



### Kaizen Terminology

The terms in this glossary are organized in the alphabetic order of the Romanized spelling of the Japanese words.

I have attempted to use English terms that conform to meanings defined by Toyota. No attempt has been made to conform to the Lean Manufacturing Lexicon. I have found that even the Toyota English terms that seem to violate the rules of normal English usage are often based on very clear concepts, and attempts by native speakers of English to make them sound more natural result in a departure from their originally intended meaning.

I recognize that there are still some explanations wanting and that there are other words that merit inclusion in this glossary, but I hope that some may still find it useful as it is for now.

### 改善用語集

この用語集の単語の順番は、日本語をローマ字にして、そのアルファベット順になっています。

なお、欧米でよく使われる「リーン・マニファクチャーリング」用語を意識せずに、英単語にはトヨタ用語に近い表現にこだわっています。その理由は、経験上「ただの和製英語」に思ったトヨタの英訳は、よく調べると根拠のある表現に思えた場合が多いからです。

まだ不十分な説明や入っていない改善用語はあると思いますが、とりあえずこのままの用語集を皆様の活動に役に立たせたいと思って掲載させていただきました。

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Roma-ji	漢字	ひらがな	English
andon	アンドン	あんどん	Andon (a type of alarm system, often refers to a tower of lights of different colors with different status conditions assigned to different color lights, but can also refer to boards with sections that light up for different status conditions)
andon boodo	アンドンボード	あんどんぼーど	Andon Board (a board with sections that light up to advise the status of areas, processes, equipment, etc.)
andon koodo	アンドンコード	あんどんこーど	Andon Cord (the cord operators pull when problems are discovered on a moving line)
arubekisugata	あるべき姿	あるべきすがた	The State Things Should Be In (the ideal) as defined by the principles of the Toyota Production System (Just in Time, Quality in Station, Leveled Production, etc.)
atohojuu	後補充	あとほじゅう	Replenish, Pull and Replenish
atokouteihikitori	後工程引き取り	あとこうていひきとり	Pull, Pull System (literally “the next process pulls and takes”)
bekidouritsu, kadouritsu	可動率	べきどうりつ、かどうりつ	Operational Availability, Machine Availability (100% is ideal because nothing should ever prevent a machine from being available for planned production)
dandorigae, dangae	段取り替え、段替え	だんどりがえ、だんがえ	Changeover, Set-up Change (of tools, dies, etc. to enable the production of a variation of a product on the same machine or line)



Roma-ji	漢字	ひらがな	English
futeiki	不定期	ふていき	Unscheduled Time (one of the 4 possible conditions of delivery, meaning that there is no attempt to create a fixed schedule for delivery runs)
futeiryou	不定量	ふていりょう	Unscheduled Quantity (one of the 4 possible conditions of delivery, meaning that there is no attempt to define the quantity of material that is to be delivered on a run)
genba	現場	げんば	Site, Genba (where something is or happens, also spelled “gemba” in certain conventions of Romanization of Japanese pronunciation)
genchi genbutsu	現地現物	げんちげんぶつ	The actual place and the actual thing (where something is or happens, and the actual things that are in question, the fundamental attitude necessary for successful management and problem solving – ie All solutions lie in careful observation of actual materials and the actual conditions under which they are handled, genbutsu is also spelled “gembutsu” in certain conventions of Romanization of Japanese pronunciation)
goesu	5S	ごえす	5S (standing for Seiri, Seiton, Seiso, Seiketsu, and Shitsuke, a slogan developed for daily workplace management)
haiyaahoushiki	ハイヤー方式	はいやーほうしき	On Call Delivery (the delivery vehicle is stationed in a specified place and awaits a request for conveyance - similar to a limousine for hire, hence the name “hire system”)
hamidashihin	はみだし品	はみだしひん	Overflow Parts
hanarekojima	離れ小島	はなれこじま	Isolated Jobsite (original Japanese is analogous to the expression “deserted island,” as if the worker at such a site were marooned and cut off from normal factory activity)
heijunka	平準化	へいじゅんか	Leveled Production, Heijunka
hitoketa	一桁	ひとけた	Single Digit (referring to times measured with no more than single digit numbers, can mean “less than 10 seconds,” or “less than 10 minutes”)
hyoujunsagyou	標準作業	ひょうじゅんさぎょう	Standardized Work (work procedures posted on site that define the takt, the sequence of operation, and the standard in-process stock)
Hyoujunsagyou kumiawasehyou	標準作業組み合わせ表	ひょうじゅんさぎょうくみあわせひょう	Standardized Work Combination Chart (a Gantt chart-like tool which illustrates standardized work as a combination of manual task time, automated work time, walk time, and waiting time, all against the takt)



