



Monodzukuri Test -Competence Research Implementation procedure

Goals:

As more companies expand globally, it has become increasingly challenging to ensure consistency when training human resources. Even when trying to evaluate each regional site's performance, it is difficult to determine common indicators of competencies due to differences in equipment and products. Moreover, besides performance indicators within the company, companies are also concerned with where they rank within their country, region, and industry.

The Monodzukuri Test –Competence Research provides materials in the English, Japanese, and Thai languages based on the Autonomous Maintenance certification in Japan. And it can be used to provide overseas workers with the same knowledge as workers in mother plant as well as to compare and evaluate the competencies in manufacturing industry, including in comparison to different sites in the company or other companies in the same industry.

With the objective evaluation of JIPM, a third-party, and comparison data accumulated on a global basis, this evaluation method has come to be widely accepted globally and is easy to implement.

Targets:

The principle targets are supervisor workshops and maintenance operators at the manufacturing sites of companies that are actively promoting TPM.

*There is no restriction, please use according to the purpose of the company

1. Implementation Method

1) Implementation period: Any time (Application deadlines are at the end of each month.)

■ Example of implementation schedule

Schedule example		Participating company	JIPM
Application	Month of application	Send the application.	➔ Receive and confirm.
	(End of each month)		(Acceptance deadline for the month) *1
Receive materials	Around the 15th of the month after payment of implementation fee	Receive test materials.	← Ship test materials.
Implement testing	After the 20th of the month of payment	Implement testing. (Set to the desired timing after reception.)	
		Send implementation data.	➔ Receive implementation data.
	(End of each month)		(Reception deadline for the month) *2
Evaluate	Following month of the sending implementation data		Evaluate implementation data.
Receive results	End of the following month of the sending implementation data	Receive results data.	← Send results data.

*1: Applications are accepted on a monthly basis. Even if applications are sent at the beginning of the month, no materials will be sent until the following month.

*2: Data is handled on a monthly basis. Even if implementation data is sent at the beginning of the month,

evaluation results will not be sent until the following month.

2) Application method: Send the application form to JIPM via email or post.

Email M-TEST@jipm.or.jp

3) Implementation fee:

JIPM-Subscribers Member	Basic fee (for up to 20 people) 300 000 JPY	Fee for each additional person 10 000 JPY/Person
General	Basic fee (for up to 20 people) 450 000 JPY	Fee for each additional person 15 000 JPY/Person

(tax included)

* The fee for mailing test materials will be charged separately at cost.

4) Test implementation:

1. Application: Send the application form to JIPM.

* JIPM will communicate with the company during the period from the time of application through to reporting of results.

2. Venue: The company taking the test must prepare the venue.

3. Number of people: The standard number is 20 people or more.

⇒ Up to 20 people can take the test for the basic fee.

4. Test materials: The main test components (such as test questions and answer sheets) can be sent to the operation site by post.

5. Supervision / operation: The participating company must perform various preparations, supervisory tasks, and operational tasks.

6. Data collection: Send the completed answer sheets as scanned PDF files (200 – 300 dpi) to JIPM.

* If the company cannot scan documents, the answer sheets must be sent by post.

7. Reporting of results: Results will be sent by email after generating report data from the evaluation results.

5) Test questions: The scope includes the Monodzukuri Test Learning Textbook material.

* Currently, the test is available in three languages: English, Japanese, and Thai.

* The Monodzukuri Test Learning Textbook material is also available in English, Japanese, and Thai.

Number of questions: 75 two-choice questions and 40 multiple-choice questions

Test time limit: 90 minutes

6) Report data: The following data (1. to 4.)

* Comparative statistical data, such as the company average and industry average, will also be provided.

* The following pages contain a report data sample.

-1. Examinee results (accuracy rate (%)) list

-2. Examinee results (accuracy rate (%)) distribution map

-3. Individual results

⇒ Rankings based on the accuracy rate will also be listed.

