

Choosing the right material handling system #5: How to make the load “loadable”?

Selecting a material handling system can be overwhelming. In this series, we walk through the decision process one question at a time. First, we asked [how much the load weighs](#). Second, we looked at [maneuverability and flexibility requirements](#). Third, we considered move frequency and distance. Fourth, we talked about cost considerations. Now, we’re assessing how the load will actually get onto the material handling system.

What do dinosaur fossils, spacecraft, and luxury yachts have in common?

Simple: they’re all hard to move.* In fact, they’re all such large, unwieldy, and weirdly shaped objects that it’s challenging to figure out *not just* how to move them from Point A to Point B *but also* how to get them attached to or supported by the material handling system in the first place. Some situations are straightforward – simple widgets can just be dropped onto a conveyor belt, or a forklift can just scoop up rocks – but loads like fossils or satellites will require extra human labor, added expense, and even secondary material handling solutions just to get the load off its resting place and onto the material handling system.

Technically, you could probably load just about any object onto just about any material handling system, with enough engineering ingenuity and within the constraints already established by earlier questions in this series (like weight considerations). But the way you do it could incur additional costs and necessitate logistical or organizational tradeoffs that will make certain systems less desirable or less feasible for certain kinds of applications.

Consider the example of [Leonardo](#), a baby Brachylophosaurus and one of the best preserved fossils in the world. When it needed to be moved to its final display case at the Children’s Museum of Indianapolis, one of the first questions facility staff asked is how they’d get the fossil onto the move system at the start. This fossil is one-of-a-kind, priceless, and exceedingly fragile. Even a single mistake could be ruinous.

They had options, but each option had tradeoffs they had to consider:

- **Human power** might have worked, by carefully carrying baby Leonardo through the facility in his case, if the fossil didn’t weigh nearly two tons.
- **Cranes** wouldn’t have worked because of facility constraints; but even if they’d had the option, they couldn’t attach a hoist directly to Leonardo. They would have had to construct some kind of protective substructure, but that would have added time, expense, and engineering to the project.
- **Forklifts** faced similar facility constraints, but even with the option, any kind of wheeled vehicle would have required Leonardo to be secured very tightly to a pallet or skid. Further, they’d have to find some way to ensure the forklift didn’t transmit enough vibration or shock loads to the fossil to risk damaging it.
- **Wheeled casters** may have seemed like the best option at first, since they could just slide under a pallet or a display case to be moved; but they’d still have to lift the whole load a few inches to start, which would have necessitated a whole secondary material handling system.
- Ultimately, they chose **air casters**. They were able to slide the air casters under a pallet and lift the pallet up as they inflated the casters.

How to load the object onto the move system is still an important question even when the load being moved isn’t a 77-million-year-old fossil. A product being built through a manufacturing process can change at each phase of its construction. A conveyor belt might get the product through the early stages, but what happens when the object grows larger and larger, or if the center of gravity changes (which could make it liable to tip over)? Ultimately, the “loadability” of the object to be moved is a key question that must be answered *before* selecting a material handling system to avoid any unpleasant surprises or unnecessary added costs in the move process.

For more guidance on this question, please see our white paper “[Selecting the right load handling equipment](#).” There, we take an in-depth look at different kinds of costs to consider. We also assess six other questions that organizations need to ask to pick the right load handling system. Download the paper [here](#).

* Something else [fossils](#), [spacecraft](#), and [yachts](#) all have in common: they’ve all been successfully moved with air casters.