What’s Next?
USGBC MA
Building Tech Forum

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What’s Next? BuildingGreen’s Top Green Products for 2019 and Beyond
Business as Usual: Difficult to integrate renewable energy and EV charging

• Charging your electric vehicle (EV) at home using renewable energy typically requires two systems:
  
  • an inverter to convert direct current (DC) to alternating current (AC) and…

Photo: By F5ZV at French Wikipedia - CC BY-SA 3.0
Business as Usual: Difficult to integrate renewable energy and EV charging

...a charger that typically supplies energy pulled from the grid.
What’s Next? SolarEdge EV Charging
Single Phase Inverter

Uses the company’s Single Phase Inverter with HD-Wave, (high-definition wave) technology:

- 1/2 the size of standard inverters
- < 30 pounds
- Efficiencies up to 99%
SolarEdge EV Charging Single Phase Inverter

And adds:

- 240V level 2 charging system
- 7.6 kW (at 32 amp) of power from the grid (when necessary)
- 9.6 kW (at 40 amp) directly from PV system when the sun is shining
- Optimizes charging efficiency using renewable energy

Photo: SolarEdge Technologies
SolarEdge EV Charging Single Phase Inverter

- Charges 6x faster than standard EV system
- Can be installed EV-ready as inverter only
- All-in-one system saves $ on installation for connections, cable, ducting, wiring, and labor.
- Fully programmable
- Tracks charging data, energy production, and use
- Demand response ready

Photo: SolarEdge Technologies
Extruded polystyrene’s (XPS) and expanded polystyrene (EPS)

High R-values + water resistance = default insulation for below grade

BUT
- XPS and EPS use problematic petroleum-based styrene chemistry
- are inherently flammable
- and XPS uses high-global-warming-potential (GWP) blowing agents
What’s Next? Foam Glass Aggregates

- Available from AeroAggregates and Glavel
- Made from recycled bottles and foaming agents
- Replaces insulation and aggregate below grade
- Can be used for green roofs and as lightweight aggregate
Foam Glass Aggregates

- R-value of about 1.7 per inch
- Excellent compressive strength
- Non-combustible
- Water drains through
- Capillary break
- Resists pests and most chemicals
- Low-toxicity and considered “clean fill”
- Resists freeze/thaw cycles
- Extremely durable

Photo: AeroAggregate
Business as Usual: Vinyl resilient flooring

Vinyl flooring is made from PVC:
- Is 57% chlorine
- Can contain phthalate plasticizers and heavy metals
- Is rarely recycled

PVC-free options:
- Are typically expensive
- May not perform as well
- Are rarely recycled

Photo: Decorative Concrete King. License: CC BY 2.0.
What’s Next? Shaw PET Resilient Flooring

- 97% PET (40% post-consumer recycled)
- No plasticizers
- PET fibers are entangled, heated, and pressed into a panel for greater strength and performance
- Color and design are printed onto the flooring and coated with a durable wear layer

Photo: Shaw Commercial
Shaw PET Resilient Flooring

- 17 bottles per 1 ft² of PET Resilient
- 50% lighter than other flooring
- Excellent dimensional stability
- Scratch and dent resistant
- Breathable and moisture resistant
- Quiet
- Minimal maintenance
- Fully recyclable

Photo: Clear Path Recycling
Shaw PET Resilient Flooring

- C2C Bronze (Gold for Material Reutilization)
- 12" x 48" planks
- Available from Shaw Contract and Patcraft Commercial

Photo: Shaw Commercial
Portland cement production is responsible for approximately 5% of total global CO$_2$ emissions.

1 ton of portland cement = 1 ton of CO$_2$

Fly ash and blast furnace slag have their own environmental and health concerns.
What’s Next? Urban Mining Northeast
Pozzotive Ground Glass Pozzolan

• Alternative to fly ash and slag
• Made from regional post-consumer recycled bottle glass
• Inert, amorphous silicate powder
• Replaces up to 40% of portland cement
• Used in millions of concrete masonry units (CMUs)
• Now available for ready-mix applications

Photo: Urban Mining Northeast
Urban Mining Northeast Pozzotive Ground Glass Pozzolan

- Creates a strong, dense, and durable concrete with lower permeability
- Requires less water and admixtures
- Improved workability

Photo: Urban Mining Northeast
Urban Mining Northeast Pozzotive Ground
Glass Pozzolan

• Recycles some of the millions of tons of glass that might otherwise be landfilled

• Has a LEED compliant HPD v2.0

• ASTM standard expected in late 2018/early 2019

Photo: Urban Mining Northeast
Most commercial HVAC refrigerants have global warming potentials (GWP) thousands of times higher than CO₂.

Refrigerant leaks:
- release these high GWP gases directly into the atmosphere
- compromise the efficiency of the HVAC system,
- and can pose a safety hazard at high enough concentrations.
Business as Usual: High global warming potential refrigerant leaks

Top Five Solutions for Arresting and Reversing Global Warming*

1. Refrigerant management
2. Wind turbines
3. Reduce food waste
4. Plant-rich diet (avoid meat)
5. Tropical forest (avoid deforestation/reforest)

*Based on “the total amount of green house gases they can potentially avoid or remove from the atmosphere.” *Drawdown*
What’s Next? MSA Safety Chillgard 5000 Refrigerant Leak Monitor

- Photoacoustic infrared (PAIR) technology detects leaks down to 1 part per million (ppm).
- Up to six refrigerants can be screened at a time, with 20 more available depending on end use.
- Modular, “plug-and-play” design
- Easy to maintain and upgrade
MS Safety Chillgard 5000 Refrigerant Leak Monitor

- Visual warnings and horns alert maintenance crews to leaks
- Can also shut down valves, turn on fans, or take other actions.
- Touchscreen dashboard
- Diagnostic programs aid in troubleshooting
- Prevents leaks by notifying staff when it’s time for system maintenance
- It can also be integrated into building automation systems

Photo: MSA Safety
BuildingGreen

• Founded in 1985
• In Brattleboro, Vermont
• Launched EBN in 1992
• 14 employees
• Supported by online memberships and consulting
• Not supported by product manufacturers

BuildingGreen offices in the old Estey Organ Factory, Brattleboro
Questions?