

SURVEY REPORT

THE INSTITUTIONALIZATION AND DISSEMINATION OF SKILLS TESTS IN THAILAND

March, 2022
SESPP Secretariat

TABLE OF CONTENTS

1. Survey outline.....	3
(1) Purpose of the survey	3
(2) Target occupations of the survey: Sequence Control	3
(3) Survey method	3
2. Background of the establishment of National skills test of Sequence control (PLC).....	3
3. Japan's cooperation for the implementation of National skills test	3
(1) The roles of JICA cooperation of dispatching experts	4
(2) The roles of Skill Evaluation System Promotion Program (SESPP)	5
4. The implementation and the impacts of the cooperation between SESPP and JICA experts	5
5. Current status and issues.....	6
(1) Implementation system	6
(2) Occupations and levels of skills tests	6
(3) Implementation status and current issues	6
6. Proposals for future activities and solutions to current issues	8
(1) Sequence control (PLC) occupation	8
(2) Machining related occupations such as Turning.....	9
7. Attachments.....	11
(1) Turning level 1 practical test – assignment drawing	11
(2) Turning level 2 practical test – assignment drawing	12

1. Survey outline

(1) Purpose of the survey

Based on the support and cooperation of Skill Evaluation System Promotion Program (SESPP), by analyzing the factors that led to the adoption and implementation of the Japanese-style skills test into the national test of beneficiary country as well as the implementation results, the survey clarifies the current issues and makes proposal for solution. At the same time, it will contribute to the effective implementation of SESPP in the future.

(2) Target occupations of the survey: Sequence Control

(3) Survey method

We interview former JICA experts, do research on existing materials and official documents, collect necessary information, and compile a report.

The materials used are as follows.

- ① Interview survey with former JICA experts (conducted in January 2022)
- ② Interview survey with Mr. Teerasak(Counselor, Labor of the Royal Thai Embassy to Japan (conducted in October 2020)
- ③ Thai National Skills test Implementation Status (2017-2020) (Source: DSD)
- ④ Overview of Skills Assessment System by country (Thailand, dated November 26, 2018)
- ⑤ J-Skills News Vol.1, FY2020

2. Background of the establishment of National skills test of Sequence control (PLC)

In 2017, as a national policy, Thailand promoted human resources development, automation, and robotization, which are key factors in improving industrial productivity. On the other hand, the automobile industry has an urgent need to develop skills with an emphasis laid on training technicians who are responsible for production line automation.

As an indispensable technology for production line automation, Sequence control (PLC) is an occupation that matches national policy and the needs of industry and this supports the establishment of national skills test. The cooperation of JICA experts (from April 2017 to March 2018) and the support from SESPP took place under these circumstances.

National policy, needs of industry and the support from JICA and SESPP projects were the three factors that functioned in a timely manner. In 2018, the Sequence control (PLC) occupation was certified as a national skills test. Since 2019 when Sequence Control (PLC) Level 1 was first implemented as a national test, it has been continued until now.

3. Japan's cooperation for the implementation of National skills test

The cooperation of JICA experts and the support of the SESPP program has greatly contributed to the implementation of Sequence control (PLC) as a national skills test in Thailand.

(1) The roles of JICA cooperation of dispatching experts

From April 2017 to March 2018, by dispatching experts to the Thai Automotive Human Resource Development Academy (AHRDA), JICA provided support and cooperation to build a skill evaluation system that can be used by companies in Thailand, including Japanese companies, in the field of Sequence control.

As a cooperation targeting at automation of the automobile parts manufacturing line and electrical product manufacturing field, especially, the implementation of Japanese-style Sequence control (PLC) skills tests (Grade 3 and 2), the objective of this support is to help Thailand to make the most of human resource development for skilled workers of Japanese companies.

The major activities and results are as follows.

- Creating exam questions in accordance with the actual situation in Thailand

Office of Skills Standard and Testing (OSST) under Department of Skill Development (DSD), Ministry of Labor established a PLC committee¹ at the end of 2016 and started to create a national skill standard for skills test of Sequence control (PLC) Level 1.

As PLC committee members, JICA experts collaborated and contributed to the creation of exam questions (theoretical exams and practical exams).