S Rank: 95% or higher

A Rank: 80% or higher and below 95%

B Rank: 65% or higher and below 80%

C Rank: 50% or higher and below 65%

D Rank: Below 50%

-4. Examinee answer data

[Report data sample]

-1. Examinee results (accuracy rate (%)) list

Monodzukuri Test - Competence Research [Result Data List]																	JIPM Co.Ltd.	
Registration number	Name		Department	Position	True-False Questions _ Accuracy Rate (%)						Multiple Questions _ Accuracy Rate (%)						Total	
					Subject1	Subject2	Subject3	Subject4	Subject5	Subtotal	Subject1	Subject2	Subject3	Subject4	Subject5	Subtotal		
1234001	Sample	Sample	P	M	81.1	56.3	50.0	76.5	87.5	68.0	100.0	100.0	50.0	50.0	75.0	75.0	70.4	
1234002	Sample	Sample	P	M	86.7	68.8	75.0	88.2	81.3	76.0	100.0	87.5	75.0	37.5	62.5	72.5	74.8	
1234003	Sample	Sample	P	M	66.7	68.8	75.0	94.1	87.5	78.7	62.5	100.0	25.0	50.0	75.0	62.5	73.0	
1234004	Sample	Sample	P	M	77.8	43.8	62.5	82.4	75.0	69.3	75.0	62.5	50.0	50.0	75.0	62.5	67.0	
1234005	Sample	Sample	P	M	72.2	87.5	100.0	94.1	87.5	86.7	100.0	100.0	75.0	50.0	62.5	77.5	83.5	
1234006	Sample	Sample	P	M	72.2	75.0	62.5	88.2	62.5	73.3	75.0	75.0	62.5	37.5	100.0	70.0	72.2	
1234007	Sample	Sample	P	M	66.7	68.8	87.5	82.4	68.8	73.3	62.5	87.5	75.0	25.0	50.0	60.0	68.7	
1234008	Sample	Sample	P	M	88.9	75.0	87.5	88.2	90.0	77.3	100.0	62.5	50.0	62.5	87.5	72.5	75.7	
1234009	Sample	Sample	P	M	72.2	81.3	75.0	88.2	87.5	81.3	100.0	100.0	0.0	75.0	25.0	60.0	73.9	
1234010	Sample	Sample	P	C	88.9	75.0	87.5	82.4	81.3	82.7	100.0	100.0	100.0	100.0	100.0	100.0	88.7	
1234031	Sample	Sample	P	C	72.2	75.0	87.5	70.6	62.5	72.0	100.0	100.0	100.0	75.0	100.0	95.0	80.0	
1234032	Sample	Sample	P	C	83.3	81.3	87.5	82.4	68.8	80.0	100.0	100.0	75.0	75.0	87.5	87.5	82.6	
1234033	Sample	Sample	M	C	88.9	75.0	87.5	82.4	87.5	84.0	100.0	100.0	100.0	100.0	100.0	100.0	89.6	
1234034	Sample	Sample	M	C	88.9	81.3	87.5	82.4	87.5	85.3	100.0	87.5	100.0	100.0	100.0	97.5	89.6	
1234035	Sample	Sample	M	C	77.8	75.0	75.0	64.7	93.8	77.3	75.0	62.5	37.5	87.5	75.0	67.5	73.9	
1234036	Sample	Sample	M	C	38.9	50.0	62.5	47.1	50.0	46.0	12.5	12.5	0.0	0.0	12.5	7.5	33.9	
1234037	Sample	Sample	M	C	83.3	81.3	87.5	82.4	81.3	82.7	100.0	100.0	100.0	100.0	100.0	100.0	88.7	
1234038	Sample	Sample	M	C	88.9	81.3	87.5	82.4	87.5	85.3	100.0	100.0	87.5	100.0	100.0	97.5	89.6	
1234039	Sample	Sample	M	S	83.3	75.0	75.0	70.6	68.8	74.7	100.0	75.0	100.0	100.0	87.5	92.5	80.9	
1234040	Sample	Sample	M	S	61.1	50.0	50.0	64.7	81.3	62.7	100.0	37.5	50.0	37.5	75.0	60.0	61.7	
Average of Your Company					78.8	72.0	80.9	81.9	80.0	78.5	92.0	85.7	72.7	71.6	80.2	80.5	79.2	
Average of Monodzukuri Test					77.7	72.2	81.7	83.9	78.9	78.6	90.3	87.0	65.7	68.3	80.2	78.3	78.5	
Average of same industry					79.4	72.8	72.5	83.2	70.4	76.2	81.6	62.8	62.6	47.6	76.1	66.2	72.7	

[Notes] File format = Excel

-This table shows individual accuracy rate (%) for each two-choice and multiple-choice question per topic, the company's average, and the Monodzukuri Test average. And you can also compare average scores with other companies in the same industry or in similar sectors.

