Lean Glossary of Terms*

Lean Production	A competitive advantage strategy of just-in-time production and the elimination of non-value- adding wastes from the production process through the involvement of employees at all levels.
Cell	A logical, efficient and usually physically self-contained arrangement of machinery, tooling, and personnel to complete a production sequence. The cell enables one-piece flow. Each cell has a leader who manages the workflow and is responsible for maintaining quality and productivity.
Five S / CANDO	An improvement process, originally summarised by five Japanese words beginning with S, to create a workplace that will meet the criteria of visual control and lean production. The five steps are: *Seiri* (sort) *Seiton* (set in order) *Seiso* (shine) *Seiketsu* (standardise *Shitsuke* (sustain) *(An alternative description is CANDO – see above)*.
Flow	The progressive achievement of tasks as a product or order proceeds along the value stream, including design to launch, order to delivery, and raw material into the hands of the customer without stoppages, scrap, or backflows. Flow can apply to the movement of information as well as material.
Invisible Waste	The intangible wastes such as time that can go easily unnoticed without careful analysis of the production process. Perhaps the most important of all wastes is unfulfilled human potential.

Kaizen	Composed of the Japanese *kai* meaning “to take apart” and *zen* meaning “to make good”, Kaizen is the gradual, incremental, and continual “improvement” of activities so as to create more value and less non-value-adding waste. Its success depends on the total commitment of the work force to increasing efficiency and reducing costs.
Kanban	Meaning “signboard” or “signal” in Japanese, a kanban is a type of visual control representing a certain quantity of material or parts. It might be a small travelling card attached to a box or cart, or an electronic signal sent by a scanned barcode. Being at the heart of pull production, a kanban signals upstream operations to deliver what is needed, in the quantity needed, when needed.
Non-value-adding	Any operation or activity that takes time and resources but does not add value to the product or service sold to the customer. All are forms of waste or “*muda*”.
OEE	Overall Equipment Effectiveness. A measure of how much good output is produced by a piece of plant or equipment. OEE is a composite measure, calculated by multiplying together three separate measures – availability, performance and quality. Hence OEE (%) = Availability (%) x Performance (%) x Quality (%)
One-piece flow	The manufacturing process in which product flows without waiting through various operations in design, order-taking, and production with out backflows, scrap, or the need for excess inventory. Also called single-piece flow.
Pull Production	A system of production and delivery instructions in which nothing is produced by the upstream supplier until the downstream customer signals a need. Pull can operate with single units or small batches. It enables production without preset schedules.

Push Production	Conventional production in which production schedules are pushed along based on sales projections and availability of materials. It leads production employees to make as much product as they can as fast as they can, even if the next process is not ready to use the materials, which causes large work-in-process inventories.
Seven Wastes (“Muda”)	The visible non-value-adding wastes found in physical production. *Overproduction* (in excess of demand), *waiting* (for the next processing step), unnecessary *transport* of materials (for example between process villages of facilities), *overprocessing* of parts (due to poor tool and product design), *excess inventory* (more than the absolute minimum needed), unnecessary *movement* (Unnecessary reaching or walking, or looking for parts, tools, prints, information, etc.) and the production of *defective parts* (or spoilage).
SMED	“Single-Minute Exchange of Dies” A technique used to reduce set-up or change-over times to “Single Minutes” (i.e. less than 10 minutes). Originally applied in the automotive industry to reduce the time taken to set up large press dies, the principles can be applied to any process that involves significant time wasted in setting up or changing over from one activity (product or process) to another. The technique requires those who perform the activity to analyse the change-over (often using video recording), and reduce the time taken. Major reductions are often possible simply with better planning and organization.
Storyboard	A poster-size visual representation to exhibit the activities of a lean project team and the key information they have discovered. Storyboards serve to inform, educate, and motivate other workers and teams.

Takt time	The rate at which product must be manufactured in order to satisfy market demand. It is determined by dividing the available production time by the rate of customer demand. It is a calculated number, not a reflection of capability. It sets the pace of production to match the rate of customer demand.
Value-adding	The creation of value through waste-free operations and processes. Any operation or activity that changes, converts, or transforms material into a product or service the customer is willing to pay for.
Value Stream	All the activities your company must do to design, order, produce and deliver its products or services to customers.
Value Stream Mapping	The identification of all the specific activities (material and information flow) occurring along the value stream for a particular product or product family, usually represented pictorially in a value stream map.
Waste	Anything that adds cost or time without adding value.

* The "Lean Glossary of Terms" has been adapted from "LeanSpeak, *the Productivity Business Improvement Dictionary*", compiled and edited by Mary A Junewick.