A certification trial (mocked test) of Sequence control Level 1 (beginner level) was conducted at AHRDA after a public hearing with companies, and the legislation procedure was completed in March 2018. After that, for Level 2 (intermediate level), the exam questions creation and the legislation procedure was completed. Sequence control Level 1 and Level 2 were certified as national skills tests in July 2018.

- Public relations activities

In cooperation with AHRDA, JICA experts (1) introduced the skills test to Japanese companies, advertised and encouraged employees to take the test, and (2) carried out public relations activities in cooperation with Japanese Chamber of Commerce and Industry in Thailand.

With the above mentioned activities, JICA expert helped to strengthen the relation with Japanese companies and industry, and when the skills test was commenced, they encouraged employees of companies to take the tests and strive to secure a large number of examinees.

- Training of assessors

Regarding Sequence control (PLC) Level 2, JICA expert collaborated with SESPP program to implement Skill Assessor Training (SAT) (giving guidance on the duties of assessors at the stage of preparation, implementation, and scoring evaluation as well as practice by role play) and Skill Evaluation Trial (SET). This activities provide the assessors with necessary skills and knowledge regarding the implementation and operation methods of Japanese-style skills test.

¹ The committee consists of nine members, including professors at a technical university, lecturers at vocational schools, engineers from private control equipment manufacturers such as MITSUBISHI and OMRON, and OSST staff (two people).

(2) The roles of Skill Evaluation System Promotion Program (SESPP)

The objectives of this program are to train assessors on Japanese-style skills test implementation and evaluation method so that they can implement and operate skills tests, and to support the establishment of a system that enables Thai side to independently implement and operate skills tests.

Following the dispatch of JICA experts and the commencement of activities aiming at establishing national skills tests of Sequence control, SESPP Secretariat collaborated with JICA experts to design support programs on Skill Assessor Training (SAT) and Skill Evaluation Trial (SET).

When the equipment and instrument necessary for the implementation of Japanese-style skills test sequence control (PLC) Level 2 got prepared, SESPP dispatched 2 experts to support the training of assessors.

During the implementation of this program, SESPP experts shared the method of Japanese-style skills test in details with Thai examinees. At the same time, Thai side was able to have good understanding about the training content, implementation method, necessary training materials and documents related to training of assessors, and learnt the know-how on designing assessor training courses.

4. The implementation jointly with JICA experts and its impacts

From April 2017 and March 2018, SESPP Secretariat closely collaborated with JICA experts to AHRDA in the implementation of this program to provide timely support to Thailand.

Aiming at the establishment of a national skills test of Sequence control (PLC) occupation, Thai side set up PLC committee to develop a national skill standard and based on the information provided by JICA experts, they showed a strong interest in the Japanese-style skills test method.

JICA expert carefully and persistently explained that the Japanese-style skills test of Sequence control (PLC) is conducted in the comprehensive skill evaluation method, and it is suitable for the national skills test of PLC required by the Thai side. As a result, the Thai side decided to proceed with the development of test questions (theoretical test and practical test) based on comprehensive skill evaluation method, and PLC committee worked on the development of test questions.

The remaining problem was the training of assessors. The training of assessors who bear responsibility for the implementation and operation of Sequence control skills tests covers following contents: (1) necessary abilities of assessors, (2) program content and training method, and (3) necessary teaching materials and documents, etc. Thanks to the cooperation of JICA experts, after having good understanding about Thailand's situation, SESPP Secretariat developed curricula for Skill Assessor Training (SAT) and Skill Evaluation Trial (SET), and dispatched experts to train local staff. At these training activities, JICA experts used many teaching materials such as Assessor pre-training textbook, Japanese Sequence control Grade 2 skills test

questions (theoretical test and practical test), Implementation guideline, Scoring guideline, Scoring standard, Mark allocation sheet, Work attitude scoring sheet and Check sheet, etc. Practicing the role play using these training material was very effective in helping the assessor in charge of implementation and operation of the skills test to understand the equipment and document necessary for the implementation and operation of the skills test.

By having JICA experts in the field, Japan side was able to grasp the current situation and detailed information required by Thai side so that they could develop the curriculum accordingly. The training activities (SAT, SET) based on this curriculum were very well received by the participants and related parties, and greatly contributed to the development of the assessor training courses on Thai side.

