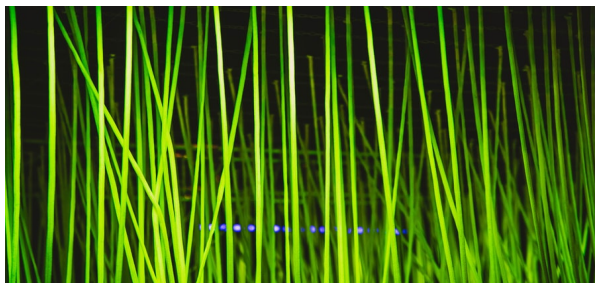
CAWT – New Onsite Wastewater Research & Testing Facility

- The Centre for Advancement of Water and Wastewater Technologies (CAWT) new Onsite Wastewater Research & Testing Facility (Ontario, Canada), which can host up to six advanced onsite wastewater technologies simultaneously. Areas of expertise include:

- Biological treatment (including biofilms and anaerobic biofilters)
- Membranes and filtration
- Advanced oxidation technologies
- Low energy, cold climate and remote systems
- Innovative technologies that target nutrients, heavy metals, and contaminants of concern.

Addressing water security is a lynchpin for an equitable, prosperous, and sustainable future.

For more information, go to: <https://cawt.ca/about/>



ETA-Danmark and VERA - VERA (Verification of Environmental Technologies for Agricultural Production) is a multinational collaboration among Environmental Protection Agencies in 4 European countries for testing and verifying environmental technologies within the agricultural sector including technologies for: Air cleaning; Livestock housing and management systems; Reducing gaseous emissions from land applied and stored manure; Slurry separation.

ETA-Danmark A/S is currently the sole appointed VERA verification body.

For more information, go to: <https://www.vera-verification.eu/>



2021 Priorities: Information & Decision Support



Information - details, particulars, facts, figures, statistics, data; knowledge, intelligence; instruction, advice, guidance, direction, counsel, enlightenment; material, documentation

Decision - resolution, conclusion, settlement, commitment, determination; choice, option, selection, ruling, recommendation, judgement

Support- underpinning, base, foundation; sustenance, assistance, contribution, backing, endorsement, sanction, argument for

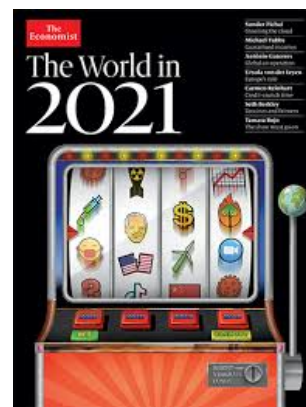
The World in 2021

“Tech must help combat climate change”, says Sundar Pichai Google’s boss, “AI and machine learning will help”

“At Google, we are working on ways to apply AI to optimise electricity consumption within our data centres. In collaboration with our sister venture, DeepMind, we have developed solutions that have reduced the amount of energy used to cool our data centres by 30%. This approach could be used by commercial buildings, including airports and shopping malls, to do the same. AI can also be used to make wind power more predictable, which will increase the value, utilisation and adoption of renewable energy”.

Read more in the in the Business section of The World in 2021 under the headline ***“The power of green technology”***

See: <https://www.economist.com/the-world-ahead/2020/11/17/tech-must-help-combat-climate-change-says-sundar-pichai>



What’s Happening ...

IETU and the LIFEproETV Project

The Institute for Ecology of Industrial Areas (IETU) in Katowice, Poland conducts research and offers services focusing on the environmental challenges posed by industrialised and urbanised areas in the context of the circular economy, resource efficiency, adaptation to climate change and mitigation of its effects.

IETU recently initiated a new project (LIFEproETV) to promote Environmental Technology Verification (ETV) in order to build strong brand awareness, market acceptance and recognition of ETV within the EU market. A key objective is to help increase the number of new environmental technologies brought to the market.

