GE Renewable Energy, COBOD and LafargeHolcim co-develop record-tall wind turbine towers with 3D-printed concrete bases

- Historic multi-year collaboration between three leaders in their industry to increase renewable energy production and use
- Wind turbine towers have typically been limited to a height of under 100 meters, as they are traditionally built in steel or precast concrete
- Printing the base directly on-site with 3D-printed concrete technology will enable the creation of larger bases and cost-effective taller hybrid towers, reaching up to 200 meters
- Taller towers capture stronger winds, thereby generating more energy at a lower cost
- First prototype successfully printed in October 2019

June 17, 2020 -- GE Renewable Energy, COBOD and LafargeHolcim announced today that they will partner to co-develop wind turbines with optimized 3D printed concrete bases, reaching record heights up to 200 meters. The three partners will undertake a multi-year collaboration to develop this innovative solution, which will increase renewable energy production while lowering the Levelized Cost of Energy (LCOE) and optimizing construction costs. The partners will produce ultimately a wind turbine prototype with a printed pedestal, and a production ready printer and materials range to scale up production. The first prototype, a 10-meter high tower pedestal, was successfully printed in October 2019 in Copenhagen. By exploring ways to economically develop taller towers that capture stronger winds, the three partners aim to generate more renewable energy per turbine.

Building on the industry-leading expertise of each partner, this collaboration aims to accelerate the access and use of renewable energy worldwide. GE Renewable Energy will provide expertise related to the design, manufacture and commercialization of wind turbines, COBOD will focus on the robotics automation and 3D printing and LafargeHolcim will design the tailor-made concrete material, its processing and application.

“Concrete 3D printing is a very promising technology for us, as its incredible design flexibility expands the realm of construction possibilities. Being both a user and promoter of clean energy, we are delighted to be putting our material and design expertise to work in this groundbreaking project, enabling cost efficient construction of tall wind turbine towers and accelerating access to renewable energy,” explained Edelio Bermejo, Head of R&D for LafargeHolcim.

Henrik Lund-Nielsen, founder of COBOD International A/S added: “We are extremely proud to be working with world-class companies like GE Renewable Energy and LafargeHolcim.

With our groundbreaking 3D printing technology combined with the competence and resources of our partners, we are convinced that this disruptive move within the wind turbines industry will help drive lower costs and faster execution times, to benefit customers and lower the CO_2 footprint from the production of energy.

"3D printing is in GE's DNA and we believe that Large Format Additive Manufacturing will bring disruptive potential to the Wind Industry. Concrete printing has advanced significantly over the last five years and we believe is getting closer to have real application in the industrial world. We are committed to taking full advantage of this technology both from the design flexibility it allows as well as for the logistic simplification it enables on such massive components," said Matteo Bellucci Advanced Manufacturing Technology Leader for GE Renewable Energy.

Traditionally built in steel or precast concrete, wind turbine towers have typically been limited to a height of under 100 meters, as the width of the base cannot exceed the 4.5-meter diameter that can be transported by road, without excessive additional costs.
Printing a variable height base directly on-site with 3D-printed concrete technology will enable the construction of towers up to 150 to 200 meters tall. Typically, a 5 MW turbine at 80 meters generates, yearly, 15.1 GWh. In comparison, the same turbine at 160 meters would generate 20.2 GWh, or more than 33% extra power.

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About LafargeHolcim
LafargeHolcim is the global leader in building materials and solutions and active in four business segments: Cement, Aggregates, Ready-Mix Concrete and Solutions & Products. Its ambition is to lead the industry in reducing carbon emissions and shifting towards low-carbon construction. With the strongest R&D organization in the industry, the company seeks to constantly introduce and promote high-quality and sustainable building materials and solutions to its customers worldwide - whether individual homebuilders or developers of major infrastructure projects. LafargeHolcim employs over 70,000 employees in over 70 countries and has a portfolio that is equally balanced between developing and mature markets.

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About COBOD International A/S

COBOD International is a globally leading 3D construction printing company, supplying 3D construction printing technology to customers in Asia, The Middle East, Europe and the US. COBOD intent to disrupt the construction industry and any industry where concrete structures are being applied. COBOD has made headlines multiple times the last couple of years from the 3D printing of the first fully permitted building in Europe in 2017, over the delivery of the largest construction printer in the world measuring 27 meters in length and 10 meter in height to the live 3D printing of a small house per day during the Bautec, a German construction exhibition. German Peri Group, the leading provider of manual concrete casting form work equipment is a minority shareholder of COBOD. Follow us on www.COBOD.com

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About GE Renewable Energy

GE Renewable Energy is a $15 billion business which combines one of the broadest portfolios in the renewable energy industry to provide end-to-end solutions for our customers demanding reliable and affordable green power. Combining onshore and offshore wind, blades, hydro, storage, utility-scale solar, and grid solutions as well as hybrid renewables and digital services offerings, GE Renewable Energy has installed more than 400+ gigawatts of clean renewable energy and equipped more than 90 percent of utilities worldwide with its grid solutions. With nearly 40,000 employees present in more than 80 countries, GE Renewable Energy creates value for customers seeking to power the world with affordable, reliable and sustainable green electrons.

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