With the creation of exam questions, the development of necessary documents and teaching materials, and the training of assessors through the assessor training program, sufficient preparations had been made for the implementation of the national skills test of Sequence control.

5. Current status and issues

(1) Implementation system

Based on Article 22 of the Skill Development Promotion Act 2002, DSD is implementing National skill standard tests (National skills tests) at skill development centers, vocational training schools, and skill evaluation centers of companies and professional schools certified by DSD.

The assessors responsible for the implementation and operation of the national skills tests have to take assessors training course (3 days = 18 hours) held by Skill Development Promotion Committee under the jurisdiction of DSD.

(2) Occupations and levels of skills tests

The Skills Development Promotion Act (2002) establishes national skill standards for each occupation and stipulates the detailed content of three levels.

As of October 2018, national skill standards for 240 occupations have been approved. The grades range from beginner level 1 to advanced level 3. The levels and contents are as follows.

Level 1 (Beginner level): as a basic level, a person can do the work on his/her own.

Level 2 (Intermediate level): a person can understand and proceed with the work on his/her own.

Level 3 (advanced level): a person can work independently and teach juniors.

The national skills test is implemented based on these three levels.

(3) Implementation status and current issues

Table 1 shows the implementation status of national skills tests in the last three years (the top 6 occupations with the largest number of examinees, machining related occupations, and Sequence control).

Skills tests of 71 occupations have been conducted in the last three years.

As shown in the table below, the number of examinees decreased to 73,050 in 2018, 72,373 in

2019, and 35,634 in 2020 due to the influence of COVID-19.

Table 1. The current situation of National Skills test Implementation in Thailand
(Top 6 occupations with largest number of examinees, machining related occupations and Sequence control)

No.	Occupation	2018		2019		2020	
		Number of examinees	Number of successful examinees	Number of examinees	Number of successful examinees	Number of examinees	Number of successful examinees
1	Indoor electrician	36,068	28,855	28,730	21,205	13,985	9,429
2	Computer word processor	5,096	2,216	6,604	3,101	2,656	1,004
3	Home and small commercial air conditioning technician	3,775	3,275	3,329	2,746	4,291	3,473
4	Thai masseuse	3,657	3,421	4,081	3,733	839	745
5	Mechanic	2,989	2,703	3,517	3,172	1,377	1,160
6	Car maintenance technician	2,674	2,244	3,780	3,032	3,227	2,714
7	Turning	190	102	194	84	206	55
8	CNC Turning	174	171	142	124	185	181
9	Sequence control			76	60	8	5
Total number of 71 occupations		73,050	57,047	72,373	54,554	35,634	24,870

Source: DSD

Note: 1. Sequence control was first held as national test in 2019

2. In order to engage in working as indoor electricians, workers have to pass the national skills test of this occupation.

The reasons why the number of examinees for indoor electrical work is particularly high are as follows. With the revision of the Skill Development Promotion Law in 2014, a fixed-term license will be granted to workers who have passed the national skills test by evaluating their experience and personal profiles. Currently, in order to engage in working as indoor electricians, workers have to pass the national skills test of this occupation. Therefore, the examinees number of this national skills test is particularly large.

On the other hand, in the machining related occupations (Turning and CNC Turning), the number of examinees is smaller than the top 6 occupations with largest number of examinees. It seems necessary to devise ways to increase the number of examinees. For example, conducting questionnaire surveys and interview surveys with companies that are users so as to understand the contributors to the small number of examinees and take appropriate countermeasures.

As for the Sequence control occupation, since it has just started as a national skills test, there are few examinees, and it is necessary to strengthen public relations activities to industry and companies, and to grasp the needs of industry.

Currently, only Level 1 of Sequence control is implemented at state-run evaluation centers (8 facilities) and a private evaluation center (1 facility). There is a huge demand among Japanese companies for Level 2, but for the time being, it is not possible to implement because the assessors have not been trained.

In addition, Japanese companies, who are users, have pointed out the following issues regarding the practical test questions of Turning occupation that were supported by SESPP.

- ① The test time is too long, 4 hours and a half for Level 1 (equivalent to Japanese Grade 3) is, and 6 hours for Level 2 (equivalent to Japanese Grade 2). (*The standard time for the practical test of the Japanese skills test (Turning) is 2 hours for Grade 3 and 3 hours for Grade 2.)