For more information, please contact the Project Coordinator, Izabela Ratman-Kłosińska, at i.ratman-klosinska@ietu.pl



Other 2021 Priorities (To be covered in our March 2021 Newsletter) Technology, Infrastructure & the Circular Economy



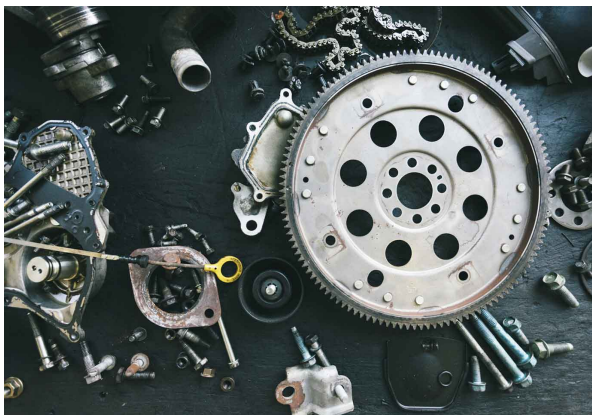
Technology - application of scientific knowledge for practical purposes; machinery and equipment developed from the application of scientific knowledge

Infrastructure - the basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of society and enterprise.

Circular economy - economic system aimed at the continual use of resources to eliminate waste; keeping resources in use for as long as possible, extracting their maximum value, then recovering and regenerating products and materials at the end of each service life; an alternative to a traditional linear economy (make, use, dispose)

Waste - squander, fritter away, misspend, misuse, spend recklessly, throw away, be wasteful with, dissipate, exhaust, drain, deplete, burn up, use up, consume

Watch this space in our March 2021 Newsletter when we will have more to report.



Verified Technology – ADS/StormTech Isolator® Row PLUS

The StormTech “Isolator Row PLUS” is a stormwater treatment technology designed for use under parking lots, roadways and heavy earth loads while providing a superior and durable structural system. The technology comprises a row of chambers covered in a non-woven geotextile fabric with a single layer of proprietary woven fabric at the bottom that serves as a filter strip, providing surface area for infiltration and runoff reduction with enhanced suspended solids and pollutant removal.



As shown in Figures 1 and 2, the Isolator Row PLUS is the first row of StormTech chambers surrounded with filter fabric and connected to a closely located manhole for easy access. The Isolator Row PLUS provides for settling and filtration of sediment as stormwater rises in the chamber and ultimately passes through the filter fabric. The open-bottom chambers allow stormwater to flow out of the chambers, while sediment is captured in the Isolator Row PLUS.

A single layer of Advanced Drainage Systems (ADS) PLUS fabric is placed between the angular base stone and the Isolator Row PLUS chamber. The geotextile provides the means for stormwater filtration and provides a durable surface for maintenance operations. A 6 oz. non-woven fabric is placed over the chambers.