-If implementing the test at multiple sites, aggregate data for each site can also be provided.

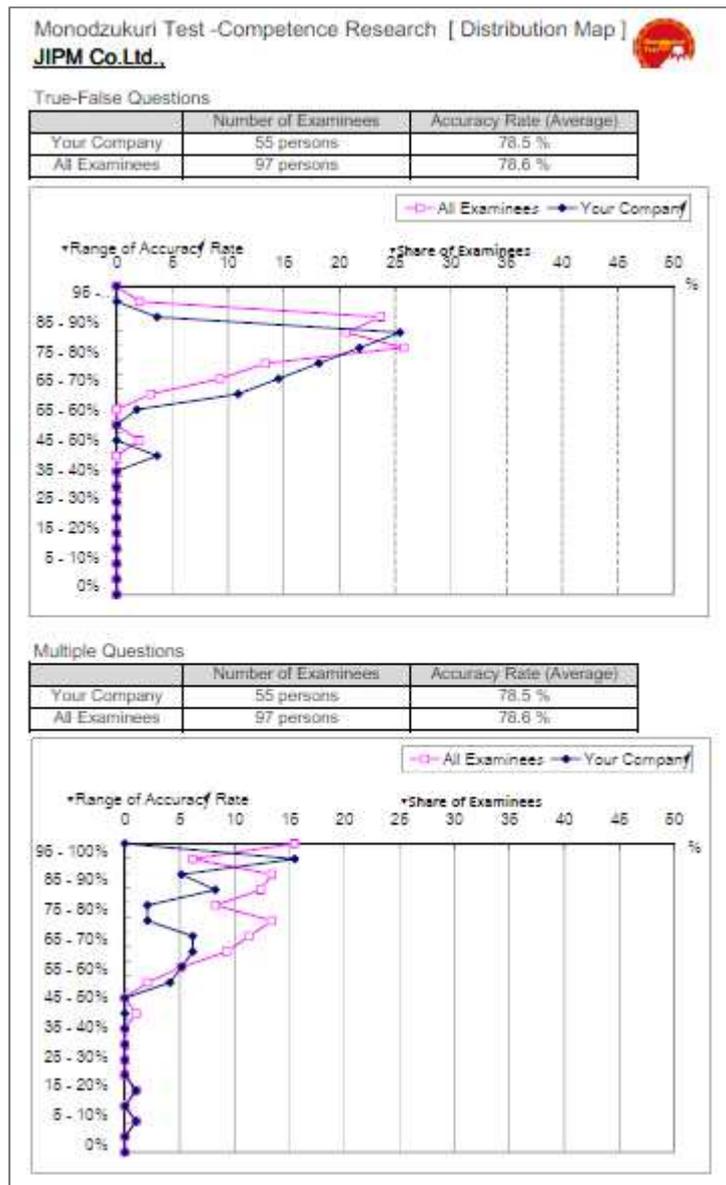
⇒ Check the strengths and weaknesses between sites numerically!

-Analyses per department or job title can also be provided.

⇒ Excel forms for entering and analyzing optional items can also be provided.

[Report data sample]

