

1. Organization Profile

JATCO (THAILAND) CO. LTD is an affiliated company of JATCO Ltd. which is located in Fuji city, Shizuoka prefecture, Japan. JATCO is expanding its development and production facilities around the world in locations close to customers. Products incorporating customer needs are planned, designed, and manufactured promptly. There are as many as 12 facilities in 8 countries outside of Japan. Production engineering in each production facility is designed with a global scope, and the same level of high-quality products is produced at all plants globally. Global facilities development closely cooperates and transforms market information into product development.

JATCO is a manufacturer specializing in automatic transmissions for automobiles. We have released a wide range of products, including not only step automatic transmissions (ATs), but also environmentally friendly continuously variable transmissions (CVTs) and transmissions for hybrid vehicles.

JATCO supplies automatic transmissions, the brains of a car to customers around the world with the best quality, safety, and value-added product to customers and society for over 50 years.

JATCO (THAILAND) CO. LTD is located in Amata City Chonburi Industrial Estate, Chonburi City, Thailand Country. Our plant started operation since the Year 2013. Our plant produces continuously variable transmissions for mini and small FWD vehicle (CVT7) for over 10 years by providing the best quality, safety, and customer and employee satisfaction product. Starting from FY 2020, we started producing motors and speed reducers for hybrid vehicles. The plant area is a total of 160,000 sq.m² with total machines and devices of 727 units with an investment capital of 4,500 MTHB and our production full capacity is 434,000 units per year for CVT7 products with 2 Groups 2 Shift working pattern. Our production line starts from the Aluminum Casting process, Aluminum Machining Process, Heat treatment process for steel, Machining process for steel, Assembly process, Testing, Logistics, and finally we ship the products to the customer.

The current local employee number is 645 persons and 18 Japanese Expats. We have 5 departments categorized into 17 sections with 3 executive members (Japanese 1 member and Thais 2 members)

JATCO (THAILAND) CO. LTD is certified by various International Standards which are IATF16494:2016, ISO14001:2015, and ISO45001:2018.

2. Milestone on the Journey of Manufacturing Excellence

JATCO (THAILAND) CO. LTD is in line with JATCO group's Production System, aiming for the highest monozukuri excellence in the world and providing JATCO's valuable products to global customers. JATCO's mission is to deliver timely and reliable supplier of high-quality products from all manufacturing bases around the world. To accomplish this mission, we have developed a unique production system known as the JATCO Excellent Production System "JEPS". Our efforts for improvement and innovation never end as we want to ensure that we remain a world-leading manufacturer.

JATCO's unique production system "JEPS", responds flexibly to changing market needs and achieves the highest level of monozukuri excellence in the world in all aspects of quality, time, and cost. JEPS eliminates waste completely by synchronizing the operations in each process from the procurement of materials, machining, assembly, inspection, to shipment as if they were carried out on a single line. JEPS also promotes TPM as part of foundation enhancement activity and we understand the importance and put much effort to implement and accelerate TPM activities in our plant.

Our TPM's journey started by providing basic knowledge to all employees and continue with step-by-step implementation from FY2015. We kicked off the "PIKA PIKA" activity by involving all members who are working directly with the manufacturing process to do 5S in Gemba, and at the same time identify the production line malfunction source. Then we connect the findings to kaizen activity for eliminating dirt or any unwanted incident which we called as "F-Tag" activity and follow the issue closing ratio progress monthly. We keep on continuing and making improvements to the activity and educating more members about the understanding of Autonomous Maintenance by joining the MONODZUKURI Test since FY2014. Until now, we have certified 88 members in total.

In FY2017, we set the 1st "Model Line" in our plant. The main purpose of this activity is to let all members work as a cross-functional team with participation from each section to speed up the kaizen activity and improve OEE. By FY2019 all sections are implementing the "Model line" TPM activity towards maintaining machines, eliminating loss, improving employees' mindset and awareness, also boosting their motivation.

