

# Organizing Your Warehouse for Work



# WHY IS A WAREHOUSE LIKE A BASE CAMP?

**Because the warehouse is where streamlined operations start, and finish.**

In solar, we rely on warehousing as a lifeline between vendors and customers—just as mountain climbers store essential supplies at base camp.

In residential solar, pre-installation planning kicks into gear once a permit is in hand and an installation start date is set. This is the time to confirm the bill of materials (BOM), order components, and assemble documentation.

Inventory management practices have a direct effect on your ability to deliver value to customers and stay in control of installation costs. Streamlining the warehouse space will help to keep track of the small details and special customer requests that can make one project a little different from the others. It will also trim the time it takes to assemble components and load the work vehicle.



# HOW CAN I REDUCE MY INVENTORY FOOTPRINT?

## IT'S ALL ABOUT BALANCE

Inventory management is a balancing game between minimizing the dollars you have tied up in parts and maximizing your ability to have what you need when your crews need it.

Large installers handling numerous projects at once may want more warehouse space so they can leverage their buying power. Small companies may seek to stock only what they need for scheduled jobs. Installers located far from distributors may stock up a little to protect themselves against the possibility of a supply shortage. Given these various circumstances, how do you figure out an optimal inventory management strategy?

As a rule of thumb, less is more. Every step you take to shrink the size of your storage space or shorten the time that inventory stays on the shelf leads to a more streamlined warehouse and better cash flow.

### LINGO CHECK

#### INVENTORY VS. EQUIPMENT

**Inventory** includes all merchandise or stock on hand for eventual re-sale. **Equipment** includes all the tools used to perform work.

# DON'T I SAVE MONEY BY SHOPPING THE VENDORS?

## MO' VENDORS = MO' MANAGEMENT

Pitting one vendor against another in a pricing contest is a losing strategy. Sure, you save a buck here and there, but consider the downside from a process standpoint. You end up with a long list of suppliers. Bottom line, it creates waste:

### + Complexity in the sales process

Using a variety of vendors means educating sales staff about all the equipment and updating price lists. Proposals can quickly go stale.

### + Complexity in the design process

Additional equipment requires designers to learn about electrical and temperature parameters and how to integrate system components. It takes much longer to put together an initial design.

### + Logistical complexity

Gaming vendors over prices and delivery schedules takes time and doesn't save money in the long run. Order from a short list of vendors you trust, and they'll always be there in times of emergency.

### + Installation complexity

Because install crews need to understand all components you use, increasing variety increases the risk of mistakes at the jobsite and length of install.

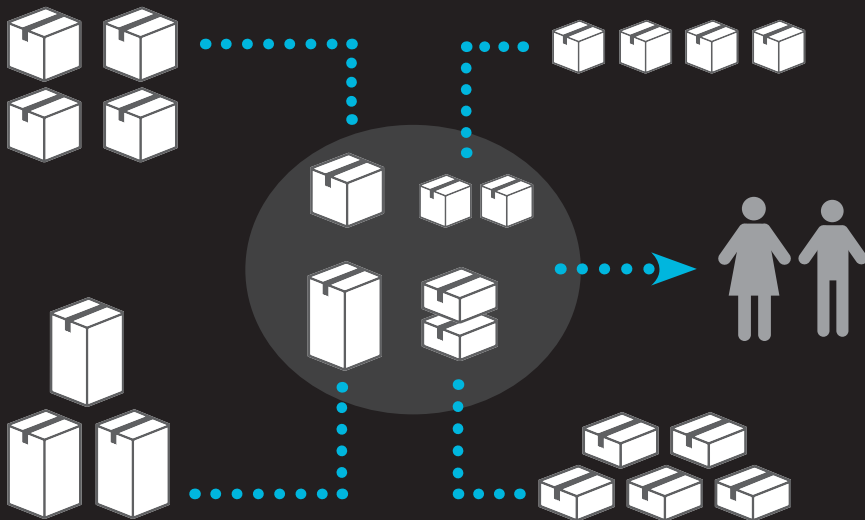
## ENPHASE ADVANTAGE // Streamline from start to finish

Installers who standardize on Enphase have found it not only leads to a simpler sales and design process, but also dramatically simplifies the logistics at the warehouse. Enphase's one-size-fits-all components mean fewer SKUs to order, stock and manage.

