

Introduction: The 3 Ms of Lean

When Japanese companies talk about waste they usually talk about the three Ms; Mura, Muri and Muda. While most people who have had contact with lean manufacturing will have been made aware of the 7 wastes and Muda they often have not been introduced to Muri and Mura at all. Yet these wastes are often far more important to tackle than Muda and often are the underlying causes of the Muda that you observe within your processes.

While Muda is the non-value adding actions within your processes; Muri is to overburden or be unreasonable while Mura is unevenness. I will discuss these terms below.

Source: <http://leanmanufacturingtools.org/71/muda-mura-and-muri-lean-manufacturing-wastes/>

Muda, Mura, Muri Video

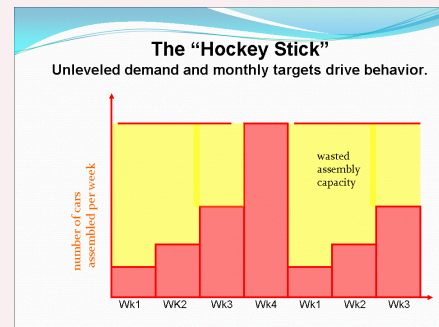
Video: <http://youtu.be/lqDgzh9IZuQ>

1. Muda, The Seven Wastes

Muda is any activity or process that does not add value; a physical waste of your time, resources and ultimately your money. These wastes were categorized by Taiichi Ohno within the Toyota production system, they are;

- **Transport;** the movement of product between operations, and locations.
- **Inventory;** the work in progress (WIP) and stocks of finished goods and raw materials that a company holds.
- **Motion;** the physical movement of a person or machine whilst conducting an operation.
- **Waiting;** the act of waiting for a machine to finish, for product to arrive, or any other cause.
- **Overproduction;** Over producing product beyond what the customer has ordered.
- **Over-processing;** conducting operations beyond those that customer requires.
- **Defects;** product rejects and rework within your processes.

2. Mura the Waste of Unevenness



Mura is the waste of unevenness or inconsistency, but what does this mean and how does it affect us?

Mura creates many of the seven wastes that we observe, Mura drives Muda! By failing to smooth our demand we put unfair demands on our processes and people and cause the creation of inventory and other wastes.

3. Muri the Waste of Overburden

Causes of Muri - Overburden

- Working on processes you are not trained in
- Poorly laid out work places
- Cluttered Workplaces
- Unclear instructions
- Lack of proper tools and equipment
- Fluctuating demand (Mura)
- Lack of proper maintenance / unreliable equipment
- Unreliable processes
- Poor communication routes

Muri is to cause overburden, by this we mean to give unnecessary stress to our employees and our processes. This is caused by Mura and a host of other failures in our system such as lack of training, unclear or no defined ways of working, the wrong tools, and ill thought out measures of performance.

Again Mura causes Muda, the seven wastes are symptoms of our failure to tackle Mura and Muri within our processes not the root cause!