To ensure TPM sustainability, We works together as a team to change all member's mindsets, awareness, and work styles to realize the future of company production's direction and is always ready to explore and exploit new trends and enhance our MONODZUKURI.

3. Benefits Achieved

We promote TPM activity as a lean manufacturing philosophy that centers on achieving near-perfect production. The aims of TPM are high: no breakdowns, no short stops, no defects, and no accidents. We emphasize maximizing the lifespan and productivity of the machine by empowering all employees to take responsibility for their line machines. Here are the benefits of the activity.

1. Reduce 67% unplanned maintenance time

We implemented cleaning, inspecting, lubricating, and performing corrective work on machinery.

2. Safer working environment

Our model is made up of a 5S foundation, ensuring all workspaces are sorted, ordered, clean, and always standardized. Since dirty work environments led to risk of injuries, we can reduce safety risks. As of now, our Injuries Frequency Ratio is zero.

3. Increased quality output

One of TPM's supporting activities is Quality Maintenance. As a result, we drastically improve quality and customer satisfaction with customer complaint rate is 0 ppm.

4. Proven impact

OEE is used as a KPI that represents line overall productivity and measures to improve machine reliability. Big improvements have been made and our OEE now is 93.5% (Assembly), 89.3% (Machining), and 81.0 (Casting) on average.

Our TPM's approach is strongly focused on empowering employees and promoting ownership of their machinery by allocating the jobs traditionally completed by maintenance members to production members. That way everyone is responsible for machinery and equipment upkeep. We also train operators to perform basic manufacturing maintenance duties and encourage a proactive attitude toward identification issues. This frees up maintenance staff to perform more value-adding tasks. Employee resistance was an initial concern for the company, but the positive results soon changed people's minds.

4. Key of our Manufacturing Excellence

In today's highly dynamic and rapidly changing environment, global competition among organizations has led to higher demands on manufacturing organizations. Our manufacturing plant has experienced an unprecedented degree of change in the last three years, involving drastic changes in management approaches, product and process technologies, customer expectations, and competitive behavior. These challenges are forcing us to foster high reliability, availability, and maintainability in manufacturing systems. The recent competitive trends have been putting maintenance functions under the spotlight as never before. The ever-increasing demands on manufacturing systems have contributed to the complete overhaul of maintenance practices in manufacturing enterprises. TPM initiative has emerged as a key competitive strategy for business organizations in the global marketplace to enhance the competitiveness of enterprises. The highlights are contributions of strategic TPM initiatives on manufacturing performance and demonstrate the significant potential of TPM in achieving manufacturing excellence.

Quality is one of the most crucial criteria in our plant's success and survival as there is nothing more than what an era of globalization and intensity demands. The successful manufacturing plant recognizes that consumer reliability may have a severe influence on their bottom lines. As a result, several competitive companies are constantly raising their quality requirements, and improving quality is the best way to recover. The majority of automobile part manufacturing plants are looking for high-quality requirements in their manufacturing techniques and are executing a quality system. TPM is the key success of our overall equipment effectiveness (OEE) for various workstations such as turning, grinding, cutting, heat treatment, and die casting for the fiscal year 2020–2022 has been evaluated. The TPM approach was adopted in our plant. As a result, there has been an improvement in our overall performance in our manufacturing activities.

