



ENVIRONMENTAL SYSTEMS

DIVISION NEWSLETTER

JUNE - 2019

ESD NEWSLETTER

ENVIRONMENTAL ENGINEERING features the Application of Environmental Technologies to ENGINEERING Systems to attain OPTIMAL Performance according to ESTABLISHED Standards.

The Newsletter of the Environmental Systems Division (ESD) will attempt to highlight a Variety of Environmental Technology Applications aimed at Enhancing Engineering Systems Performances in accordance with the Latest Standards by presenting Excerpts of and Links to Selected Articles from a Variety of Websites. ESD Members are encouraged to forward materials on Environmental Engineering topics for review by the Newsletter Editorial Staff. ESD Newsletter Readers are urged to forward comments on materials that appear in its content.

The ESD Newsletter will feature presentations in **Five** Sections:

1. ENVIRONMENTAL TECHNOLOGIES
2. ENVIRONMENTAL REGULATIONS
3. EED CHAIRMAN/DIVISION NEWS
4. EDITORIAL BOARD SELECTIONS
5. READER COMMENTS

It is envisioned that the ESD Newsletter will be Monthly enterprise involving ALL members of the ESD in its production. Your participation in providing and reviewing ESD Newsletter materials will be greatly appreciated.

1. ENVIRONMENTAL TECHNOLOGIES

Booming LNG industry could be as bad for climate as coal?

The booming liquefied natural gas (LNG) industry will play at least as big a role as new coal investments in bringing on a climate crisis if all planned projects go ahead, US-based energy analysts and campaigners say. The report by the Global Energy Monitor appears at odds with comments by Australia's emissions reduction minister, Angus Taylor, who has said the country could be proud that the rapidly expanding LNG export industry was displacing coal power overseas. Government analysis identified LNG as the main reason Australia's greenhouse gas emissions have risen each year since 2015, but the minister and industry say Australian gas deserves credit for lowering global emissions. The Global Energy Monitor, formerly known as CoalSwarm, is a US-based research and advocacy group that tracks fossil fuel development. It found there were US\$1.3tn in planned LNG investments across the globe, including nearly \$38bn in Australia, putting it fourth on a list behind the US, Canada and Russia. (Ref. 1)



Environmental Business - an eco-friendly way

Environmental Business looks at ways in which businesses can operate in an eco-friendly way and still remain profitable. Achieving a green economy involves transforming what we produce and how we produce it, responding to changes in both supply and demand. We need a balanced and environmentally sustainable economy that will support strong business investment and new opportunities in order to be able to meet long term challenges. It is crucial for natural assets to be managed sustainably and used efficiently across all sectors of the economy. It is important to reflect their value in all production and consumption decisions. In order for this transition to take place, business and consumers must take advantage of the benefits of resource efficiencies. The economy will need to grow, but this must be within the context of reduced environmental impact and a greater resilience to future environmental challenges, which will include climate change, material scarcity and any emergencies related to securing energy supplies and food security. Areas under consideration include: energy management; waste management; carbon management; water management; sustainable procurement of raw materials; ethical labor standards within the supply chain; product composition, and eventual disposal at the end of the lifecycle. (Ref. 2)

2. ENVIRONMENTAL REGULATIONS

AARP Strongly Opposes Nuclear Bailout Bill

AARP State Director Barbara A. Sykes announced AARP's opposition to House Bill 6 that would saddle all Ohioans with a new, unfair and unnecessary annual \$300 million nuclear bailout tax. Based on the legislation, one company, First Energy, stands to receive the majority of the newly created \$300 million Clean Air Program Fund. Analysis of the bill indicates that rather than seeing a cost reduction in their bills, as originally promised by the bill supporters, all Ohio utility customers will still be on the hook to pay for existing energy efficiency programs and contracts with no clear end to those fees. "The bill, as written today, does not deliver in a clear, identifiable way, any benefit to Ohio's consumers, manufacturers or future. Instead it promises savings and jobs, but has no specific language outlining due process to ensure that will happen. It will actually increase utility bills and in a very unnecessary and unfair way," said AARP Ohio Manager of Advocacy Luke Russell. (AARP is a nonprofit, nonpartisan organization, with a membership of more than 37 million, that helps people turn their goals and dreams into real possibilities, strengthens communities and fights for the issues that matter most to families such as healthcare, employment and income security, retirement planning, affordable utilities and protection from financial abuse.) (Ref. 3)



