Mimi Berdal, member of the board of the Norwegian Solar Energy Firm REC. Picture courtesy of REC.

Materials science and engineering firms, however, continue to face the struggle of encouraging women through their doors in the first place, Teigen says, because it is a "male-dominated part of the labor market." Berdal disagrees. "Due to the large impact of the oil and gas industry in the Norwegian economy, there are many highly qualified female engineering and science [candidates] available for board positions," she says.

Indeed, across science and engineering, women are better represented in Norway than in many other Western hemisphere countries. "The European Engineering Report shows that 19.7% of engineers in Norway are women. This is about double the level in the USA, UK, and Australia," says Kathleen Buse, faculty director for the Leadership Lab for Women in STEM [Science, Technology, Engineering and Math] in the United States. Buse believes that women corporate board members can serve as positive role models and forces for cultural change, particularly in materials organizations.

"It's important to have female role models on all levels in engineering companies: female colleagues, managers, executives, and board members," adds Ingrid Elisabeth di Valerio. She herself was discouraged from entering engineering when she was younger, but persevered nonetheless.

The radical step taken by Norway has been closely followed by other European countries, starting with Spain in 2007. Iceland and France introduced similar quotas in 2010, with Belgium and Italy following in 2011, and The Netherlands in 2013. Partly as a result of these moves, the percentage of women on corporate boards in the European Union rose to a record 18.6% in 2014, according to the European Commission. Malaysia and Brazil have meanwhile also enacted their own quotas.

"It has become evident that women actually exist who have the knowledge, competence, and capacity that are required for boardroom duty!" observes Professor Agnes Bolso, a sociologist at the Norwegian University of Science and Technology. "To question that has become illegitimate."

Angela Saini

NIST releases tool for evaluating building performance

http://birdscom.nist.gov

Designing a building that simply meets local code requirements is not necessarily the optimal way to do it when you consider all the long-term costs. Now, building professionals in more than 200 US cities can use a new database developed by the National Institute of Standards and Technology (NIST) to evaluate whether it pays to exceed code requirements for energy efficiency by tallying expected costs, kilowatts expended, carbon emissions, and other impacts over a planned commercial building's lifetime.

Called BIRDS (Building Industry Reporting and Design for Sustainability), NIST's new database and software tools are designed to assess three major determinants of building sustainability: energy, environmental, and cost performance.

Focusing initially on 11 building prototypes that account for about half of US new commercial construction annually, the online data package features a "whole building measurement system." An integrated set of metrics gauges sustainability of materials and energy usage, assesses carbon footprints and 11 other indicators of environmental performance, and tabulates economic costs over nine different investment horizons.

BIRDS complements NIST's popular tool known as BEES (Building for Environmental and Economic Sustainability) that allows a user to measure economic and environmental impacts of building products, ranging from concrete to roof coverings to floor coverings.

Due to the complexity of a building and the hundreds or thousands of products that are required to construct and operate the structure, it is not feasible to use typical life-cycle assessment approaches to estimate its environmental performance.

Instead, BIRDS implements a novel hybrid life-cycle assessment (LCA) approach to evaluate the environmental performance of a building. The new tool combines two separate LCA approaches—"top-down" environmental input-output data and "bottom-up" process-based data—to calculate a more accurate environmental impact.

NIST's aim is to make LCA and life-cycle costing—analytical methods now mostly plied by specialists—more accessible with hands-on tools anyone can use to answer "what if" questions when planning or designing a new office building, retail store, or any of nine other types of commercial structures.

"Buildings are complex systems, and how they perform is not simply the sum of their many parts," says Joshua Kneifel, who led the development of the database and its measurement tools. "With BIRDS, anyone can measure and compare operating energy use through detailed simulations, materials use through innovative life-cycle inventories, and building costs over time." □

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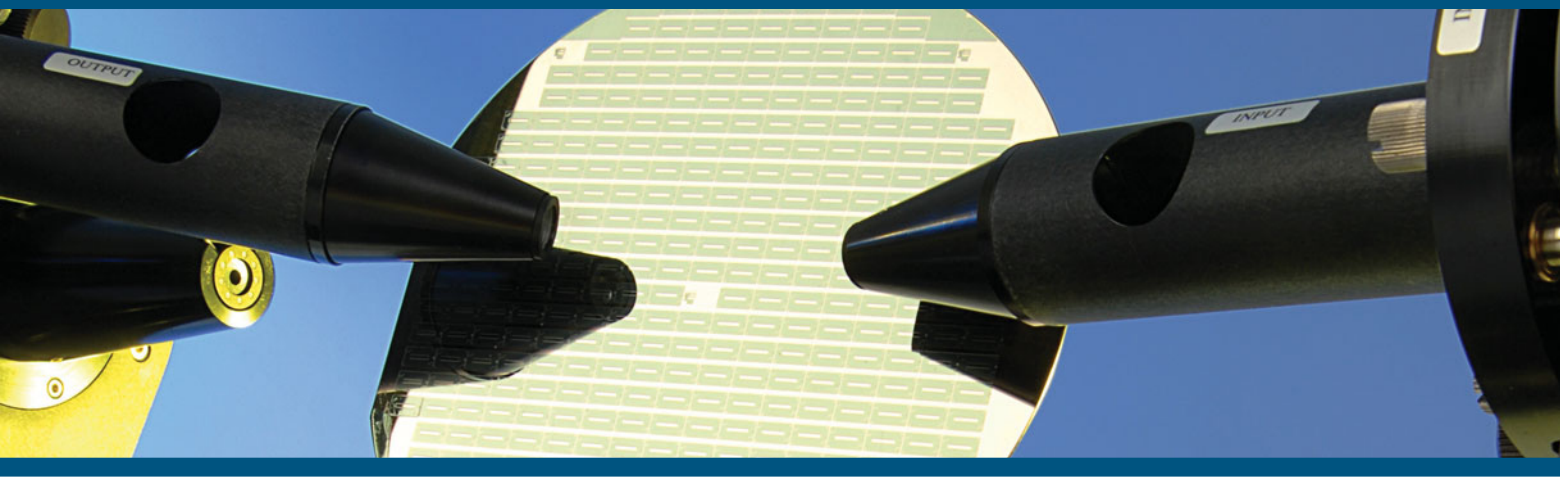

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