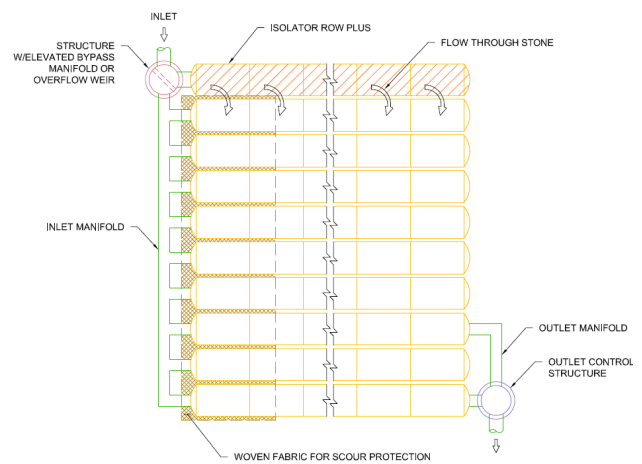


Figure 1: StormTech Isolator Row PLUS Schematic

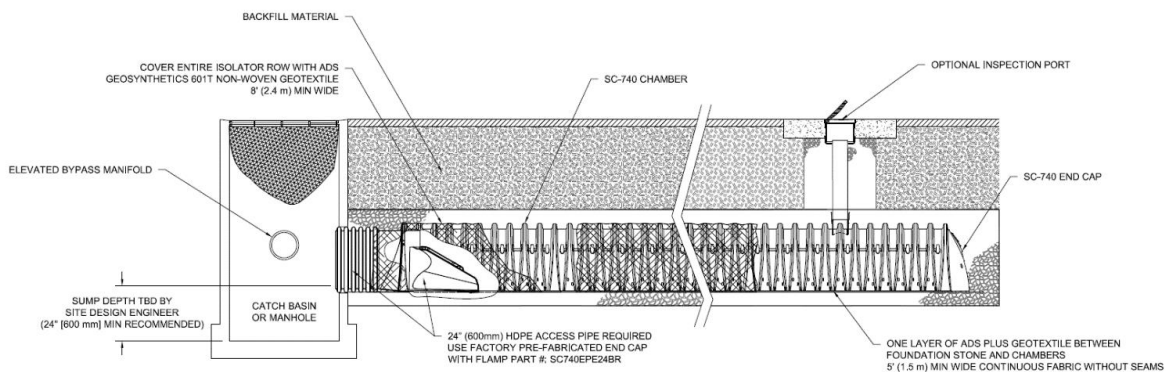


Figure 2: Isolator Row PLUS Detail

StormTech Isolator® Row PLUS Verification (continued)

The Isolator Row PLUS is designed to capture the “first flush” and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole not only provides access to the Isolator Row PLUS but includes a high low/concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row PLUS bypass through a manifold to the other chambers. This is achieved with either a high-flow weir or an elevated manifold. This creates a differential between the Isolator Row PLUS and the manifold, thus allowing for settlement time in the Isolator Row PLUS. After Stormwater flows through the Isolator Row PLUS and into the rest of the StormTech chamber system it is either infiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

StormTech developed and owns the Isolator Row PLUS technology and has filed a number of patent applications relating to the Isolator Row PLUS system.

The following features make the Isolator Row PLUS effective as a water quality solution:

- Enhanced infiltration Surface Area
- Runoff Volume Reduction
- Peak Flow Reduction
- Sediment/Pollutant Removal
- Internal Water Storage (IWS)
- Water Temperature Cooling (Thermal Buffer).

The StormTech Isolator Row PLUS technology was tested at the Mid-Atlantic Storm Water Research Center (MASWRC), under the supervision of Boggs Environmental Consultants, Inc. The performance test results for two overlapping StormTech Isolator Row PLUS chambers (commercial unit model SC-740) were verified by Good Harbour Laboratories Inc. (GHL), following the requirements of ISO 14034:2016 and the VerifiGlobal Performance Verification Protocol.

For more information on the StormTech “Isolator Row PLUS” technology, contact:



Advanced Drainage Systems
t: +1-888-892-2694
e: info@stormtech.com
w: www.stormtech.com



Holiday Crossword Puzzle



The Grid

	1		4		5			6	8	9	10		2	11	
3								7							
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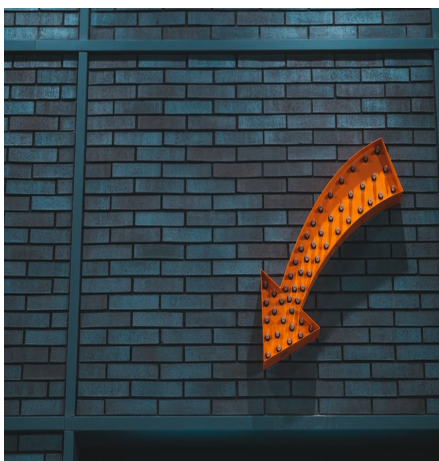
Holiday Crossword Puzzle - The Clues (Across)