Renewables May Prove Cheaper Than 96% of Coal Plants Worldwide by 2030

The uphill battle confronting coal seems to be getting steeper. A new global analysis of 6,685 coal plants finds that it is now cheaper to build new renewable generation than to run 35 percent of coal plants worldwide. By 2030, that percentage increases dramatically, with renewables beating out 96 percent of today's existing and planned coal-fired generation. The 4 percent exception is in markets with extremely low fuel costs, where coal is cheap and plentiful, or with uncertain policies for renewables, like Russia. The study, conducted by pro-climate-action financial think tank Carbon Tracker, covers about 95 percent of worldwide operating capacity and about 90 percent of under-construction capacity. The report's authors lay out three inflection points for the transition away from coal-fired power. They forecast the first for 2025, when renewables economically beat out new-build coal. According to the report, countries including Australia, China and India are already there. (Ref. 4)

3. ESD CHAIRMAN/DIVISION NEWS

Environmental Student/Early Career Competition Committee

ESD has started work on a new Environmental Student/Early Career Competition. The competition is envisioned to be between like age/education individuals or groups (e.g., classes, schools, etc.). The Committee will work out all the details of the program, resolve issues, obtain approval first by the ESD Executive Committee and then by ASME, develop a budget, advertise the program and run the first competition (including obtaining questions & judges) in addition to anything else the Committee believes is necessary. If you are interested in being a member of the Committee please contact Arnie Feldman at jjdsenv@att.net.

4. EDITORIAL BOARD SELECTIONS

How to Ensure New Technologies Are Sustainable?

As our natural resources continue to dwindle and the effects of climate change become increasingly apparent, individuals and businesses alike are beginning to focus on sustainability in greater numbers. By reducing emissions, diverting waste from landfills, and harnessing new, sustainable forms of technology, we may be able to better ensure humanity's survival into the future. But the concept of sustainability refers to much more than the natural environment. The phrase "sustainable development" was first used at the 1987 World Commission on Environment and Development, outlining the link between sustainability and social issues, including poverty and inequality. In the modern era, the line between those living in poverty

and those living comfortably is becoming increasingly blurred, and a push towards widespread sustainability may help restore the global balance. The unfortunate reality is that sustainable technology is often more expensive than traditional tech, leading many to eschew sustainable products in lieu of less costly versions, no matter their environmental impact. But the upfront cost is just part of the overall picture — sustainable technology may be more cost-effective in the long run, with savings that can include reduced energy bills and decreased waste disposal costs. Recent innovations in sustainable technology make it easier than ever to make the switch to a more eco-friendly lifestyle and/or business model. (Ref. 5)

IPCC circulates draft ocean and cryosphere report for final government review

The Intergovernmental Panel on Climate Change (IPCC) has circulated the Final Draft including the Summary for Policymakers (SPM) of the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) to governments in the final stage of preparation before the IPCC considers the report for approval in September. The report assesses the latest scientific literature addressing climate change and the ocean and the cryosphere – water in its solid state such as glaciers and ice sheets. It will add to knowledge on a range of topics from water supplies for people living in high-mountain areas to the risks of sea-level rise for coastal communities as well as other climate-related changes in the two systems that all people on Earth depend upon directly or indirectly. “This report will provide valuable information about how climate change is affecting ocean, coastal, polar and mountain ecosystems,” said Hans-Otto Pörtner, Co-Chair of IPCC Working Group II. “It will also discuss how nature and society can respond to the risks this poses and achieve climate-resilient development.” (Ref. 6)

