

## **Title: A Look Inside Perovskite Solar Manufacturing**

Description: Energy Materials Corporation makes perovskite-base solar panels using roll-to-roll printers. Perovskites have shown remarkable progress in recent years with rapid increases in efficiency, which can match silicon-based solar cell efficiency in the lab. The U.S. Department of Energy funds photovoltaic perovskite research to address challenges relating to durability and commercialization, as well as to advance low-cost, high-speed, solar manufacturing. Learn more about perovskite research at the U.S. Department of Energy: <https://www.energy.gov/eere/solar/perovskite-solar-cells>

### **Transcript:**

Our concept is to manufacture perovskite-based solar panels - complete solar panels - made in-line, roll-to-roll. And what that means is that we are printing all layers of the perovskite device in-line, all processes happening at the same speed.

What that allows you to do is get to the lowest possible manufacturing cost and also the lowest capital cost to build manufacturing assets.

The basic difference with perovskites is that they are solution processable – you can make an ink out of perovskite and you can print it. So that enables high-speed, high-throughput manufacturing.

What this technology allows you to do, is get to very low cost and very low capital costs to build factories, because all you're doing is building a printing press basically instead of the five different factories you'd need to make a silicon solar panel.

One in-line production tool, we're running at our target speed of 100 feet per minute, that's a 4GW per year production tool.

So it's a very different scale than what most people talk about when they're thinking about PV production lines.

We're in a process called scale-up right now, and that scale-up is going from little lab devices to making high speed roll-to-roll devices.

The really hard part is the speed and getting all the layers to print at the same speed. That tool that we're working on now is a real industrial tool that was built by Kodak as a pilot production line.

If we want to get to the targets that have been set out for renewable energy, we have to have a drastic expansion of manufacturing capability for solar panels.

And what's really exciting is that we have a way to do that with an order of magnitude less capital costs to build factories with a product that has less than half the manufactured cost of existing solar panels.