② The practical test task is composed of work elements that diverge from the actual situation of the workplaces in companies. Thai side should take into consideration the work content in actual workplaces at companies in the same manner as the test task in Japan, in order to design the test tasks that are easier for the laborers at companies to evaluate and use.

③ The tolerance is not suitable for actual workplaces.

The tolerances of all dimensions are constant (± 0.1) regardless of the sizes, they are not designated as general tolerances corresponding to the length (size) of the dimensions. The principle of tolerance standards is to set the tolerance small for small dimensions and large for large dimensions. If the designated general tolerances do not fit into the principles of tolerance standards, the workers can understand the tolerances as they read the drawings, but it is difficult to process mechanically.

For reference, the test task diagrams of Turning level 1 and level 2 practical are attached (see attached document). It can be said that it is time to accurately grasp on the feedbacks and comments from the test sites and the companies that are the users, and to consider reviewing the practical test tasks.

The minimum wage was also pointed out as a contributor to the small number of examinees.

In order to increase incentives for skill improvement and skill acquisition, the revised Law on Labor Protection 2008 set minimum wages by occupation and skill level.

As a result, for those who have passed the national skills test, this law stipulates the minimum wage that is higher than the general minimum wage in accordance with the skill level for each occupation.

However, it is pointed out that this provision does not encourage employers to have their employees take the skills tests.

It is necessary to ensure that successful examinees can perform the expected job at workplaces by valuing the qualifications commensurate with the minimum wage and designing test tasks that reflect the actual work contents at workplaces.

6. Proposals for future activities and solutions to current issues

As mentioned above, many issues have been pointed out regarding national skills tests of several occupations such as Sequence control (PLC) and Turning.

In order to expand and develop the skills test, Thai side has to work on these issues and take improvement measures as follows:

(1) Sequence control (PLC) occupation

① Problems of public relations activities

As Japanese experts return to Japan and time passes, Thai side gradually lose the contact with became estranged from persons in charge at Japanese companies, and public relations activities tend to be delayed, so it is important to keep in touch with persons in charge at Japanese companies on a regular basis.

In order to recruit examinees, it is also important to strengthen public relations activities by getting the cooperation from Japanese companies who are members of PLC Committee, or asking them to introduce other companies.

In addition, it is also important to strengthen public relations activities in collaboration with the Japanese Chamber of Commerce and Industry in Thailand, with which Japanese experts have laid the foundation for the cooperation relationship, to provide information on skills tests to member companies and to cooperate in recruiting examinees.

② Proceed to the next level of the skills test of Sequence control

It is very important to train assessors in charge of Level 2 and implement national skills test Level 2. Level 1 is a popular exam for trainees at professional schools and students at vocational schools. On the other hand, Japanese companies such as automobile parts manufacturers and electrical control equipment manufacturers are training their employees with training content that incorporates the test tasks of Japanese Grade 2. They are hoping for more advanced tests of level 2 or higher. Therefore, it is necessary to broaden the examinee base at level 1, to level up the skills test by implementing level 2 and to promote the diversification of examinees by responding to examinees with higher skill level.

(2) Machining related occupations such as Turning

① Review of practical test tasks based on the feedbacks and comments from companies

Once the practical test tasks are designed, it doesn't mean that the mission is completed. It always needs to be reviewed and improved. It is crucial to collect test results, listen to the comments from the test sites and companies who are users, feed back to the test questions creation committee, consider improvements, and take measures. Regarding the skills test, it is important to continue improvement efforts based on PDCA (Plan, Do, Check, Act) cycle activities.