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hyoujuntemochi	標準手持ち	ひょうじゅん てもち	Standard In-Process Stock, Standard Work in Process (should be no more than 1, literally “standard, on-hand piece”).
ikkonagare	一個流れ	いっこながれ	1 Piece Flow (each station of a line completes its work on only 1 piece at a time, there is no batching)
jasutointaimu	ジャストインタ イム	じゃすといん たいむ	Just in Time, JIT (arrival of needed items only, only in the quantity needed (i.e. 1 at a time), and only at the time needed)
jidouka	自動化	じどうか	Jidoka, Quality in Station, Autonomation (making equipment or processes that are “smart” enough to detect an undesired, abnormal state and stop so as not to produce a defective product, normally the word “jidouka” in Japanese means “automation,” but the “dou” of this word refers to “work,” and its kanji character includes the symbol for “person” (nin-ben) which alludes to the capability of a device to “judge” like a person would when inappropriate conditions have occurred and stop its process so as to avoid producing defects)
jikkoutakutotaimu	実行タクトタイ ム	じっこうたく とたいむ	Actual Takt Time (takt time is derived strictly from net working time divided by the number of units ordered for that time, but actual takt time is derived from calculations that factor in real-world issues).
junbiki	順引き	じゅんびき	Pick in Order of Use (as in material delivery systems that gather and deliver parts in consideration of the sequence in which they are to be used according to Standardized Work)
junjidangae	順次段替え	じゅんじだん がえ	Rolling Changeover, Rolling Set-up Change (changeovers of equipment along a production line performed in succession according to the sequence of the use of the equipment in production so as to minimize production line downtime)
kadouritsu	稼働率	かどうりつ	Operation Rate, Utilization Rate (the time a machine is capable of working products divided by the time it actually works the products)
kaizen	改善	かいぜん	Kaizen, Continuous Improvement (persistence in eliminating Muda (unprofitable actions) and thus achieving the goals of Just in Time, Quality in Station (Jidoka), and Leveled production (Heijunka))



Roma-ji	漢字	ひらがな	English
kanban	かんばん	かんばん	Kanban, Kanban Card, Kanban System (a system often involving cards that cycle (travel) with materials and their containers and contain information such as the Kanban Cycle that will facilitate just in time delivery, often misunderstood to mean a storage or staging area for materials, also spelled “kamban” in certain conventions of Romanization of Japanese pronunciation)
kanbansaikuru	ガンバンサイクル	かんばんさいくる	Kanban Cycle (the delivery cycle for a given unit of material within a kanban system expressed by 3 numbers: days per cycle, deliveries per cycle, and number of deliveries by which a kanban card will return with its material)
Kouteibetsu nouryokuhyou	工程別能力表	こうていべつ のうりよくひ ょう	Process Capacity Sheet (a kaizen tool used to calculate if a process or machine has sufficient capacity to meet demand as expressed by takt time)
kuukinagashi	空気流し	くうきながし	Running Air (the capability to perform rolling changeovers in which the changeover of each separate machine is completed within takt time so that the production line fails to produce a product for only one beat of the takt time)
medemirukanri	目で見える管理	めでみるかん り	Visual Control (for example: the posting of Standardized Work in front of the operator instead of keeping it in a binder in a desk, shadow boards, taping footprint of items to designate where they are supposed to be placed, etc.)
menashinoshoujinka	目なしの少人化	めなしのしょう じんか	Designing for Minimal Staffing, Manning Flexibility (see Shoujinka, “menashino” refers to the kanji character for “shou” in which the symbol for “eye” is not used, thus changing “shoujinka” from its usual meaning of “reducing personnel” to “few” or “minimum personnel”)
mieruka	見える化	みえるか	Implementation of Visual Control
mizusumashi	水すまし	みずしまし	Fixed Course Pick-up, Water Spider, Water Strider (ongoing line-side material delivery and empty container and kanban pick-up, literally “whirligig,” although the allusion intended was to a water strider, the term “water spider” came from an attempt to translate into Chinese, in which the term for water strider is written with the characters for water and spider)



