

# PowerFilm<sup>®</sup>

MADE IN THE USA

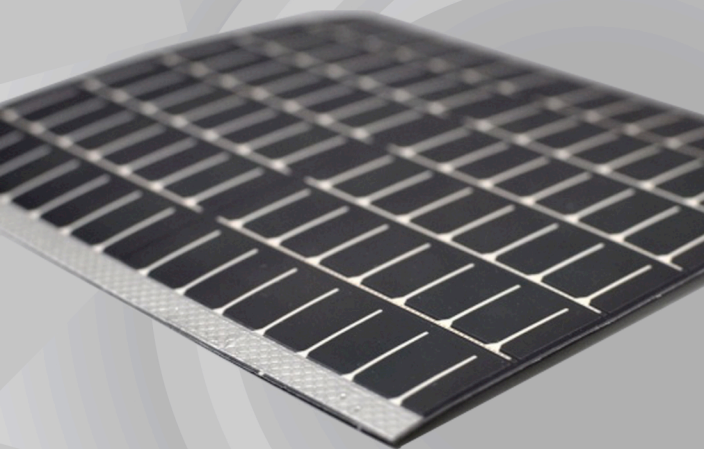
SOLAR



# SOLAR POWER

*without  
the sun*

It's Possible with  
PowerFilm



# What if the power of harvesting light and converting it into energy was achievable indoors?

Amorphous silicon thin-film technology has inherent high impedance giving it excellent low-light performance down to 200 lux, making it a good match for any number of indoor applications.

Its paper-thin profile allows easy mounting on surfaces and devices. Its manufacturing versatility allows custom module design to match specific needs of voltage and power.

Optimum performance comes from choosing both the right photo voltaic (PV) module and the right electronics and storage medium.

## Applications

**Actuators** like the valves on the sink at the right can be powered by a PV system, eliminating the need for electrical connections, saving you time and money.

**Wireless and Bluetooth connected sensors** and displays, like this atomic clock with indoor/outdoor thermometer and its remote sensor, can be powered by a PV system, reducing or eliminating battery maintenance and replacement.



**Point of Sale Displays** can use ambient lighting to power both the display and any internal communication devices, eliminating the need for wired power and again reducing or eliminating any dependence on batteries.

## Low-Light Use Cases

**L**=Typical Lighting    **A**=Example Applications

### Indoor (200-400 Lux)

**L**- Lamps, overhead fixtures

**A**- Bluetooth accessories

Requires EHC, higher price

### Exterior room (1,000+ Lux)

**L**- Windows on one or more walls.

**A**- Remote controls, eReaders, cameras, smart phones, MP3 players.

EHC option for higher performance

### Office/Retail (400-1,000 Lux)

**L**- Commercial, fluorescent lighting

**A**- Point of sales displays, electronic price tags, asset tags

### Industrial (400-1,000 Lux)

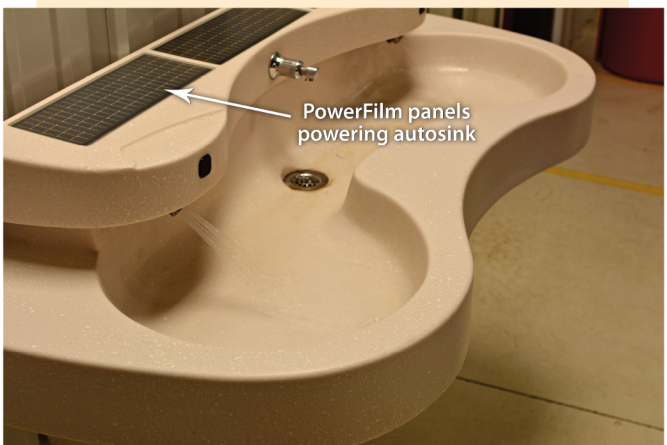
**L**- Warehouse level lighting, power plant

**A**- Asset tagging, and tracking remote sensors

### Indoor/Outdoor

**L**- Can be indoor or outdoor installation, or move through both environments

**A**- eReaders, door locks, asset tracking and motion sensors



## Engineering for Best Performance

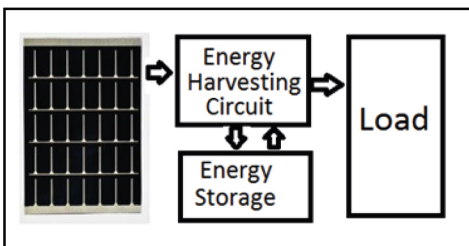
PowerFilm, Inc. has worked with Linear Technologies' and Texas Instruments' energy harvesting chips (EHC) as well as our own custom designs in developing low-light energy harvesting systems. When determining the best system, it is critical to match the proper PV module with the right energy harvesting circuit and storage device to provide the most efficient and cost-effective design.

## Items for consideration

- Determination of the power demand pattern – low level, steady-state power draw or periodic power demand spikes
- Lighting environment pattern – steady or varied lux
- Critical aspects of the system – cost and maintainability

## System Development

PowerFilm has built a significant OEM business by providing world-leading custom design, engineering and production capabilities along with our unique PV material. Low light solutions require more than just adding a PV panel. PowerFilm specializes in complete systems and solutions and has been perfecting thin film solar for almost three decades.



## Development Kits

PowerFilm energy harvesting system development kits cover a number of general application needs. These are suitable for concept development and low-volume runs. For larger volume applications, PowerFilm Engineering can develop custom systems based on specific lighting environments and power demands.

## Low-Light Development Kits

### Option 1

This setup is designed for very low power applications with a consistent use case and environment requiring under 100mA @3V or less.

The circuit is 90+% efficient through most of its range and is capable of operating from a few  $\mu\text{A}$  to 100mA.

### Option 2

This setup is designed for systems which may have variable use case or mixed exposure to indoor and outdoor environments.

The circuit runs between 87 and 90% efficient and is capable of operating from  $\sim 10\mu\text{A}$  to 200mA at up to 15V (the default configuration is set for a 4.2V output, but is easy to change).

# Customization is our Specialty

PowerFilm has almost three decades of experience customizing remote, portable power solutions, meeting a variety of energy needs and exceeding customer expectations. Our engineers work side-by-side with clients to make their visions become a reality.

For more information, contact:

Joe Colby

Director of OEM Sales & Business Development

515-292-7606 Ext. 163

[jcolby@powerfilmsolar.com](mailto:jcolby@powerfilmsolar.com)



PowerFilm manufactures exclusively in the U.S.A.



LightSaver is an environmentally friendly portable power solution

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