# OH, HOW TIMES HAVE **CHANGED**

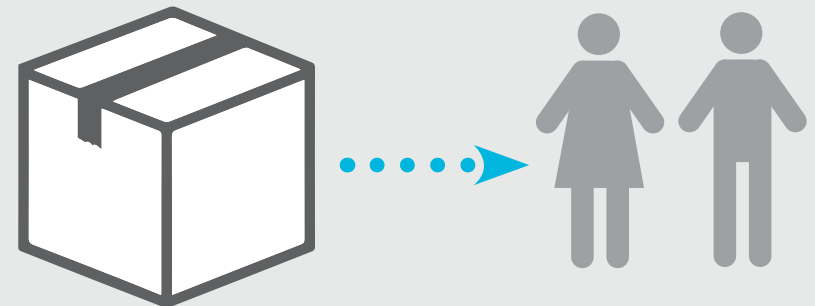
## BEST PRACTICES THEN...

The strategy for logistics has changed significantly as the industry has matured. As some companies scaled, they went straight to manufacturers to get volume pricing. They leased warehouse space and hired staff to deliver product, creating distribution networks inside their companies. Once module prices began to fall, many installers moved away from this strategy.



## ...AND NOW

Solar distributors say that current best practice is to pre-order one job at a time and drop-ship to the customer whenever it makes sense to do so, eliminating complicated warehousing and shipping. This way, the warehouse stays as small as possible with space mainly for tools and high-turnover, low-value items.



# TO DROP-SHIP, OR NOT TO DROP-SHIP? THAT IS THE QUESTION.

## SOME MANUFACTURERS OFFER COMPLETELY PALLETIZED KIT SYSTEMS. SHOULD YOU TRY IT?



### ADVANTAGES

- No loading and unloading of major components before each project. Just show up and get moving.
- Speed along the process of customer milestone invoicing.
- Eliminate warehousing altogether at great savings.



### DISADVANTAGES

- Liability for breakage or short-ship means an installer representative should be onsite to receive.
- Shipping could be more expensive because special trucks with lift gates are needed for residential deliveries.
- The customer might not have appropriate place to store equipment, increasing the risk of vandalism or exposure.

**HOW LITTLE  
INVENTORY IS  
TOO LITTLE?  
I DON'T WANT  
MY CREWS  
WAITING FOR  
PARTS...**

## Get what you need... just in time

One of the pillars in lean manufacturing is the “just-in-time” system of production control.

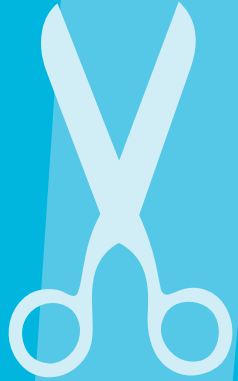
If you oversupply the warehouse, you tie up company capital. You need advanced systems to track and manage inventory, staff to organize the warehouse (even if for a small portion of time), specialized equipment to move inventory around, and funding for additional space. Think carefully about how much stuff you really need on hand.

Warehouse size varies by company size. Best practices observed by Enphase Field Application Engineers revealed that installers with five employees hold only slightly more inventory than an installer with three employees. More mature companies with multiple crews have larger warehouse spaces that fit vehicles and offices together.

LINGO  
CHECK

### JUST IN TIME

The philosophy is simple. Storing unused inventory is a waste of your resources. Just in time focuses on having enough of the right material at the right time in the right place.



LET'S CUT  
SOME  
WASTE,  
SHALL WE?

## USE THE **5S** SYSTEM TO STREAMLINE EFFICIENCY

The 5S system is a widely used methodology that helps to establish continuous improvement. Originating in Japan as part of the just in time approach, the program focuses on visual order and organization. Applying the 5S system can streamline efficiency in a solar installer's warehouse.

### **SORT**

Sort through everything in each work area. Keep only what's necessary. Materials, tools, equipment and other supplies that are not frequently used should be separated into a single common space.

### **STRAIGHTEN**

Arrange and identify work items so they can be easily retrieved in the order of most common use.

### **SHINE**

Regularly clean work areas to carry on the Sorting and Straightening work you've already performed. Inspect equipment, especially safety equipment, for wear and tear.

### **STANDARDIZE**

Develop a work structure and written standards that encourage adoption of 5S habits. Use visual aids such as labels, posters and banners.

### **SUSTAIN**

Conduct training to maintain the established 5S standard and add it to performance evaluations.

