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## Recent News from

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Winter 2010

### ECONOMY:

#### **“I Promise Not to Blow it Again”**

"Having survived at least four economic cycles of boom and bust since I entered the construction industry, I know that idealism must be tempered by realism. So let's hope that during the next boom, when it occurs, we all remember [to...](#)"

### THE TEN BEST NEW BUILDING PRODUCTS OF 2009:

**Electricity from urine, bridges made of recycled plastic, and salvation for the engagement ring that went down the sink... The building products industry is exploding with ideas.**

The “tried and true” is being challenged relentlessly by new products and technologies. Age-old problems are being solved by insightful re-envisioning of familiar materials. New challenges are driving accelerating leaps of imagination. Sustainability has become a source of inspiration rather than an afterthought for marketing.

With so much being invented and re-invented, how does Chusid Associates have the temerity to suggest a list of only 10 new products worthy of attention?

We don't.

These are the best new things that we've heard about, and we want to share them. We encourage you to share your own ten (or four, or one), to spread any good news you

know. Cross-fertilization inspires the next round of invention.

We believe these products are each, in their way, game-changers. More importantly, they bring into focus significant trends and developments in the thinking of the industry.

Not surprisingly, sustainability is a big factor in a lot of the current innovation. It is one of the industry's biggest challenges, the issue is very high-profile, and solutions have become a lot more saleable. Under such conditions, innovation is incentivized.

One of the most important conceptual re-alignments of the Age of Sustainability has been the realization that the materials once considered that "waste" may in fact be raw materials for other products. It is Recycling 2.0, if you will. The entry level of the recycling concept is to make used paper into new paper, or old aluminum cans into new ones. This next level uses the leftovers of one industry to form the raw source for another.

**Electricity From Urine:** A team at the University of Ohio has found a way of using one of our most abundant waste resources to produce an in-demand commodity. Urea, one of the chief components of urine, contains four hydrogen molecules bonded to two nitrogen molecules. The Ohio team found an efficient way to split off the hydrogen using an electrode made of nickel. (You have to invest some electric current to get the reaction, but only about 3% of the voltage required to split water into hydrogen and oxygen.) The hydrogen can then be used to generate electrical power very cleanly – its only combustion product is water – and the nitrogen is collected for industrial uses.

It's so cool, it's hard to resist suggesting an ad slogan for this concept:

"Power Begins With Pee."

While this isn't a building product *per se*, it could have profound implications on sustainable building design. It could create a market for urine, encouraging the inclusion of waste **collection** systems, instead of disposal systems, in building design. It should encourage design professionals to take a second look at *everything* being vented or

disposed-of from building operations.

**CalStar Fly Ash Bricks and Pavers** - Another waste product, which poses a more difficult disposal problem than urine, is fly ash, the coal combustion byproduct that gets scrubbed from the chimneys of power-plants. It can be used in a variety of ways, including mixing into concrete, but nonetheless, millions of tons of fly ash still get dumped into retention ponds or landfills every year. Less than 45% of the fly ash created is currently put to beneficial use.



Calstar Products of California's Silicon Valley has paired that resource with another significant environmental problem, and created an elegant solution. Making bricks from clay requires high-heat firing that consumes huge amounts of energy and releases about 1.5 lbs of CO<sub>2</sub> per clay brick. CalStar has begun making them from fly ash, using the cementitious properties of the ash to bind the bricks together, encouraged by a low-heat steam curing process. (CalStar's American-made product should not be confused with a type of "fly ash brick" made in Asia, which is essentially concrete brick with fly ash as a filler.)

CalStar Fly Ash Brick production uses only 15% of the energy, and is associated with only 15% of the CO<sub>2</sub> emissions, of clay brick. Building on technology first explored by Dr. Henry Liu, they have developed bricks that meet the commonly accepted performance standards for clay brick and are available in a spectrum of colors. Their first plant just opened in Caledonia, WI, less than 75 miles from Chicago, and more are planned.

Their innovation points at a pattern we believe will crop up in many aspects of construction. Brick is used as a structural material much these days, but it remains an important tradition of our architectural vocabulary. Fly ash brick make it possible to continue to enjoy the beauty of masonry architecture without the threat to the planet, a tradition rescued by a sustainable solution. [www.CalStarproducts.com](http://www.CalStarproducts.com)

**Electro-Conductive Concrete** – The industries that burn coal for energy – chiefly power

plants – actually figured out that “waste might not be waste” about a decade ago. They started referring the ash and associated leftovers from power plant boilers as Coal Combustion Products (CCP's) – not byproducts – and sought to turn their liability into a modest revenue stream. That initiative has led to many new uses.

One power plant executive, Bruce Ramme of We Energies in Wisconsin, has made an especially impressive imaginative leap (and patented it). He realized that fly ash and other CCP's could be mixed with concrete not only for their chemical properties, but also – due to their carbon content – for their electrical properties: Get enough carbon into the concrete and it will conduct electricity.