ACROSS

- 1 The process of executing a task or function.
- 2 US media organization that posts talks online for free distribution under the slogan "ideas worth spreading".
- 3 Expressing motion in the direction of a particular location.
- 7 Destroyed by burning.
- 12 Invisible gaseous substance surrounding the earth.
- 13 Measure of relative event dispersion that's equal to the ratio between the standard deviation and the mean.
- 15 Relating to climate.
- 19 The condition of tilled soil, especially in respect to suitability for sowing seeds.
- 21 Relating to technology or its use.
- 22 Acronym for privately and publicly funded non-profit media organization based in Washington, D.C.
- 23 Abbreviation for Honorary.
- 24 Past participle of alight.
- 25 Pertaining to agricultural activity as an industrial sector of the economy.
- 26 Placed or located directly across from something else or from each other.
- 28 Acronym for a type of registered income fund that can be used to hold locked-in pension funds as well as other assets for eventual payout as retirement income.
- 29 Acronym for net asset value.
- 30 Acronym for a soccer organization.
- 32 Type of negative reaction to a substance.
- 36 Branch of zoology concerned with the study of insects.
- 38 Name meaning "counsel", "song", "queen", which is a variant of Regina (Latin) and Reina (Spanish).
- 39 Public copyright license issued by "Wizards of the Coast" granting permission for tabletop role-playing game developers to modify, copy, and redistribute some content of their games.
- 40 Acronym for environmental protection.
- 41 Abbreviation for overtime.
- 42 Study of living organisms divided into many specialized fields that cover their morphology, physiology, anatomy, behaviour, origin, and distribution.
- 45 Short-haired, short-eared, rabbit-like rodents of the genus *Dasyprocta*, of South and Central America and the West Indies, destructive to sugar cane.
47. Denoting a single thing or the same.
- 48 Acronym for previously funded collaborative network of European solar physics research groups aiming to measure and understand solar magnetism.
- 50 Fully trained nurse with an official certificate of competence.
- 51 Adverb indicating continuation of a movement or action.
- 52 Variant spelling of "a" before a word beginning with a vowel.
- 54 The act of reducing the severity, seriousness, or painfulness of something.
- 56 Climbing or trailing woody-stemmed plants.
- 58 Symbol for the chemical element nickel.
- 59 Male descendant.
- 60 An increase in speed or rate.
- 61 A network of interconnected computers.

Holiday Crossword Puzzle - The Clues (Down)



DOWN

- 1 Shared supply of resources to be drawn on when needed.
- 2 Application of scientific knowledge for practical purposes, including machinery and equipment.
- 4 Move about or travel over a wide area; or pass over something without stopping.
- 5 Conjunction used to link alternatives.
- 6 Institute in Virginia USA offering programs in automotive, HVAC/refrigeration, and maritime technology.
- 8 Direction in which a compass needle normally points, towards the horizon on the left-hand side of a person facing east.
- 9 Symbol for the chemical element chromium.
- 10 Branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
- 11 Period between 1603 and 1868 in the history of Japan, when Japan was under the rule of the Tokugawa shogunate.
- 12 Of or like vinegar.
- 14 The process of establishing the truth, accuracy, or validity of something.
- 16 The action or process of creating a new method, idea, or product.
- 17 Modify something to make it suitable for a new use or purpose.
- 18 Acronym for Information system that provides authoritative taxonomic information on plants, animals, fungi, and microbes.
- 20 Acronym for National Institute for Foodstuffs in Argentina.
- 23 A movable joint or mechanism on which a door, gate, or lid swings as it opens and closes, or which connects linked objects.
- 27 Too slippery to catch hold of or hold on to.
- 30 Confused or unable to think clearly.
- 31 Person or organization that cooperates with or helps another in a particular activity.
- 32 Filled with horror or shock.
- 33 Abbreviation for Epiregulin protein.
- 34 Accounts given in the form of official documents, after thorough investigation or consideration by appointed persons or bodies.
- 35 Right tributary of the river Barcău in Romania which is 22 km long.
- 37 The characteristic sound of cattle.
- 43 Chemical bond formed by the electrostatic attraction of oppositely charged ions.
- 44 Go away from.
- 45 Prefix meaning “vessel” or “container” used in medical and scientific terms referring to blood and lymphatic vessels.
- 46 The action of joining together or the fact of being joined together.
- 48 Acronym for Imaging and sound association based in Europe.
- 49 Denoting a version of something small.
- 53 Non-existent.
- 54 Suffix denoting polymer-related molecules.
- 55 Denoting a single thing or the same.
- 57 Abbreviation for north-east.