Roma-ji	漢字	ひらがな	English
monotojouhounonakarez u	物と情報の流れ 図	ものとしょう ほうのながれ ず	Material and Information Flow (a tool to identify the flows of material and information in an operation so as to find where the principles of kaizen are being violated, it has 3 versions: the Current State, the Target For Now State, and the Should Be State, a variation of the Material and Information Flow has come to be known as the "Value Stream Map")
muda	無駄	むだ	Muda, No-pay, Worthless, Pointless (activities that do not add value that the customer will pay for)
mura	ムラ	むら	Uneven, Lack of Uniformity (even if results conform to specifications, they may not be uniform or predictable, mura refers to a lack of control)
muri	無理	むり	Overburden (original Japanese word has further connotations such as "impossible," and others)
nagareka	流れ化	ながれか	Making (a process) Flow, Creating a Moving Line
nanatsunomuda	七つの無駄	ななつのむだ	The 7 Types of Muda (7 categories of worthless, or non-value-adding activities: Stocking, Overproduction, Waiting, Conveyance, Over-processing, Motion, Rework - Note that while in certain cases some of these activities may be unavoidable, they do not prod
nisugata	荷姿	にすがた	Packing and Presentation (literally "the state of the cargo," considering such aspects as how the packed item will be removed and used, elimination of trash, etc.)
noritsugiunpan	乗り継ぎ運搬	のりつぎうん ばん	Truck Transfer System (a "pick up and drop off" system that allows loading and unloading to take place without forcing the truck or tugger to wait)
nouritsu	能率	のうりつ	Productivity (normally translated as "efficiency," but in the context of kaizen the emphasis is on production of goods that the customer wants and not efficiency for the sake of an isolated process)
ooteddo	OTED	おおてっど	One Touch Exchange of Dies (frequently used to describe changeovers that do not require adjustments whether they involve dies or not)
pokayoke	ポカ避け	ぽかあよけ	Failsafe Devices, Poka Yoke ("Poh-kah Yo-kay" literally "distraction-proof")
saikurutaimu	サイクルタイム	さいくるたい む	Process Cycle Time (the time required to complete one cycle of manual or automatic work or a combination thereof)
sanmu	3ム	さんむ	The 3 Mu's (Muda, Muri, Mura)



Roma-ji	漢字	ひらがな	English
seiketsu	清潔	せいけつ	Holding a high, “able to eat off the floor” standard for work site cleanliness and organization, the fourth S of 5S, original meaning in Japanese is “sanitize”
seiri	整理	せいり	Deciding what is needed and what is not needed and removing what is not needed from the site of the job, The first S of 5S, original meaning in Japanese is “disposition”
seisanriban	生産管理版	せいさんかん りばん	Performance Analysis Board (so named because it shows planned units vs. actual completed units on a real time basis in a visible place so that all on the line can remain aware of whether the line is meeting takt time or not)
seisou	清掃	せいそう	Paying attention continuously to whether things on the work site are in their designated locations defined by 1 and 2 S activities, the third S of 5S, original meaning in Japanese is “clean up”
seiton	整頓	せいとん	Locating what is needed so that it will be available to the job immediately, The second S of 5S, original meaning in Japanese is “tidy” or “set to rights”
shigoto	仕事	しごと	True Work, Value-adding Work (activities that add value as opposed to activities that may be considered work but do not modify materials)
shijibira, seisanshijibira	指示ピラ、生産 指示ピラ	しじびら、せ いさんしじび ら	Specifications Manifest (on a mixed line where there is no guarantee that the following unit will have the same specifications as the one preceding it, the spec manifest is attached to the unit in a visible place so as to inform each worker what the unit requires)
shinnonouritsu	真の能率	しんののうり つ	True Efficiency (production of ordered goods only with minimum work and investment, as opposed to arbitrarily producing at full capacity)
shitsuke	躰	しつけ	Maintaining strict discipline in the work site so that all rules and procedures defined by the first, second, third and fourth S’s are followed until they are improved, the fifth S of 5S, original meaning in Japanese is “discipline”
shoujinka	省人化	しょうじんか	Personnel (or Staff) Reduction (literally “the move to savings through reduction of personnel”)
shoujinka (menashinshoujinka)	少人化、目無し の少ない人化	しょうじんか (めなしのそ うじんか)	Designing for Minimal Staffing, Manning Flexibility (designing a process so that it can be run by only one person, thus allowing increase and decrease of personnel according to the demand)



