

# Issues and aims (visions) for JIPM: No. 1

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The following is a list of 5 issues that JIPM should survey and research, which comes from sources such as survey to the industrial communities.

- ① Technology and issues on equipment management
- ② Risk awareness in manufacturing floors
- ③ Workforce in manufacturing floors
- ④ Handing down skills from proficient workers
- ⑤ Guidelines for equipment management

Each of them will be explained as follows.

## 1. Technology and issues on equipment management

On this theme, three issues are pointed out.

First, there are gaps among a top-management group, a middle-management group, and a group of employees on-site/engineers/staff. Above all, it was found that awareness of TPM changes greatly, when there has been a change in the top-management due to personnel transfer or other reasons. A big and mutual impact was also observed when there was a personnel

reshuffle in the middle-management group. We recognize that these findings would cause a stir in promotional or educational activities of JIPM.

Secondly, there are voices saying that maintenance for aging equipment is insufficient. Generally speaking, the average tenure of use is 7 to 8 years in the US, whereas it is 11 to 12 years in Japan. Consequently, there is quite a large amount of equipment in use for more than 30 years in Japan.

For such equipment, deterioration with age should be considered in a maintenance method, rather than to take a uniform approach.

Thirdly, amid the steady aging of equipment in large apparatus, there is an issue about large apparatus whether to scrap and build or to replace. It is also in question how JIPM would address this issue.

## 2. Risk awareness in manufacturing floors

The process industry, especially, faces the risk that an equipment failure can lead straight to a serious accident. Therefore,

inspection should be conducted properly and countermeasures should be readily in place.

However, there is a problem with the reliability of the standard documents themselves. “Zero accidents, zero defects & zero failures” must be achieved based on reliability assessments, with some supplement to the standard documents either by estimating the risks to take actions, or by implementing a system to prevent accidents while considering the unspoken yet recognized problem that currently it depends on inspectors.

Assuming these issues, JIPM hopes to pave the way to resolve these issues. Also, it aims to provide approaches to issues such as CSR, accident/hazard avoidance, the energy issue, and a balanced response to environmental issues, etc.

### 3. Workforce in manufacturing floors

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Within this category, issues with high urgency are the so-called “year 2007 problem” and the response to the diffusion of IT.

#### 3-1 Year 2007 problem

The year 2007 problem is roughly divided into the following two major issues.

The first issue is about automated and unattended equipment. We have bitter experiences with countermeasures against the shortage of workforce. The attempt to replace human labor entirely with machine

work eventually led to the increase in capital investment and the equipment became even more complicated. Consequently, much effort had to be made both for maintenance skills and human resource development. We believe that such a mistake should never happen again.

The other issue is about outsourcing, the means for a company to cover the shortage of workforce by treating maintenance staff as operators and outsourcing a part or all of the maintenance operation.

This, however, could lead to a serious problem if there is a misstep. In other words, the concept of Autonomous Maintenance (Jishu Hozen) might fade away and the situation may revert to the old days when the roles of manufacturers and maintenance staff were discrete from each other. Also, there is a concern about the method of outsourcing specialized maintenance in that in-house technical capabilities may erode. It is required to study what would be appropriate personnel allocation.

#### 3-2 Response to diffusion of IT

Then, regarding the issues in responding to diffusion of IT, there are the following two points.

The first one is about TPM and diffusion of IT. It has been claimed that the key to the success of manufacturing is the unification of goods and information. In reality, however, due to the lack of good tools, goods often go ahead of information and countermeasures follow afterwards.

It seems that the recent developments in RFID tags\* have finally shed a light to resolve this problem.

Also, in the realm of production control and process management, where TPM has struggled to exercise its power, good use of these RFID tags may enable us to collect information in real-time to take actions in the order from the biggest issue to the smaller ones (namely, from the one that would work best for the company). If this is successful, it is expected that an entire plant or an entire company can be improved “as a whole.”

The second point is the issue of advancement of equipment management due to use of sensors. Please consider a situation where TPM has resolved troubles in equipment or production lines in a plant, and achieved a “streamlined flow of goods.” In order to maintain this, various sensors have been used in equipment or a production line to transmit information. Since some lines are equipped with tens of thousands of sensors, troubles with sensors are becoming a big problem.

This calls into question how TPM activities should be carried out.

#### **4. Handing down skills from proficient workers**

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A sharp decline in the number of equipment failures due to the diffusion of TPM is exactly what a company aims for. However, in terms of handing down skills and

techniques, this has spawned a new challenge.

In the past, as there were many cases of equipment failure, it was possible to practically learn the mechanism of the equipment and the repair technique by disassembling the equipment and finding the location of failure to repair. Nowadays, however, there are few cases of equipment failure, and a periodic shutdown is done once every 2 to 4 years (it used to be once a year). It is not uncommon that an employee attends an overhaul for the first time 4 years after he/she joined the company.

Japan used to be awarded for 5 or 6 events in the World Skills Competition, but for the last several years it has earned only 1 or 2 awards each time, which seems to indicate there is less opportunity to hand down the skills and techniques. Measures should be taken such as building simulators, videotaping scenes of overhaul, or disassembling/assembling equipment in maintenance lessons.

As for the occurrence of large-scale accidents in the recent years, including maintenance accidents, there is also concern that the basic rule “decide what should be decided and enforce that decision” may not be so commonly followed as before.

Standard documents must have been certainly organized a long time ago. Nevertheless, why is the number of accidents increasing? Taking inspections alone as an example, unspoken recognition used to be a good tool for the inspections in

which five senses are at work, for example, “the sound is louder than yesterday,” “it’s hotter than usual,” “something stinks,” or “I hear strange noise.” It could be that this practice is dying out.

It is needless to say that standardization of unspoken recognition is important, but the question is how to implement it concretely.

## 5. Guidelines for equipment management

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While addressing the aforementioned issues, there is also an imminent need to systemize them to create guidelines and standards on equipment management for the manufacturing industry in Japan.

In many companies, the standards for equipment design, production and installation are already in use, but there are few cases where a maintenance standard is established. In the process industry, however, possible damage in case of an accident is so big that a maintenance standard is available in many places. Still, there is an urgent need to take measures to prevent primitive accidents, by creating a minimum standard mandatory to run a manufacturing business in Japan.

That’s all for my discussion on the five issues for JIPM.