② Value of qualifications and review of test tasks

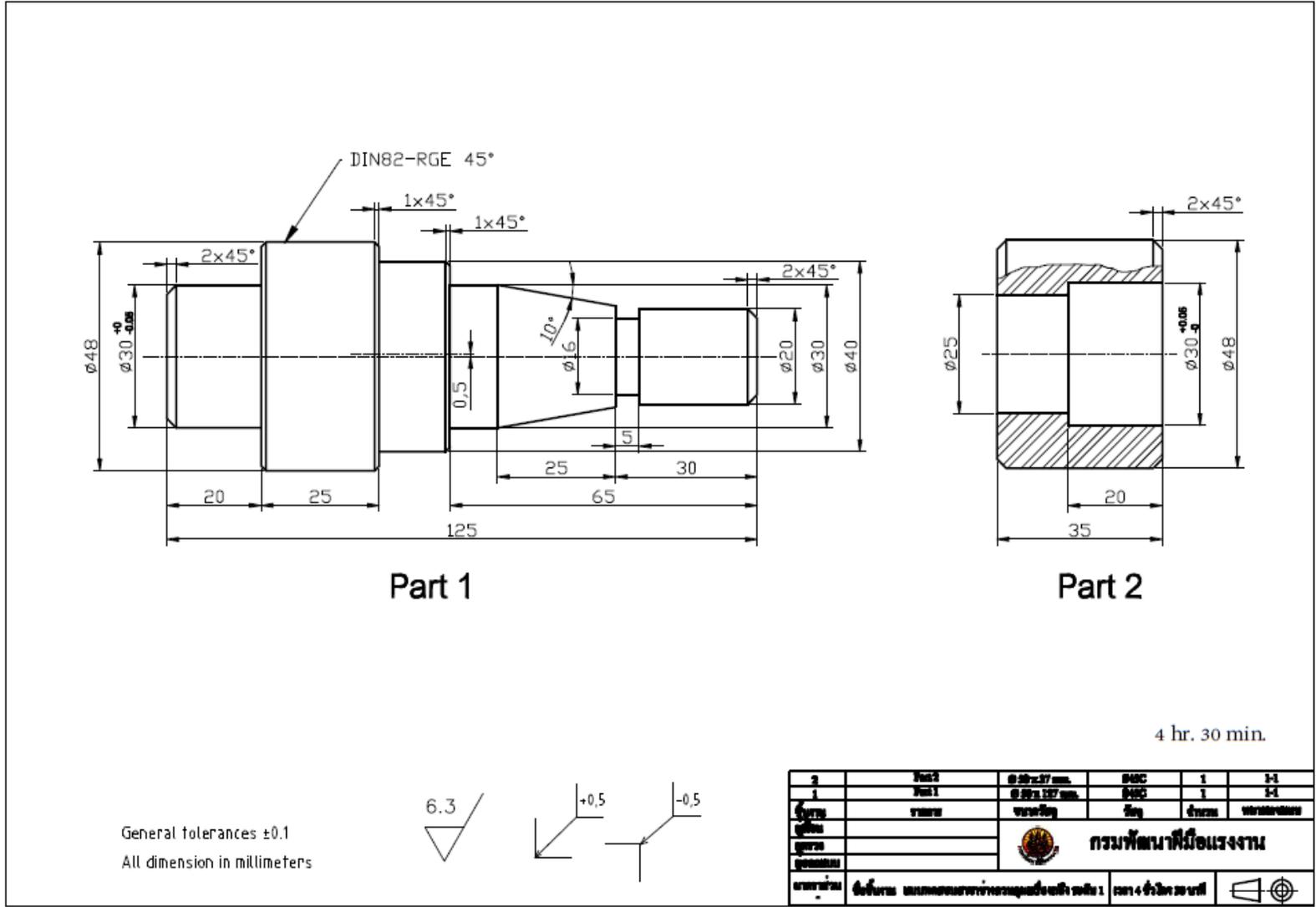
It is important for the employers to recognize the value of the qualification if they want to hire or work with successful examinees even if they pay the minimum wage. Over the years, the Japanese skills test has established a reputation that successful examinees have shown good performance at workplaces that meet the expectation of their employers and they are enthusiastic about their jobs. This is supported by the fact that the composition of practical test tasks based on job analysis, the difficulty level corresponds to the grade, and the pass rate gives a certain value to those who have passed the skills test. The employers evaluate and recognize this value.

Not only in Thailand, the committee in charge of the exam questions will take the initiative in conducting a questionnaire survey of stakeholders in the skills test, collecting and analyzing information, and putting together improvement measures in order to raise the value of the qualification (the value of those who passed the test).