Roma-ji	漢字	ひらがな	English
shouryokuka	省力化	しょうりょくか	Labor Saving (reducing the need for staff)
sotodandori	外段取り	そとだんどり	External Setup, Off-line Setup (preparation for set up changes that is performed without stopping the production process)
sumeddo	SMED	すめっど	Single Minute Exchange of Dies (frequently used to describe very fast changeovers whether dies are involved or not)
tadaimochi	多台持ち	たたいもち	Tending Many Machines (to run more than one machine - refers to responsibilities assigned to a single person)
takaiumpan	多回運搬	たかいうんぱん	Frequent Runs (taking many trips instead of conveying an excess of material each time)
takouteimochi	多行程持ち	たこうていもち	Tending Many Processes (to run more than one process - refers to responsibilities assigned to a single person)
takutotaimu	タクトタイム	たくとたいむ	Takt Time (net working time divided by the number of units ordered for that time - original meaning in German is the “beat” of a musical composition - to produce the units ordered, the cycle time of all jobs on the line must be under takt time)
tanoukou	多能工	たのうこう	Multi-skilled, Cross-trained (workers who are not limited to running only one type of equipment)
tanoukouka	多能工化	たのうこうか	Fostering of training to produce multi-skilled workers
teiichiteishihoushiki	定位置停止方式	ていいちていしほうしぎ	Fixed Position Stop System (even if the andon cord is pulled to stop the line, the line will not stop until the moving work reaches a fixed point)
teiinsei	定員制	ていいんせい	Fixed Staffing, Fixed Manning (designing a line so that there must be a certain number of operators to begin operation)
teiki	定期	ていりょう	Scheduled Time (one of the 4 possible conditions of delivery)
teiryou	定量	ていりょう	Scheduled Quantity (one of the 4 possible conditions of delivery)
Toumennerau sugata	当面狙う姿	とうめんねらうすがた	The Target State for Now (an improvement in the current state, but still short of the “Should Be” State)
Toyotaseisan houshiki	トヨタ生産方式	とよたせいさんほうしぎ	The Toyota Production System (the system developed by the Toyota Motor group of companies to minimize investment and production volume, and maximize productivity and profit)



<b>Roma-ji</b>	<b>漢字</b>	<b>ひらがな</b>	<b>English</b>
tsurubehoushiki	つるべ方式	つるべほうし ぎ	Pickup and Supply System (a shuttle delivery system that picks up empty containers and delivers materials or parts in the same run - original Japanese word refers to a double bucket and pulley arrangement for drawing water from a well)
uchidandori	内段取り	うちだんどり	Internal Set-up, On-line Setup (activities in a setup change that require the production line to stop - If these take less time than takt time then “running air” becomes possible)
Yoidon houshiki	ヨーイドン方式	よーいどんほ うしき	Simultaneous-start Time Study, Ready Set Go Time Study (it is desirable to time any process while it is being performed together with the rest of the processes of the same line so before using the stopwatch the timer will call out “yooi don!” which means “ready go!” so that all operators can begin their operations at the same time and the times will be more accurate)