The world needs a global agenda for sand

In a commentary published today in the journal *Nature*, a group of scientists from the University of Colorado Boulder, the University of Illinois, the University of Hull and Arizona State University highlight the urgent need for a global agenda for sand. Sand is a key ingredient in the recipe of modern life, and yet it might be our most overlooked natural resource, the authors argue. Sand and gravel are being extracted faster than they can be replaced. Rapid urbanization and global population growth have fueled the demand for sand and gravel, with between 32 and 50 billion tons extracted globally each year. “From 2000-2100 it is projected there will be a 300 percent increase in sand demand and 400 percent increase in prices,” said Mette Bendixen, a researcher at CU Boulder’s Institute of Arctic and Alpine Research (INSTAAR). “We urgently require a monitoring program to address the current data and knowledge gap, and thus fully assess the magnitude of sand scarcity. It is up to the scientific community, governments and policy makers to take the steps needed to make this happen.” A lack of oversight and monitoring is leading to unsustainable exploitation, planning and trade. Removal of sand from rivers and beaches has far-reaching impacts on ecology, infrastructure, national economies and the livelihoods of the 3 billion people who live along the world’s river corridors.



Illegal sand mining has been documented in 70 countries across the globe, and battles over sand have reportedly killed hundreds in recent years, including local citizens, police officers and government officials. (Ref. 7)

Next-Generation, Low-Cost Stop Sign Improves Driver Safety

According to the U.S. Department of Transportation, more than half of all roadway fatalities occur on rural roads. Now engineers at the University of Texas at San Antonio (UTSA) are building and testing a low-cost, self-powered thermal system that will detect vehicles, improve the visibility of stop signs, and prevent deaths. Rural roads account for 70 percent of the nation's byways and the location for 54 percent of all fatalities, according to the Federal Highway Administration. Without access to a power supply, they are more likely than other roads to lack signals and active traffic signage. To improve driver safety, Sara Ahmed and Samer Dessouky, professors in the UTSA College of Engineering, created a low-cost, self-powered intersection detection and warning system to alert rural motorists about potential dangers. The next-generation stop sign uses a multi-pixel passive infrared sensor that detects a vehicle as it approaches an intersection. Once the vehicle is within the sensing range, a signal beacon triggers the stop sign's flashing system. "The sensor observes thermal signatures and processes them to detect passing vehicles," said Zachary Balcar, a master's student in the UTSA Department of Electrical and Computer Engineering. "It distinguishes the vehicle's direction of travel, estimates the velocity of its thermal signature, and determines the classification of the vehicle." (Ref. 8)

Engineers Develop Concept for Hybrid Heavy-Duty Trucks

Heavy-duty trucks, such as the 18-wheelers that transport many of the world's goods from farm or factory to market, are virtually all powered by diesel engines. They account for a significant portion of worldwide greenhouse gas emissions, but little has been done so far to curb their climate-change-inducing exhaust. Researchers at MIT have devised a new way of powering these trucks that could drastically curb pollution, increase efficiency, and reduce or even eliminate their net greenhouse gas emissions. The concept involves using a plug-in hybrid engine system, in which the truck would be primarily powered by batteries, but with a spark ignition engine (instead of a diesel engine). That engine, which would allow the trucks to conveniently travel the same distances as today's conventional diesel trucks, would be a flex-fuel model that could run on pure gasoline, pure alcohol, or blends of these fuels. While the ultimate goal would be to power trucks entirely with batteries, the researchers say, this flex-fuel hybrid option could provide a way for such trucks to gain early entry into the marketplace by overcoming concerns about limited range, cost, or the need for excessive battery weight to achieve longer range. (Ref. 9)

5. ESD NEWSLETTER READER COMMENTS



- Expecting the reader comments and views on the newsletter.

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