

Week in Tech: A 3D-Printed Option for a Hot Housing Market

Plus, Syracuse University retrofits a dorm into a net-zero living lab, Princeton researches the racial inequalities in household energy efficiency, and more design-tech news from the week.

By [Madeleine D'Angelo](#) June 11, 2021



3D printing technology company Alquist has partnered with [Virginia Tech](#) on 217 Carnation St., aiming to put Virginia's first 3D-printed house on the market and ease the state's shortage of affordable housing stock. Alquist and Virginia Tech will use a COBOD BOD2 3D printer from Denmark to print the walls of the three-bedroom, two-bathroom single-family project from concrete. By leveraging the material's thermal efficiency, the team expects the house to be 50% more energy-efficient than required by state code. Alquist and Virginia Tech estimate that the prototype house will hit the market at \$210,000, but that the cost of future projects will decrease. [[Alquist](#)]

Syracuse University has revealed plans to retrofit an existing dorm on the institution's South campus, transforming the structure into a net-zero "living laboratory," according to a university press release. Spearheaded by architectural technology professor Nina Sharifi and funded largely by a grant from the New York State Energy Research and Development Authority REV Campus Communities Energy to Lead program, the \$1.59 million project aims to produce as much—or more—energy as it consumes and "develop replicable approaches that can be applied to buildings constructed prior to 1980 in New York state," Sharifi said in the release. [[Syracuse University](#)]

New York-based webcam technology provider [EarthCam](#) has documented the construction of One Vanderbilt, one of New York's latest supertalls. EarthCam used nearly 2 million images and eight different cameras to capture the six-year process, compressing the construction process into a video that runs under 4 minutes. [[EarthCam](#)]

Researchers from [Princeton University](#) have found that cities should consider the impacts of both race and income when developing household energy efficiency programs. Examining 90,000 households in Tallahassee, Fla., and 110,000 households in St. Paul, Minn., the researchers found stark energy use disparities by race within the same income group. While the low-income households used approximately 25-60% more energy per square foot than households in higher-income areas, energy use also varied among members of the same income group; households in predominantly nonwhite neighborhoods having a higher energy use intensity, reflecting the "lower energy efficiency of the buildings, as well as lower participation in rebate programs," states a Princeton press release. The researchers hope to continue their work to find "what is actually driving disparities in energy use intensity and rebate participation, so cities can use that information to further close the gap on inequalities." [[Princeton University](#)]

[Zaha Hadid Architects](#) has partnered with Hyperloop Italia (the Italian arm of [Hyperloop Transportation Technologies](#)) on the design of Hyperloop's next phase. "We share Hyperloop Italia's multidisciplinary approach, which combines innovations in design and operational technologies with advances in ecologically sound materials and construction practices; enabling us to deliver future-resilient projects that are spatially inventive, structurally efficient, and environmentally sustainable," said ZHA principal Patrik Schumacher in a press release. [[Zaha Hadid Architects](#)]

Researchers from the University of Vermont in Burlington have found that urban nature loss disproportionately impacts people of color and low-income Americans, triggering related losses of ecosystem benefits. Researchers estimate that the nature-related benefits of better air quality, crop pollination, and the control of insect-borne disease will decrease by 224%, 118%, and 111%, respectively, for people of color by 2100. “Given current and historical inequality in this country, our goal was to identify how future losses of nature might affect these racial and income disparities,” said UVM researcher Jesse Gourevitch in a press release. “Unfortunately, we find that, in general, nonwhite, lower-income, and urban populations disproportionately bear the burden of declines in ecosystem benefits.” [\[University of Vermont\]](#)

Despite the drop in greenhouse gases from pandemic-related shutdowns, researchers have measured the highest levels of atmospheric carbon dioxide since the National Oceanic and Atmospheric Administration began monitoring the levels 63 years ago. “While 2020 saw a historic drop in emissions, the fact that at certain points more than half the world’s population was under lockdown, and emissions ONLY fell 6%, should be a sobering reminder of how staggeringly hard it will be to get to net zero and how much more work we have to do,” wrote Jason Bordoff, founding director of Columbia University’s global energy center, to The Washington Post. [\[The Washington Post\]](#)

Can 3D printing with raw earth help solve the housing crisis and climate crisis? ARCHITECT contributor Timothy Schuler investigates, taking a closer look at TECLA, a prototype residential house designed by Italian firm [Mario Cucinella Architects](#) and built by the Italian 3D printing company [WASP](#), to get a sense of the material’s potential and limitations. [\[ARCHITECT\]](#)

The Lake Mary, Fla.–based 3D-measurement and imaging company [Faro Technologies](#) has acquired the San Francisco software developer HoloBuilder for \$34 million. Aiming to create what it describes as “the industry’s first end-to-end Digital Twin solution,” Faro will make use of HoloBuilder’s “fast and easy reality-capture photo documentation,” according to a Faro press release. [\[Faro\]](#)