Cohering Existing Technology with Greener and Modern Innovation

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Nowadays, human has been looking at how the world harnesses renewable energies, with an example at the mining sector. A strategy discussion about innovation, green mining, is being pursued by all new modern mines. A great example of Chile as the largest producer of copper in the world is that they are going into renewable energy by investing a 500-Megawatt solar power, and the plan is to upgrade 1.2-Gigawatt in the Atacama Desert. Here, we noticed that innovation is still needed, although solar PV technology has existed for more than 30 to 40 years. Some technical challenges were evident because the design conditions at which this technology originated could differ. In Chile, UV radiation is very high, and because of that, the existing modules have a shorter lifespan. Therefore, technology and innovation in that area need to be customized to the needs of the specific country or region.

There is a whole range of what be called as adjacent innovations which integrated into the grand plan of making the mining sector become more sustainable. This modernizing technology trickles down to other aspects such as digitization of mining, autonomous vehicles, electric vehicles/batteries, IoT, nano technology-assisted mining, and water treatment. Moving forward, it can introduce sustainability concepts in the overall supply chain of the 'conventional' mining industry.

Looking at the concept of zero waste or a low-carbon shrink. It is also defined as zero-based manufacturing. People around the world develops systems where several industrial wastes become a resource for another industry. However, it requires much information sharing about the waste because its characteristics are not uniform. Moreover, the quantity and availability are also not very well defined. A robust and smart information system is urgently needed to make this a seamless operation of what be called as industrial symbiosis.

Becoming literate is essential to incubate the university to be innovative and set up many startup companies in high-technology startups. Recruiting students, recruiting faculty members, and incentivizing research indicated that we were in the right direction. In the frame time of 10-20 years, people can see the trajectory of a high trajectory of patent filing. Surely, establishing funding to promote innovation in the community of transnational partnerships is required. By having a global partnership, innovation promoted much faster; that is the concept behind it. The investment of many innovations in transportation, waste management, water treatment, and energy delivery makes the nation and country as smart as possible.

Innovation for sustainability

This edition narrates the exploration of existing technology that moved toward a more efficient process and greener technology. A proof concept in zero waste manufacturing and supply chain system was reported in several field applications. Several articles prepare data learning systems that enable the human and environment to be intertwined in harmony.

The first paper is written by M.O. Onibonoje, O.O. Alegbeleye, and A.O. Ojo. The paper reported an intelligent grid solar-powered distributed energy resource system to realize a pollution-free and self-dependent system that accommodate a specific load. The authors claimed that the project has a reliable distributed energy resource system to provide an independent energy system.

The second paper is written by D. Permatasari, F. Ambia, E. Kusrini, and M. Zulkarnain. The paper investigates the comparison of economic incentives from the aspect of production sharing gross contract split of oil and gas located in Kalimantan. The authors claim the best scenario of the operational and economic parameters related to the profitability index, balanced incentive amount, indirect tax, and additional split discretion.

The third paper is written by J. At Thabari, A.S. Auzani, W. Nirbito, Y. Muharam, and Y.S. Nugroho. This paper explicates the risk of spontaneous fire processes caused by coal piling during transportation and distribution activities. Authors argue that they are able to identify parameters that are sensitive to the level of vulnerability of the pile to burn at an earlier time.

The fourth paper is written by A.D.P. Putera, I.W. Warmada, D.H. Amijaya, W. Astuti, I.G. Sukadana, and H.T.B.M. Petrus. The paper explores alternative metallurgical coke with greener material in the field of mineral processing technology. The authors confidently claimed that they found the optimized simulation parameters in the blast furnace by replacing anthracite coal with coconut shell charcoal compounded with nickel laterite.

The fifth paper is written by A.N. Aisyah, D. Ni'maturrohmah, R. Putra, S. Ichsan, G.T.M. Kadja, and W.W. Lestari. The paper examines the usage of new heterogeneous catalysts in the form of metal-organic frameworks (MOFs) in the production of biodiesel and green diesel. Authors argue that an optimum yield of up to 85% of biodiesel was attained using this new formulation.

The sixth paper is written by S. Yudha S., C. Banon, A. Falahudin, M.A. Reagen, N.H.M. Kaus, and S. Salaeh. The paper elucidates the fabrication of chemical catalysts commonly used in petrochemical industries that originated from the waste of oil palm leaves. Authors argue that the method resulted in an inexpensive support material for catalysts which parallelly increases the biomass valorization.

The seventh paper is written by M.E. Toif, M. Hidayat, Rochmadi, and A. Budiman. The paper presents the production of levulinic acid from sugarcane bagasse as a by-product from a sugar factory. Levulinic acid has been known as a valuable commodity in wide applications such as pharmacy and cosmetics. Authors argue that they are able to formulate the shrinking core model for cellulose conversion to glucose and also the reaction model for glucose to levulinic acid with a good fitting.

