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Helping Products Survive Transportation

Assemble



Move



Use



How many moves?

The Problem



Design & Use

The Problem

Focus on form, fit, and function

Solve a problem for customer

DFx is a long list of 'distractions'



Design & Environment

The Problem

Customer's use environment

Temperature rise when powered

The shipping container will protect
the unit

If not 'in use' it can't fail



Design & Transport

The Problem

Often an after thought

Hand off to the team that sorts out shipping details

Multiple transportation paths



Are OOB failures

a reliability problem?



Common Approaches



Standards

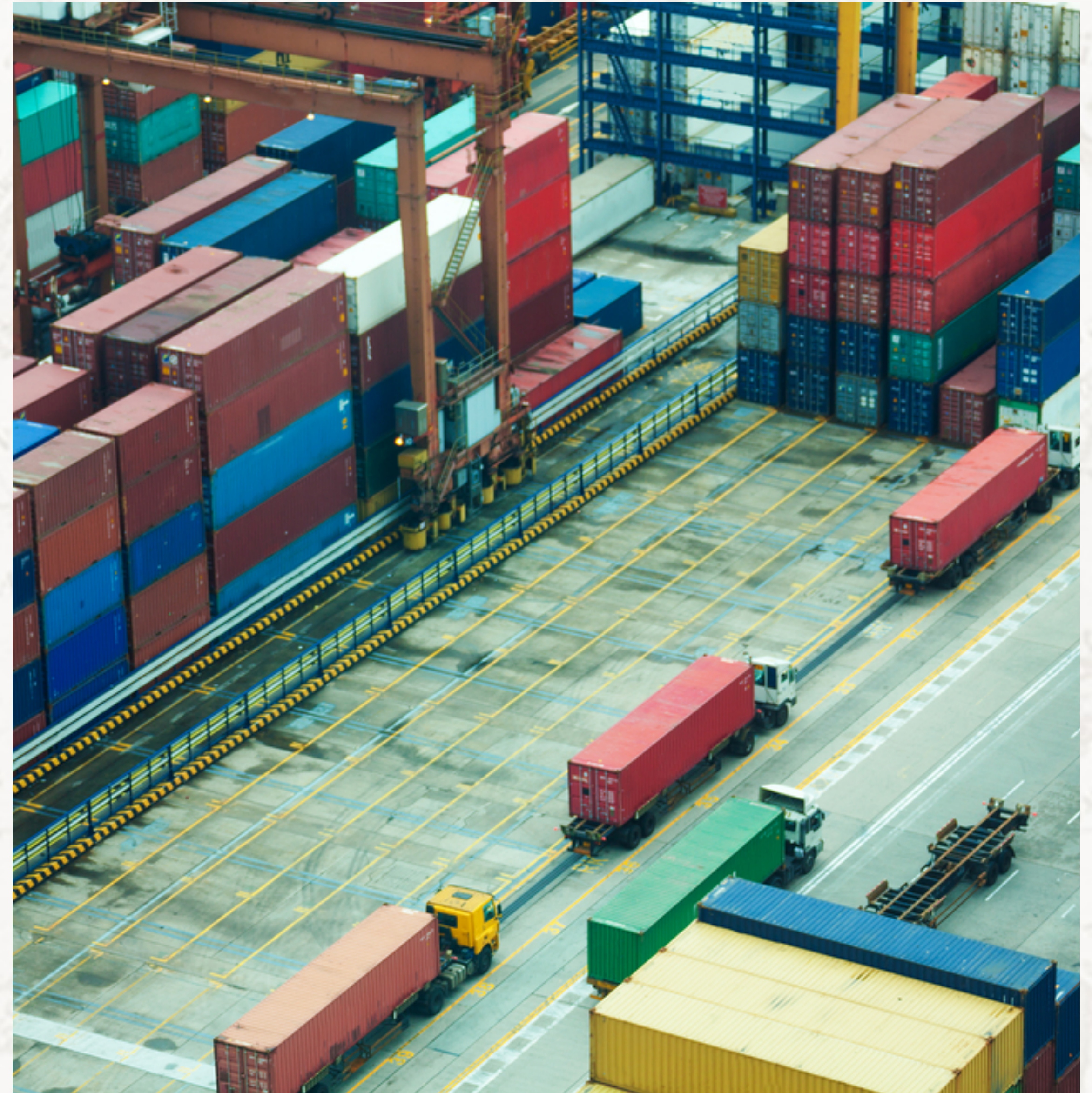
Common Approaches

Shock, vibration, temperatures

Some vendors have guidelines

Shake, rattle, roll – and see it's still working – no time to detect issues

Rarely takes into account product design aspects



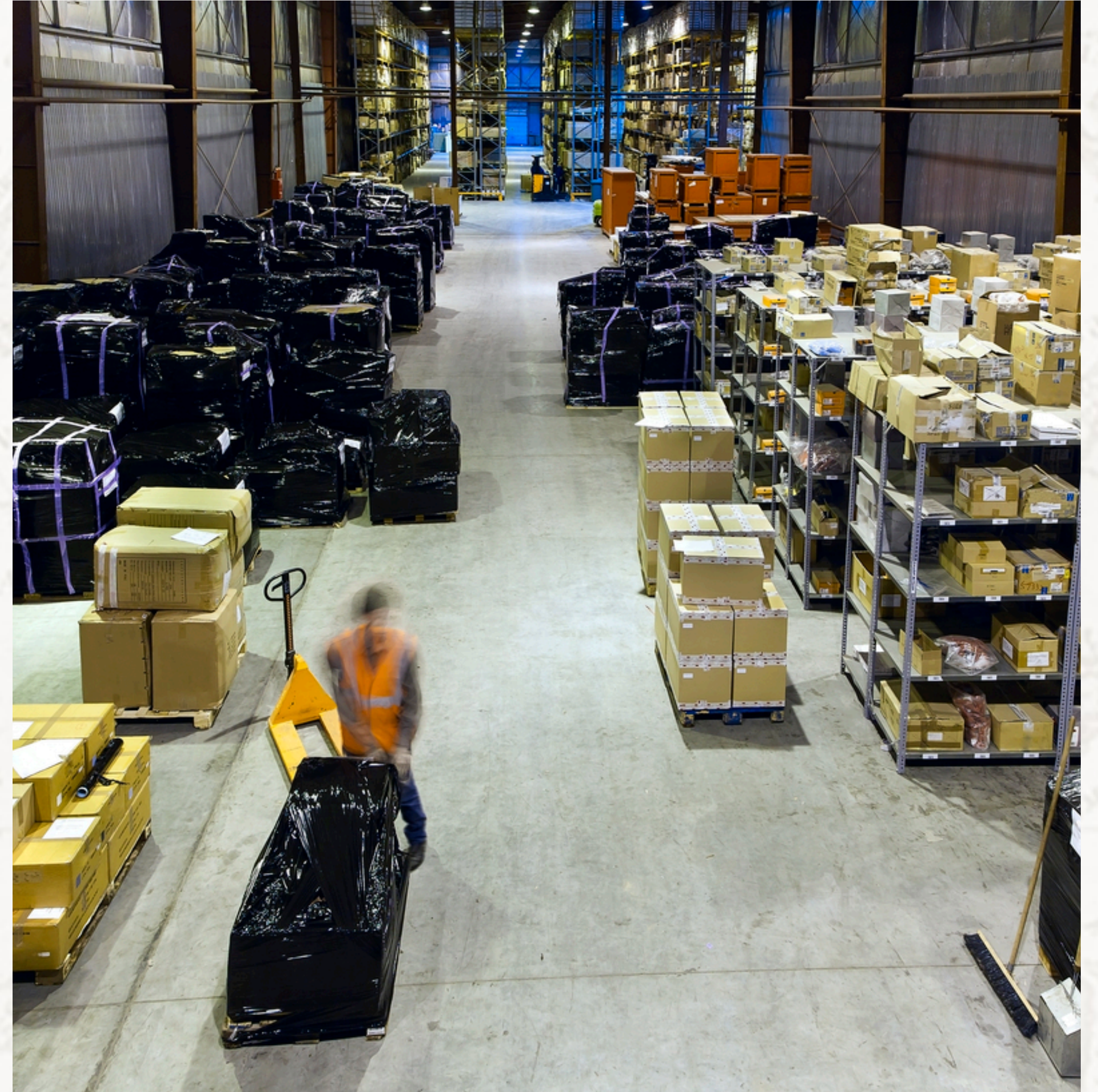
Testing

Common Approaches

Everything varies

Shipping containers and supports
vary a lot

Is ten drops really good enough?



Insurance

Common Approaches

Let's not invest in getting the product in working order to the customer, insurance will cover any loss.

Customer is the one to discover the failure



What can be done to

prevent failures?

Design for Transport



Product Design

Design for Transport

A robust product is more likely to survive transport

Even if shipping stresses are 'beyond the operating or storage specified limits' they are still real

Establish shipping paths and then design guidelines



Transport Environment

Design for Transport

Measure, Measure, Measure

No standard used your product in
your container to measure applied
stresses



Transport Design

Design for Transport

Product and Packaging have to work together

From product into packaging

to movement to transports

to movement to storage

to movement to use location

and movement between/during use



What else can

be done?

Minimize transportation
caused damage
— increase customer satisfaction

Thanks

see more at AccendoReliability.com