What good is that? For beginners, a power-plant foundation that is self-grounding. How about a road with traffic sensors poured right into it as part of the slab? Or a road that can charge your car while you drive? Or a building whose concrete foundation, frame, walls and floors all function as computer memory?

This is a concept yet to be made into a product, but it shouldn't take long. It's the kind of material that makes designers dream.

**Axion Recycled Plastic Structural Members:** Before leaving the area of recycling brainstorming, tribute should be paid to Axion International, the company that's making railroad bridges (among other things) out of recycled plastic. It seems counter-intuitive: the very word “plastic” suggests behaviors that are quite the opposite of what you want from structural, load-bearing materials.

Nonetheless, using technology developed at Rutgers University, Axion makes beams and piles from combinations of different plastics. They are “immiscible polymers” that have different physical properties, and retain their individual strengths even when blended together. This makes it possible to combine their properties synergistically.

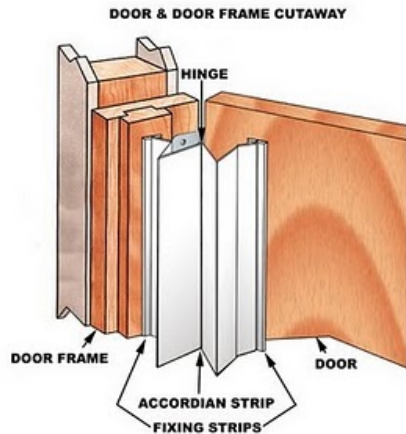


Axion is currently supplying engineered solutions, which they can deliver more affordably than wood or steel structures. (Standardized lumber from their process is not yet economically practical, but that could change if the price of wood rises.) Two bridges designed to carry tanks have already been built at Fort Bragg. Two more bridges, rated at 130 tons and designed for railroads, are being constructed at Fort Eustis, Virginia this winter, with almost everything but the rails being supplied by Axion. The company is researching code certifications to bring these materials into building construction as well.

[www.axionintl.com](http://www.axionintl.com)

**SDI Wireless-Friendly Buildings** – Wireless communication continues to mushroom as a way to transmit many different kinds of information: voice, text, computer data, video and audio signals, wireless monitoring including implanted medical devices, and the list is growing. But buildings sometimes impede wireless signals. One solution is to put a large antenna in the building, but this means producing a high concentration of radio-frequency (RF) emissions near the antenna in order to have acceptable signal at the points furthest from it.

SDI-2, Inc. is rolling out a series of products they call the Wireless Farm to make buildings friendly to wireless by using more evenly distributed signals. The first product in the line, Max, is a non-powered wireless signal booster. A box about the size of a deck of playing cards, it can be placed in a variety of locations in the building interior – even concealed locations - to help distribute signal. This makes wireless devices safer to use. Where signal is weak, devices such as cellphones automatically boost their internal power to compensate, putting out a lot of RF right next to your head, your groin, or wherever your cellphone happens to be. Better signal distribution means the devices use less of their own power, not only extending battery life but also minimizing any possible health hazards from radio-frequency concentrations. [www.sdi-2.com](http://www.sdi-2.com)



**Fingersafe Door Hinge Guards** – Some problems are so familiar that most people never stop to think of a solution. Consider the hinged edge of a door and the hazard it poses to fingers, especially young fingers. It's easy to get a finger squeezed – even amputated – by the leveraged force of the door closing. It's estimated there are 300,000 finger injuries from doors worldwide annually.

Fingersafe USA has solved the problem, raising the standard of care. Their hinge-guard is a folded, flexible strip that attaches to the door and frame. As the door is closed and the gap between door and frame gets smaller, the hinge guard pushes fingers out of the way. It's easily fitted to wood or metal doors and can be removed for maintenance.

[www.fingersafe.com](http://www.fingersafe.com)

**Lythic Colloidal Silica Densifier** – Densifiers have been used on concrete slabs for decades to harden the surface and minimize dusting. With the ascendance of exposed concrete (colored, polished, etc.) as floor finish, the brands and flavors of available densifiers have mushroomed. What they all had in common was:

- a) silicate-based chemistry that delivered silica into the concrete surface
- b) high pH, making them unpleasant to handle and hazardous to dispose of.

The more affordable silicates required a lengthy removal and disposal process to avoid a

discoloring residue called whiting.

A concrete polishing professional in the Pacific Northwest, David Loe, found a better densifier that uses nano-technology. His Lythic Densifier is a colloidal silica solution that delivers pure amorphous silica to the concrete, eliminating residue removal and disposal. It's lower in pH, and costs less (material + application) than the most affordable class of silicates. While the company doesn't claim that it improves performance, anecdotal evidence from applicators suggests beneficial properties not found in silicates, too. One applicator who polished a hundred-year-old slab using Lythic stated outright that he did not believe any other type of densifier could have delivered the result.