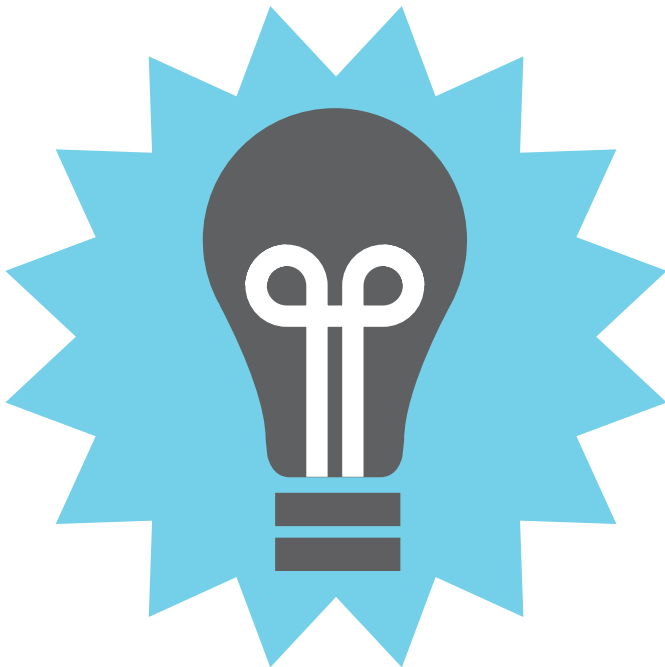


## HOW ABOUT SOME OBSERVATIONS FROM THE FIELD?

### HERE'S **ONE** GREAT IDEA

Enphase Field Application Engineers see a lot of work environments in their travels. They have unique insight on what works and what doesn't work with warehouse management.

One example of superior streamlining had materials sectioned off with one place for all electrical supplies, another for racking-specific materials, a third for vendor-specific materials and a dedicated space for picking up work orders.



### ...AND **FIVE** MORE IDEAS FOR ORGANIZING YOUR WAREHOUSE

- 1 Label bins and organize them into a clear and sensible system.
- 2 Reserve a surface for “red-tagged” equipment or tools in need of repair.
- 3 Reserve dedicated spaces for staging pieces and ladders, leftover rails, fall protection gear and other personal protective equipment
- 4 Implement a simple system to know when to restock supplies. If you use a recognizable color to coat the insides of the bins, once the color comes clearly into view, you'll see it is time to place an order.
- 5 Set up simple processes for gathering and removing construction waste, separating recyclable packaging from non-recyclables and scrap metals. And ensure you keep a schedule to removing them.



# TIME TO HIT THE ROAD. NOW WHAT? PREP AT THE WAREHOUSE CUTS SETUP TIME AT THE SITE

Preparation before leaving for the job affects efficiency at the site. Checking to see that your crews have materials that they need can impact overall time to complete a job. Your crews should be supplied with the “must haves” they need before starting an installation.

A Rocky Mountain Institute (RMI) study of installation labor efficiency benchmarked labor hours per kilowatt (kW) spent on pre-installation activities. Successful Australian installers spend 0.41 labor hours per kW, substantially less than either the German installers at 1.49 hours or the U.S. installers at 1.63 hours. This means there’s significant opportunity to optimize job preparation through better coordination of pre-installation activities.

### What’s the driving force behind Aussie efficiency?

- Simplified processes for loading and unloading racking and mounting materials
- Sending a single person to pick up system components on install day

It might seem counterintuitive to think a single person picking up hardware at the warehouse can be more efficient than a two- or three-member crew. The actual loading time is in fact longer. But by completing this task with just one person, you free up the rest of the crew, and in doing so achieve an overall reduction in pre-installation activity time.



**SO THAT'S  
IT FOR THE  
WAREHOUSE?**

**You're well on your way to streamlining, but there's always more you can do.**

If you get these strategies running effectively and efficiently, you are setting up your whole system for success. Want to dig deeper? Here are some resources to check out:

**Solar Survival Guide**

Sign up to receive the entire Solar Survival Guide for streamlining the back office, the work vehicle, the jobsite and more.

[enphase.com/solarsurvival](https://enphase.com/solarsurvival)

**Enphase training**

Check out videos, webinars and live training sessions covering all aspects of designing and installing Enphase Systems.

[enphase.com/en-us/support/training](https://enphase.com/en-us/support/training)

**Enphase Authorized Distributors**

Find a distributor who can help you streamline your order management.

[enphase.com/en-us/residential-solutions/how-to-buy](https://enphase.com/en-us/residential-solutions/how-to-buy)