5. Achievement Records

Category	Index	Unit	Result FY15 (Kick off)	Result FY22	Status FY23 (Apr-Dec)	Target FY23
S	Number of work-related accidents requiring days off work	Cases/ year	0	0	0	0
S	Number of work-related accidents not requiring days off work	Cases/ year	0	0	0	0
P	Productivity for main product (JPMH)	Parts/Operator hours	Casting: 5.89 machining: 27.89 assembly: 0.50	Casting: 12.98 machining: 39.12 assembly: 0.61	Casting: 12.58 machining: 38.76 assembly: 0.62	Casting: 13.01 machining: 37.50 assembly: 0.70
P	OEE	%	Casting: 73.8 machining: 81.8 assembly: 90.1	Casting: 84.7 machining: 86.2 assembly: 95.7	Casting: 82.7 machining: 88.1 assembly: 94.2	Casting: 85.0 machining: 91.0 assembly: 94.0
	Availability rate	%	Casting: 88.5 machining: 85.2 assembly: 91.1	Casting: 95.9 machining: 90.2 assembly: 96.0	Casting: 94.1 machining: 91.6 assembly: 94.3	Casting: 91.6 machining: 91.0 assembly: 94.2
	Performance Rate	%	Casting: 92.2 machining: 96.5 assembly: 99.6	Casting: 97.6 machining: 97.2 assembly: 99.9	Casting: 96.7 machining: 97.3 assembly: 99.99	Casting: 100 machining: 100 assembly: 100
	Quality Products Rate	%	Casting: 90.5 machining: 99.5 assembly: 99.2	Casting: 90.4 machining: 98.3 assembly: 99.9	Casting: 90.87 machining: 98.82 assembly: 99.90	Casting: 92.8 machining: 99.98 assembly: 99.9
P	Number of breakdowns	Breakdowns/ year	Casting: 83 machining: 1,046 assembly: 559 (total: 1,688)	Casting: 26 machining: 672 assembly: 171 (total: 869)	Casting: 52 machining: 644 assembly: 159 (total: 855)	Casting: 19 machining: 510 assembly: 140 (total: 669)
P	MTBF	Hour	Casting: 947 machining: 871 assembly: 873 (total: 875)	Casting: 869 machining: 509 assembly: 1345 (total: 684)	Casting: 453 machining: 603 assembly: 1,683 (total: 794)	Casting: 1,042 machining: 958 assembly: 1,215 (total: 845)
P	MTTR	Hour	Casting: 1.48 machining: 0.87 assembly: 0.30 (total: 0.71)	Casting: 0.87 machining: 1.04 assembly: 0.47 (total: 0.92)	Casting: 0.70 machining: 1.10 assembly: 0.30 (total: 0.90)	Casting: 0.50 machining: 0.84 assembly: 0.23 (total: 0.70)

Cate gory	Index	Unit	Result FY15 (Kick off)	Result FY22	Status FY23 (Apr-Dec)	Target FY23
Q	Number of customer complaints	Number/year	13	0	0	0
Q	In-line defect rate: scrap	%	Casting: 0.18 Machining: 0.14 Assembly: 0.25	Casting:0.16 Machining:0.05 Assembly: 0.24	Casting: 0.12 Machining: 0.02 Assembly: 0.21	Casting: 0.15 Machining: 0.03 Assembly: 0.05
Q	In-line defect rate: scrap and rework	%	Casting: 6.38 Assembly: 9.05	Casting: 1.41 Assembly:0.05	Casting: 1.07 Assembly: 0.05	Casting: 1.50 Assembly: 0.15
C	Cost index (Scrap cost)	Cost/Unit	Casting: 71.0 machining: 20.3 assembly: 45.9 (total: 137.2)	Casting:71.6 machining:14.2 assembly:8.4 (total:94.3)	Casting: 66.4 machining: 25.1 assembly: 6.1 (total: 98.6)	Casting: 62.1 machining: 13.9 assembly: 8.9 (total: 84.9)
D	Production Lead time (Gear raw to Assembly)	Days	2	1.7	1.7	1.7
D	Inventory day	Days	3	1.5	1.5	1.5
D	Delivery performance	%	100	100	100	100
S	Safety index	Accidents per 1,000,000 operator hours	0.00	0.00	0.00	0.00
M	Number of Employee Suggestions	Number/year	35 (close: 100%)	1494 (close: 89%)	918 (close: 96%)	(close: 95%)
M	Number of Kaizen Sheet (Teian)	Number/year	827	127	72	127
M	Number of Kaizen Item	Number/year	676	673	541	630
M	Number of QC Circle Item	Number/year	111	135	101	135
M	Number of Near Miss Memo	Number/year	2,602	675	1248	834