-2. Examinee results (accuracy rate (%)) distribution map



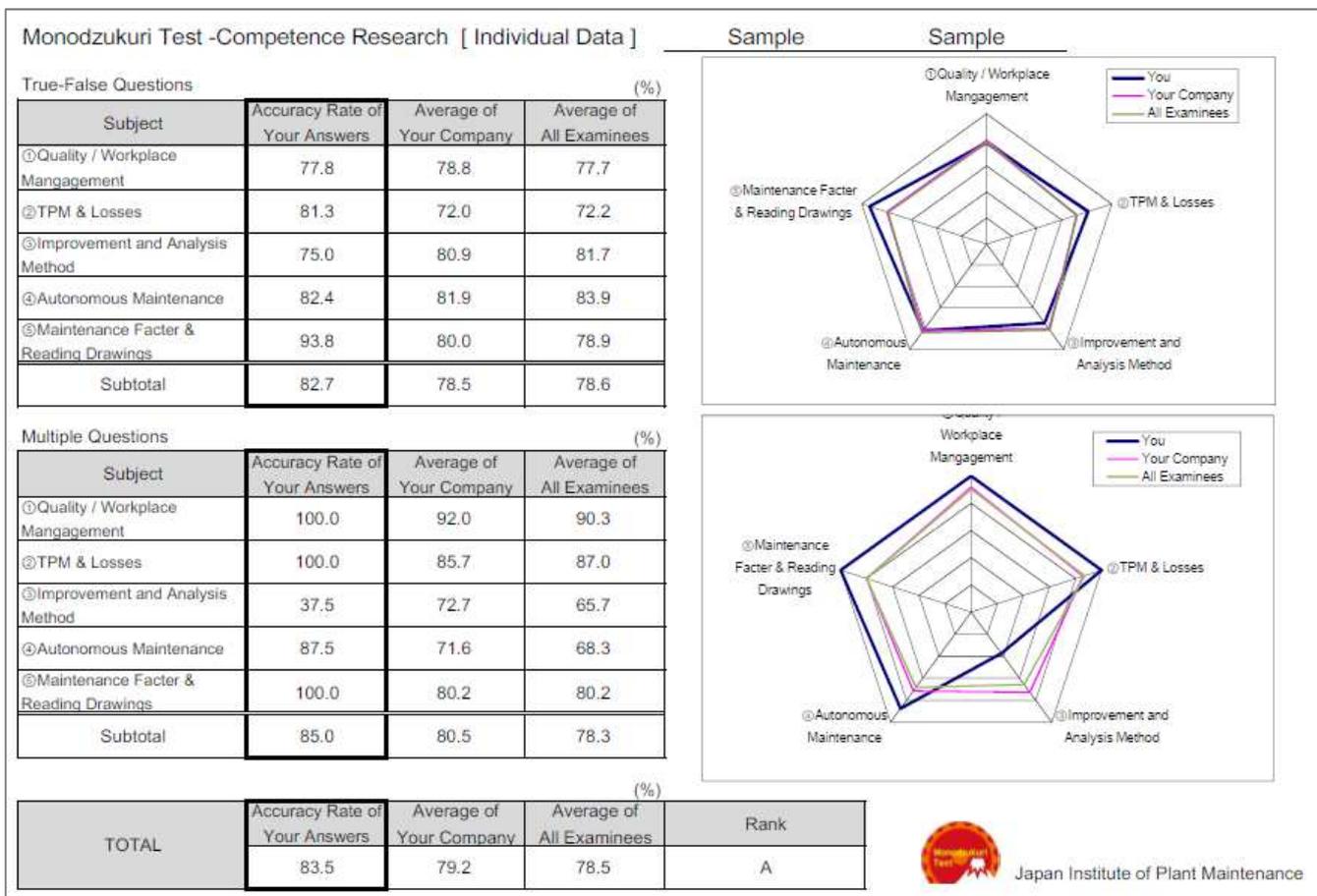
[Notes] Data format = PDF

-These results help when deciding the course of action for training by enabling one to understand the range of accuracy rate among all examinees.

-Graph comparison targets include data from multiple sites within the company.

[Report data sample]

-3. Individual results



[Notes] Data format = PDF

-Individual employees' strengths and weaknesses can be visualized.

⇒ Decide which topics require stronger measures.

-Providing feedback to examinees enables them to obtain an objective understanding of their present conditions.

⇒ The results can be used to set targets and increase motivation.

-By taking the test on a continuous basis, individual improvement can be measured.

