

Business Innovations that Will Save the Planet — and Your Bottom Line

01 Smart modular and connected pallets for logistics and transportation.

Matthew Reali | CEO, Ponera Group

Think of Ponera as the "LEGO" of pallets. A smart, modular, and digitally-enabled solution can be assembled to reach any size. Thermoplastics allow for extended life and reusability — more than 10 years and 100 usages. **Embedded sensors in the modules allow for unprecedented traceability and transparency in the value chain**, resulting in a 90% reduction of transport-related CO₂ emissions. "Approximately 92% of the world's natural resource consumption is not circular," says Reali. "The industrial packaging industry still works with inefficient and non-sustainable one-time use consumables. Thirty percent of global

From left to right: Sami Reguig, Xavier Pereira Da Costa, Christian Rüegg, Dinah Schönholzer, Cyrille Platteau, Matthew Reali, Masoud Talebi Amiri.

SWITZERLAND

industrial wood consumption is used for industrial packaging. Our smart modular and digitally-enabled industrial packaging solution enables circular logistics, reduces industrial packaging costs by up to 90%, and reduces wood consumption by 95% and CO₂ emissions by 80%. In addition, we provide the foundations for more digitized and transparent logistics networks."

"APPROXIMATELY 92% OF THE WORLD'S NATURAL RESOURCE CONSUMPTION IS NOT CIRCULAR."

02 An affordable and high-performance energy efficiency window retrofit solution.

Rachel Rosen & Ron Wexler | president, CEO and cofounder, WexEnergy

WexEnergy's PolarSkin™ and SolarSkin™ window retrofit panels attach to the inside window glazing of existing windows to optimize the volume of air trapped in between the existing window and the insulation retrofit. Like the gap between panes in a double-pane window (or the pockets of air in a down comforter), **this layer of enclosed air — and its thickness in particular — creates an insular barrier and improves efficiency of the window**, reducing energy



UNITED STATES

loss by 48% on single-pane windows and 27% on double-pane windows. "Focusing on a solution to poor window insulation allows us to engage with others across socioeconomic strata in battling climate change," says Rosen. "We can demonstrate that it's possible to positively impact climate change while improving comfort and quality of life. Creating a solution to poor window insulation is good business sense as it addresses a highly relatable problem with an affordable solution that is easy to understand and implement."

03 Sustainable paper and packaging from waste.

Florence Miremadi-Nafici | CEO, Nafici EcoPulping

Millions of tons of wheat straw and other agricultural wastes are burnt or left to rot, causing millions of tons of carbon emissions globally every year. EcoPulping is an innovative **low-carbon process that transforms agricultural wastes (e.g., cereal straw, reed, maize stover, and more) into unbleached paper pulp to produce paper, packaging, or molded products.** The pulp produced is an alternative to pulp made from trees. "Millions of tons of agricultural residues are burnt, causing massive carbon emissions globally every year," says Miremadi-Nafici. "Wheat straw, as an example, is a great source of fibers and a fantastic alternative to felling trees for paper and packaging products."

UNITED KINGDOM



"WHEAT STRAW IS A GREAT SOURCE OF FIBERS AND A FANTASTIC ALTERNATIVE TO FELLING TREES FOR PAPER AND PACKAGING PRODUCTS."

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04 A vertical farm using automated and remote management software for better crop growth.

Alexander Olesen | CEO, Babylon



Vertical farming is a technology that has been out of reach for many until now. The Cloud Farm is the world's largest fully distributed vertical farm. It offers remote management of on-site vertical farms and eliminates barriers to entry for businesses looking to grow their own food. The farms provide the most sustainable and nutrient-dense produce on the market. **Fifteen square feet produces the equivalent yield annually of 2,000 square feet of conventional farmland, uses 90% less water than conventional farming, and has zero pesticides.** "Our goal is to remove the barriers that previously prevented access to vertical hydroponic farming at the community level and, in doing so, enable people to grow fresh, sustainable food," says Olesen. "This method increases access to nutritious food while drastically reducing the environmental footprint of crop cultivation."





SPAIN

05 Artificial intelligence to reduce water losses in water distribution networks.

Ainhoa Lete | executive president, BuntPlanet

Water scarcity is one of the most critical global challenges we currently face, and BuntBrain software reduces leaks and commercial losses by up to 50%. The product aims to address this global business problem with a scalable and affordable solution for water utilities that can reduce and prevent water loss in water distribution networks. **"Climate change expert James P. Bruce observed: 'If climate change is a shark, water is its teeth,'"** says Lete. With the number and frequency of drought and flood events increasing, we have adopted Smart Water Management to help fight climate change. BuntBrain helps water utility companies detect and pre-locate early leaks, saving water, energy, and time."



UNITED STATES

06 A green casting process that creates thin yet strong sheets of iron.

Sarah Jordan | CEO, Skuld

Ductile iron has the optimum combination of strength, density, and cost compared to alternative materials. However, its use has been limited because casting defects occurred in thin sections under 6mm. Using the environmentally friendly lost foam casting process, innovations in foam blowing technology, and a metallurgical alloying process that prevents casting defects, **Skuld's ductile iron can be cast as thin as 1 mm. The method uses 27% less energy, 7% less raw materials, can save 70% on cost versus iron or steel parts, and 66% versus aluminum.** "The lost foam casting technique is the greenest metal-making process there is," says Jordan. "With our Thin-Walled Ductile Iron solution, we are in discussions with a major automotive OEM to implement this solution. Their interest is three-fold: environmental impact, new lightweight designs, and cost reductions."

Adopting Profitable Solutions to Protect the Environment

These 7 innovations are all part of the 1400+ clean and profitable solutions identified by the Solar Impulse Foundation, demonstrating the financial profitability of clean technologies.

[SolarImpulse.com](https://solarimpulse.com)



07 Photovoltaic trackers that follow the sun.

Louis Maurice | president, Groupe OKWind



FRANCE

Smart photovoltaic trackers allow professionals and individuals to self-consume their renewable energy production at a more competitive rate than the electricity grid and therefore escape the constant rise in the cost of energy. **Like a sunflower, smart photovoltaic trackers follow the sun's course and produce**

70% more power than a fixed photovoltaic installation. In addition, their mobile shadow protects crops and grassland biodiversity from sun irradiation and allows farmers to improve crop yields while producing renewable energy. "Energy is at the heart of the transition to a green economy," says Maurice. "Our self-consumption solutions, combining green energy generation and energy management, give everyone the chance to take their energy destiny into their own hands and contribute to creating a better future. Moreover, self-consumption also offers fixed-price energy during exploitation, freeing our customers from price fluctuation."

"COMBINING GREEN ENERGY GENERATION AND ENERGY MANAGEMENT, EVERYONE HAS A CHANCE TO TAKE THEIR ENERGY DESTINY INTO THEIR OWN HANDS."