This product represents the application of highly advanced science with very basic materials. The ability to produce a colloid of highly pure, extremely consistently sized silica nano-particles is pretty esoteric. That it can benefit something as old, established and unchanging as portland cement concrete is cause to stop marvel. [www.lythic.com](http://www.lythic.com)

**Perma-Flow Self-Cleaning Drain Trap:** That P-shaped pipe under the sink has caused much hassle and heartache, and it's been doing it ever since the invention of indoor plumbing. It gets clogged, and it's difficult and disgusting to clean out. It also has a reputed hunger for diamond engagement rings. Despite being utterly unlovable, it persists in bedeviling us from one generation to the next.



PF Waterworks is ending the tyranny. The transparent plastic Perma-Flow drain system has a little paddle-wheel in the drain bend, and uses water turbulence to propel debris through and away. It prevents the build-up of yuck (and you can see that it's working) which minimizes the need for chemical drain cleaners, a definite environmental plus. An external handle allow you to swipe the drain clean if things start to accumulate, but also

helps retrieve lost items – like that proverbial engagement ring – that might slip into the pipe.

This idea represents one of the primary sources of innovation throughout human history: the initiative to solve a problem so familiar that most people have ceased to think about it. [www.pfwaterworks.net](http://www.pfwaterworks.net)

**Brady Pro-X Pre-Formed Door Header:** Since the rise of cold-formed steel stud construction, there has been a standard way to make a door header: framers build it up in the field out of studs and rails. Need we point out how time consuming and therefore expensive that is? It also predictably produces a lot of cutting waste.

The Brady Pro-X Header is a pre-formed unit that attaches to mated hanger clips. The clips get screwed to the studs, and the header snaps into place literally in seconds. There's also a snap-in insert for applications that need greater strength. The metal-forming design of the interlocking pieces yields a sum of 28 bends in the header-plus-insert, adding considerable strength to the unit. (The traditional built-up header has only eight bends.)



This product points at an important change that's rippling through the construction industry. The industry is notoriously slow to change, partly because our established business and legal practices make change discouragingly risky. This reluctance promotes a tendency to live with problems instead of solving them. Then along comes an independent thinker who knows the way things are always done but has the courage to say, "Just because we've done it this way for 20 years doesn't make it the best way." Construction people are looking at their allegiance to the tried-and-true and wondering if convention itself has become a risk, the risk of becoming irrelevant, impractical, and unsustainable.

**Lifemaster Painter's Wash System:** At the intersection of the re-thinkers of old problems and the champions of sustainability comes a classic Why-didn't-I-think-of-that? product. Actually, I and many others did think of it, but we didn't follow through and develop it. Back in the bad old days when solvent-based paints dominated the scene, I had a coffee-can of paint thinner that I used for cleaning brushes. I kept the can covered after I'd finished washing, and let the solids settle to the bottom for a few days. Then I poured off the almost-clear paint thinner into a sealed container for re-use, and threw away the solid yuck at the bottom of the can.

The Lifemaster Wash System by Azko Nobel Paints is a special washtub for cleaning water-based paint off brushes and tools. The paint-laden water is collected, and additives are introduced to separate water from solids. The water can safely go down the drain, and the non-toxic solids can be easily and safely disposed of. It's clean, green, and very smart in a simple way. [View blog entry here.](#)

## TRADESHOW SEASON:

**Here are some tips from our Blog that you can use for upcoming trade shows:  
Press Kits at Trade Shows**

Take advantage of the opportunity to stock a press room with press releases. Press rooms usually have long tables where exhibitors can display their press releases, and most editors do take the time to scan the materials on the table; most go back to their offices with a satchel full of news they plan to use in the coming year. [More...](#)

### **Trade Show Follies**

No matter how well you plan them, trade show booths are always "exciting." I was reminded of this at a recent construction industry show, intended to be the national launch event for a new product. The booth was designed to showcase the new product, and fabrication of the custom booth went flawlessly. [Until...](#)

## UPCOMING EVENTS:

**Chusid Associates will be at the following upcoming trade shows and events:**

[World of Concrete](#) / [World of Masonry](#) -- February 2<sup>nd</sup> - 5<sup>th</sup> -- Las Vegas, NV

[CSI - Puget Sound - Annual Product Show](#) – February 11<sup>th</sup> – Seattle, WA

[Concrete Décor](#) – March 16<sup>th</sup> -18<sup>th</sup> – Phoenix, AZ

[CSI - San Diego - Seminar](#) – April 22<sup>nd</sup> – San Diego, CA

[Construct 2010](#) – May 12<sup>th</sup> – 14<sup>th</sup> – Philadelphia, PA

[AIA](#) – June 10<sup>th</sup>-12<sup>th</sup> – Miami, FL

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