[Report data sample]

-4. Examinee answer data

Monodzukuri Test -Competence Research [Answer Data List]															
Registration No.\Question No.	True-False Question														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1234001	✓	×	✓	✓	✓	✓	×	✓	×	✓	×	✓	×	✓	×
1234002	✓	✓	✓	✓	✓	✓	×	✓	×	✓	×	×	✓	✓	×
1234003	✓	✓	×	✓	✓	✓	×	✓	×	×	×	✓	✓	✓	×
1234004	✓	×	✓	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓	×
1234005	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	×
1234006	✓	✓	✓	✓	✓	✓	×	✓	×	✓	×	✓	✓	✓	×
1234007	✓	✓	×	✓	✓	×	×	✓	×	×	✓	×	×	✓	×
1234008	✓	✓	✓	✓	✓	✓	×	×	×	✓	✓	✓	✓	✓	✓
1234009	✓	✓	×	✓	✓	✓	×	✓	×	×	×	✓	✓	✓	✓
1234010	✓	✓	✓	×	✓	×	×	✓	×	✓	×	×	✓	✓	×
1234011	✓	×	✓	✓	✓	✓	×	✓	×	✓	✓	✓	✓	✓	×
1234012	✓	✓	✓	✓	✓	×	×	✓	×	✓	✓	✓	✓	✓	×

[Notes]

-By checking which questions were answered correctly, knowledge of specific items can be evaluated.

-By checking which problems had the lowest scores overall, the results can be reflected in post-test training.

2. About test subjects

1) Test Subjects

The test subject of Monodzukuri Test -Competence Research corresponds to Monodzukuri Test Learning Textbook. For details, refer to the table below.

Test Subject		テキスト構成
Subject 1	Quality / Workplace management	Chapter 1 Basics of Production
Subject 2	TPM & Losses	Chapter 2 Improving Efficiency and Capturing Losses
Subject 3	Improvement & Analysis method	Chapter 3 Improvement and Analysis Methods
Subject 4	Autonomous Maintenance	Chapter 4 Routine Maintenance of Equipment (Autonomous Maintenance in General)
Subject 5	Maintenance factor & Reading drawings	Chapter 5 Basics of Routine Maintenance

2) Test questions

Monodzukuri Test -Competence Research is composed of two-choice questions and multiple-choice questions (sentence, choosing one suitable for the blank space in the chart from choices).

In the two-choice question, 75 questions are asked through all the exam subjects. For multi-choice questions, exercises are set according to one item for each subject. Since there are 8 answer columns in a exercise, as a multi-choice question, we will be asked 40 questions in total for 5 subjects.

The exercises of multiple-choice question are set as an issue according to the item of the textbook, for example "Quality" from Subject 1 (Quality / Workplace management), "Losses" from Chapter 2 (TPM and Loss) .

3. What the Monodzukuri Test –Competence Research Can Accomplish

The Monodzukuri Test offers study textbooks (sold separately : Monodzukuri Test Learning Textbook) designed based on textbooks that have achieved outstanding results in online education programs for the Autonomous Maintenance certification program in Japan. These textbooks can be used to study for the test, providing examinees with a wide range of knowledge needed for production site operations.

The test, which covers the scope of topics explained in the study textbook, can be used to evaluate the competencies of each site and individual employee in terms of various topics, as well as for detailed analysis using data received at the time of application such as occupation and job title. Reference figures taken from JIPM's data (such as average scores of other global companies in the same industry) can also be provided, facilitating detailed comparisons among sites in the same company or with average scores of other companies.

Furthermore, test results can be used as employee evaluation criteria as well as for training programs and as output indicators.

1) Application examples

1. Comparing statistics among sites within the same company, or different companies in the same industry.
 - Evaluating and comparing competencies through use of the same study materials and test materials regardless of country or region
 - Comparing average scores with other companies in the same industry, or in categories such as machining or installation
 - ⇒ The strengths and weaknesses of companies and/or regional sites can be observed objectively.

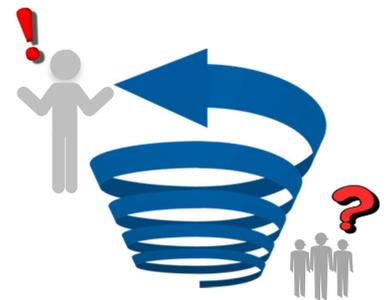


2. Virtuous circle of human resource training

- 1) Implement the test without any studying in advance to grasp the present situation.
↓
- 2) Identify strengths and weaknesses, and raise the bar through training.
↓
- 3) Repeat the training and tests until reaching the target level.