At the same time, it is necessary to analyze the previous test's results (theoretical test and practical test), consider the pass rate and the value of the qualification, and take comprehensive improvement measures. Upon reviewing the test tasks, it is important to lay emphasis on the stakeholders' perspective.

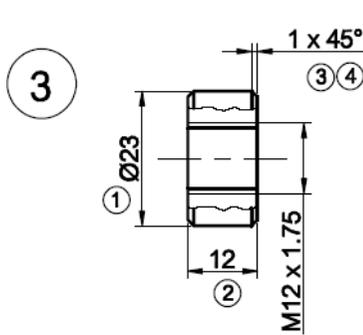
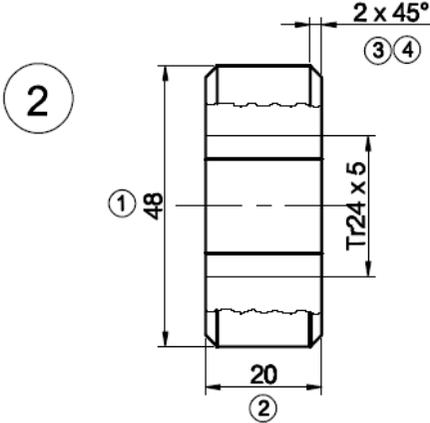
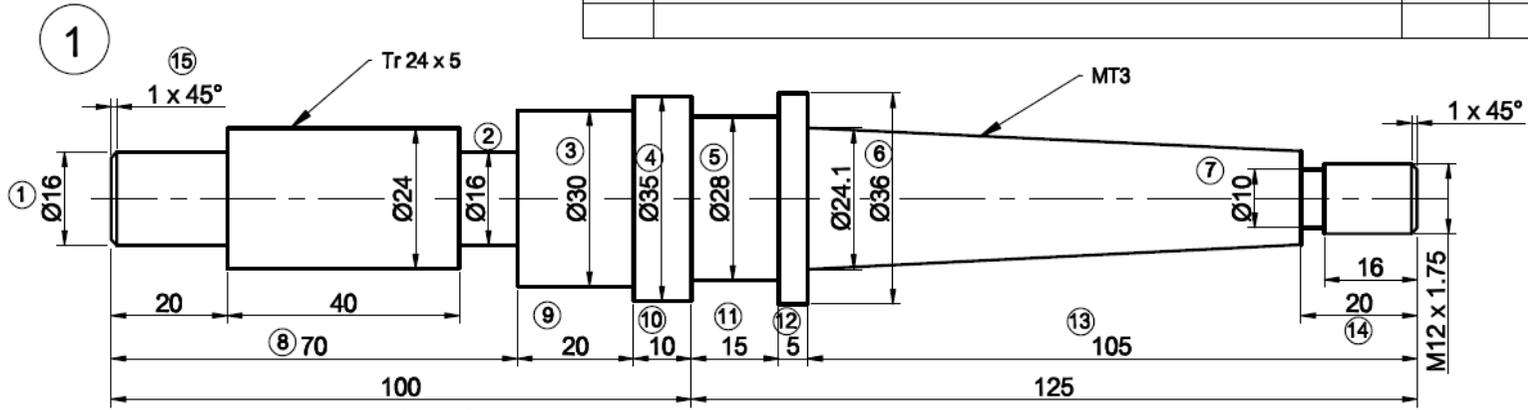
7 Attachments

(1) Turning level 1 practical test – Drawing assignment

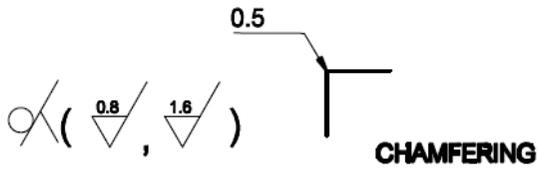


(2) Turning level 2 practical test – Drawing assignment

Rev No	Revision note	Date	Signature	Checked



6 hr.



3	1	C45 Ø 25 x 30 mm.			
2	1	C45 Ø 50 x 48 mm.			
1	1	C45 Ø 38x 230 mm.			
Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No. / Reference		
Designed by	Checked by	Approved by - date	Filename	Date	Scale
				01/05/2010	1:1
ISO E		Lathe Level 2			
		OSSD		Edition	Sheet 1/1