The eighth paper is written by W.B. Sediawan, I. Hartati, H. Sulistyo, M.M. Azis, and U. Al Rahma. The paper examines the alternative processing technology of myrcene as an essential oil in the fragrance and pharmaceutical industry. The authors claimed that the method they formulated: microwave-assisted hydrotropic distillation, solvent, and process parameters able to produce a higher output compared to the existing method.

The ninth paper is written by B. Isfa, N. Jamarun, Emriadi, S. Arief, A.H. Ritonga, D.A. Tanjung, and V. Sisca. The paper study investigates the characteristics of TiO2/ZnO

nanoparticles as a basic material in the paint industry. Authors argue that their study resulted in good dispersion and other qualities compared to the solely TiO2 nanoparticle pigment.

The tenth paper is written by Supriyono, C.W. Kartikowati, B. Poerwadi, C. Wulandari, L.L.F. Hikma, A. Azzahra, K. Ghanyysyafira, and H.L. Pinastika. The paper explores the process of synthesizing hydroxyapatite nanoparticles which are widely used in the biomedical field as bone and dental regeneration. Authors claim that their product has good quality as validated by the experiment and produced through an efficient process.

The next paper, written by A. Faisal, A. Anshari, F.M. Nazri, and M.M. Kassem, thrives on developing new ways to develop a sustainable built environment. The paper examines the impact of building damage under repeated earthquakes. Authors argue the probability of concrete frame damage in the event of multiple earthquakes compared to that single one.

The twelfth paper is written by A. Vysikantsev, A. Kambarov, and S. Novikov. The paper explicates current problems in the field of economic security of the aviation industry. The authors formulated an indicator so, called economic value added, to determine the stage of the life stage of the aviation enterprise.

The thirteenth paper is written by N.F. Sa'idah, A. Cakravastia, U.S. Pasaribu, and B.P. Iskandar. The paper reinforces the urgency of the maintenance database with a two-dimensional parameter of the service contract. The authors propose a model with several scenarios that consider usage rate with a high availability altogether with the reduced maintenance cost of the assets.

The fourteenth paper is written by J.D. Hernández-Vásquez, A.L. Jutínico-Alarcon, E.A. Simanca-Celedon, A. Romero-Acuña, W. Orozco-Lozano, M. Villate-Fonseca, and M.J. Campuzano. The paper examines various uncertainty measurement methods in the field of industrial metrology. The authors prove that the GUM (Guide to the Expression of Uncertainty in Measurement) Method has the best estimation in the case of thermal metrology.

The fifteenth paper is written by M. Sahlan, L.K. Dewi, D.K. Pratami, K. Lischer, and H. Hermansyah. The paper examines the usage of bioinformatics data to identify inhibitor agents for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection. Authors claim that Tetragonula sapiens propolis has great potential to block the binding of SARS-CoV-2, which makes this agent a COVID-19 drug candidate.

The sixteenth paper is written by C. Jangkajit and C. Suwannapong. This paper lies on IoT to enhance the performance of message services in the telecommunication field. The authors believe that they introduced a new algorithm, namely the Triangular Number Sequence Backoff (TSNB), to serve better metrics in the congestion control mechanism.

The seventeenth paper is written by A. Tonge and S. Thepade. The paper presents a big data processing protocol, specifically in a video file format. Authors claim a faster extraction method using Discrete Cosine Transform (DCT) to summarize video files with higher accuracy compared to the common use video dataset.

The eighteenth paper is written by C. Nitnara and K. Tragangoon. The paper explains the protocol of an Artificial Neural Network combined with a Genetic Algorithm to fit the injection molding result. The authors argue that the data processing using those combined artificial intelligence methods able to reduce the product's failure by 35.73% from the maximum value.

The nineteenth still in the field of artificial intelligence, is written by N.A.C. Azhar, P. Chockalingam, C.C. Wen, and L. Perumal. The paper analysis of the data resulted in the microwave heat treatment of aluminum sheet. Authors claim that the Mamdani fuzzy logic model able to predict the processing parameters to achieve the desired quality.

The last paper, the final paper written by E. Burlutsky, D. Balzamov, V. Bronskaya, D. Bashkirov, O. Kharitonova, L. Khairullina, and O. Solovyeva. The paper explores the nature of rock in the geological field and characterizes its thermal properties. Authors believe that this study brings the improvement of oil-saturated reservoirs, thus increasing the life span of its super-viscous oil environments.

In conclusion, the integration of existing technology with updated innovation has opened up exciting new possibilities for solving complex problems in a wide range of fields. As research continues to advance, innovation will likely continue to play an increasingly important role in the world around us. Ijtech greatly welcomes and looks forward to receiving your submissions and sharing your research with our readers.

With warmest regards from Jakarta,

Dr. Yudan Whulanza
Editor in Chief