⇒ Expand and alternate the scope of examinees to improve overall performance throughout the entire production site!

* Comparison data (such as industry averages) can be checked to facilitate target setting.



3. Output indicators/analyses

- Use as indicators for human resource training
 - ⇒ Examinees who ranked B or above on the Monodzukuri Test can also be set as output indicators.
- Analyses that link other factors
 - ⇒ Implementation result score rate data is provided as Excel files. By specifying details received at the time of application such as the department examinees belong to, their job titles, or other unique correlating factors (e.g., age, years of experience, etc.), customized analyses can be performed.

2) Advantages

1. Training of in-house instructors

Taking the Monodzukuri Test clarifies individuals' strengths and weaknesses in terms of each topic. When training other employees to raise performance levels in the company, it may be difficult to decide who to assign as the instructor.

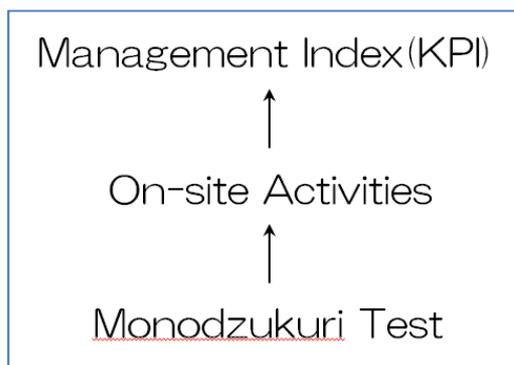
In a company, an employee that shows outstanding results in a given topic is assigned to the role of instructor for that field. To train other employees, the trainer must have a strong understanding of the subject. Therefore, he or she must study even more and ensure that he or she has the necessary knowledge. Of course, consideration of the individual's amount of experience is sure to increase dependability.



Sometimes, surprising people may possess the necessary traits to serve as instructors, which leads not only to personnel training but also to the discovery of talented personnel.

2. Tie-in to the site's output indicators and KPIs

If a facility has an irregularity, it may go unnoticed if the staff members do not have sufficient knowledge to detect such irregularity. By studying with the Monodzukuri Test, staff members obtain the necessary knowledge, thus increasing the chances of noticing when something goes wrong or is not functioning properly.



By changing staff members' day-to-day awareness, the number of malfunctions and failures will decrease.

Meanwhile, on-site data such as MTTR and MTBF must be obtained, and once presented in terms of numerical values, these can be tied to indicators such as KPIs.

One way to attempt this is to start with a model facility. By gradually expanding to include more staff members and facilities, the entire site's performance can be improved.

3) Data for comparison

1. Autonomous Maintenance certification (Second Grade), in Japan

Average scores can be compared with those of the Autonomous Maintenance certification test, which is the foundation of the Monodzukuri Test and boasts of over 100,000 past examinees (Second Grade only), as well as average scores per topic.

2. Monodzukuri Test, in Thailand

Average scores for the two-choice and multiple-choice questions per topic can be compared with those of the Thai Monodzukuri Test, which has been carried out earlier with the same materials. There is also data by industry type, department, and job title.

3. Competence Research (for companies competing for the TPM Award)

Competence Research, which is conducted for companies competing for the TPM Award (overseas), includes the same questions as the Monodzukuri Test. Average scores can be compared for two-choice and multiple-choice questions per topic. Data can also be narrowed down to specific industries, departments, or job position.

3. Training for the Monodzukuri Test

A study textbook for the Monodzukuri Test is available separately (Monodzukuri Test Learning Textbook). There is an English, Japanese, and Thai version, so please use the version most suitable for your region.

The methods of study and training primarily involve self-study using this textbook and in-house training. There are also plans to prepare other tools (such as PowerPoint lecture materials) that can be customized for use in in-house training (exact date has not been determined).

Negotiations with collaborating overseas organizations are also underway to provide external training programs in advance as well as to organize training programs after results have been presented.

[Collaborating training support organizations]

➤ SMMT Industry Forum : U.K.

Website <https://www.industryforum.co.uk/>

➤ Technology Promotion Association (Thailand-Japan) : Thailand

Website <http://www.tpa.or.th/>