Holiday Crossword Puzzle - Answers



ACROSS

- 1 Performance
- 2 TED (Note: TED refers to "Technology, Entertainment, Design")
- 3 To
- 7 Torched
- 12 Air
- 13 COV (Note: COV is "coefficient of variation")
- 15 Climatic
- 19 Tilth
- 21 Techno
- 22 NPR (Note: NPR refers to "National Public Radio")
- 23 Hon (Note: Hon refers to "Honorary")
- 24 Alit
- 25 Agro
- 26 Oppositely
- 28 LIF (Note: LIF refers to "Life Income Fund")
- 29 NAV
- 30 FA (Note: FA refers to "Football Association")
- 32 Allergic
- 36 Entemology
- 38 Reyna
- 39 OGL (Note: OGL refers to "open gaming license")
- 40 EP
- 41 OT
- 42 Biology.
- 45 Agouti
- 47. One
- 48 ESMN (Note: ESMN refers to "European Solar Magnetism Network")
- 50 RN (Note: RN refers to "Registered Nurse")
- 51 On
- 52 An
- 54 Mitigation
- 56 Vines
- 58 NI
- 59 Son
- 60 Acceleration
- 61 Net

DOWN

- 1 Pool
- 2 Technology
- 4 Roam
- 5 Or
- 6 ATI (Note: ATI refers to Advanced Technology Institute")
- 8 North
- 9 CR
- 10 Ecology
- 11 Edo
- 12 Acetic
- 14 Verification
- 16 Innovation
- 17 Adapt
- 18 ITIS (Note: ITIS refers to "Integrated Taxonomic Information System")
- 20 INAL (Note: INAL refers to "Instituto Nacional de Alimentos")
- 23 Hinge
- 27 Eely
- 30 Foggy
- 31 Ally
- 32 Aghast
- 33 EREG
- 34 Reports
- 35 Inot
- 37 Moo
- 43 Ionic
- 44 Leave
- 45 Angio.
- 46 Union
- 48 EISA (Note: EISA refers to for "European Imaging and Sound Association")
- 49 Mini
- 53 Nil
- 54 Mers
- 55 One
- 57 NE



VerifiGlobal Alliance Members

<https://www.verifiglobal.com>



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The VerifiGlobal Alliance is a global network of 12 organizations providing testing and verification services across multiple sectors and areas of expertise. Current member organizations are – Battelle (USA), CAWT (Canada), CMI (Australia), ETA-Danmark (Denmark), Eurofins (Finland), GHIL (Canada), IETU (Poland), MASSTC (USA), RESCOLL (France), Southern Research (USA), TRCA-STEP (Canada), 350Solutions (USA).

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.

Contact VerifiGlobal about joining the VerifiGlobal Alliance.

The VerifiGlobal Solutions Network is comprised of progressive, forward-looking companies with innovative technologies that have been independently verified in accordance with the ISO 14034 ETV standard and the VerifiGlobal Performance Verification Protocol.

Contact VerifiGlobal about independent verification of your technology performance claims.



The VerifiGlobal Forum has been established to engage with cooperative and supportive organizations that recognize the importance of innovative technology solutions to address global challenges and the value of independent quality-assured technology performance testing and verification.

Contact VerifiGlobal about participation in the VerifiGlobal Forum.

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 information on ETA-Danmark, contact Thomas Bruun: tb@etadanmark.dk

For more information about VerifiGlobal, go to: <https://www.verifiglobal.com>