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Green Inc.

Energy, the Environment and the Bottom Line



March 18, 2010, 8:50 am

Aluminum Maker Eyes Solar Industry

By [TODD WOODY](#)



Alcoa The aluminum manufacturer Alcoa wants to get into the solar trough business.

[Alcoa](#), the aluminum giant, is testing a new type of solar technology that the company said it believed will lower the cost of renewable energy.

The company has replaced the glass in [parabolic troughs](#) with reflective aluminum and integrated the

mirror into a single structure.

Parabolic troughs focus sunlight on liquid-filled receivers suspended over the mirrors to create steam that drives an electricity-generating turbine. Parabolic trough technology has been in modern use in solar power plants since the early 1980s, but Alcoa executives said they saw an opportunity to refine the technology and get a foothold in the rapidly expanding renewable energy market.

“If you go out and look behind large parabolic troughs, you’ll find an elaborate truss structure,” said Rick Winter, a technology executive with Alcoa. “From our understanding of aerospace structures, we said if we can modify the wing box design used in aircraft and integrate a parabolic reflector, it would give us a light and stiff structure that would fundamentally affect the cost equation.”

An airplane’s wing box is a unit that integrates support structures and anchors a wing.

“Using aluminum and a wing box design we’re able to create the parabolic curve that we want in the structure itself,” said Scott Kerns, a vice president and general manager at Alcoa. “We can make the skin conform more or less to the way we want to concentrate the light.”

Current solar troughs use glass mirrors that are formed in the shape of a parabola and then attached to a support structure made of aluminum or steel. The executives said they estimate that the all-aluminum Alcoa parabolic trough, which is being tested at the [National Renewable Energy Laboratory](#) in Colorado, will cut the price of a solar field by 20 percent due to lower installation costs.

Aluminum manufacturing, however, is the nation’s [most energy-intensive industry](#), according to the Energy Department. Mr. Kerns said Alcoa had not performed a life-cycle analysis of the total energy costs and benefits of deploying such parabolic troughs, but noted that the company planned to use recycled materials to make the solar collectors.

“We can take the energy intensity out, as much of the structural elements have the potential to use recycled aluminum,” Mr. Kerns said.

Alcoa will face competition from start-ups like [SkyFuel](#), which has developed a lighter-weight parabolic trough that uses a [reflective film](#) instead of glass mirrors.

The Alcoa executives said the company planned to have its solar trough in commercial production within two to three years.

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1.

[Mekhong Kurt](#)

Bangkok, Thailand

March 18th, 2010

9:51 am

If Alcoa can pull this off -- including the cost savings and the energy-intensive reduction -- this might be a real boom. After all, a 20% cost reduction is pretty impressive.

I do wonder if an aluminum mirror can be as reflective as glass ones.

[Recommend](#) Recommended by 0 Readers

2.

Anonymous

March 18th, 2010

11:49 am

see <http://www.solar-etc.com/>

this company is using aluminum mirrors

[Recommend](#) Recommended by 0 Readers

3.

Vernon Huffer

Portland, OR

March 19th, 2010

3:43 am

If I remember right under good conditions the insolation rate is 280 btu/sq.ft.and can be focused to produce very high temperatures, however a little haze can spoil the focus and the water does not boil. Therefore this system could be a boon in selected locations, not every place.

[Recommend](#) Recommended by 0 Readers

4.

[doug l](#)

indiana

March 19th, 2010

8:06 am

When Alcoa is actually using solar power to refine bauxite into aluminum, instead of seeing solar as a way to sell aluminum, then we'll be onto something.

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5.

Asticklor

Washington, DC

March 19th, 2010

9:45 am

Aluminum producers are not the only ones hopefully eyeing renewable energy – industries and workers across the board are hoping that a comprehensive climate bill is passed because of how beneficial it will be to our economy. The steel industry, the technology and development sector, and people all across the United States who are looking for work will gain from a climate bill. The Alcoa project is just the start – with a climate bill that calls for the limitation of greenhouse gas pollution there will be increased innovation, entrepreneurship, and the production of renewable energy projects will add hundreds of thousands of jobs to our currently struggling economy. The bipartisan support for this legislation speaks to its potential and promise – environmentalists and non-environmentalists alike know that this will help

us achieve energy independence, ensure national security, and will help revitalize our economy.

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[6.](#)

Steve

California

March 22nd, 2010

7:14 am

I am not optimistic on these working very well. I really doubt that they can be anywhere near as efficient as the current glass mirrors. I also question if they will hold up as well as glass. I am sure they will last a long time but I wonder if they will lose their reflectivity. Aluminum is much softer than glass and the desert is a harsh environment. The current mirrors use special glass and a silver backing but they are very expensive. If there is any way to lower costs and keep the efficiency up that would be a tremendous thing.

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[7.](#)

Casey Verdant

Boston

March 22nd, 2010

7:15 am

Alcoa's 20% reduction in costs is impressive, especially if the switch is really just replacing parabolic trough glass with cheap aluminum. We'll have to wait for the lifecycle analysis to see if the switch is sustainable for long-term energy savings.

Researching how to make your company, product, or next project more Green? Go to

www.greencollareconomy.com for sustainability white papers and the largest b2b green directory on the web.

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[8.](#)

Anonymous

March 22nd, 2010

7:17 am

FYI - We have a company close to here that is working on this with plastics. They are a manufacturer of plastic automotive mirrors.

(<http://www.replex.com/solarconcentrationmirrors.htm>).

Michael Corder

The Energy Blog

<http://energy.typepad.com>

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[9.](#)

Evan

Jamaica NY

March 29th, 2010

5:12 am

Bending metal and shipping product,* God bless 'em. Beats morphing into a finance company.

*well, planning to ship product; but still...

[Recommend](#) Recommended by 0 Readers

[10.](#)

Be Green

New Haven

April 2nd, 2010

4:21 am

Check out this website that shows a company that colors aluminum in an environmentally-friendly way!
<http://www.seidelinc.com/> It's so nice to see this kind of stuff.

[Recommend](#) Recommended by 0 Readers

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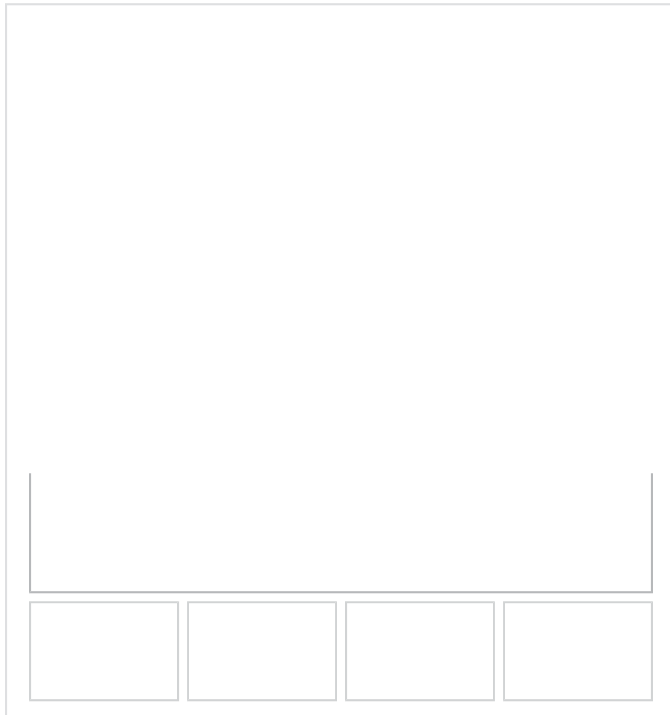
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