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## Strengthening “Hitozukuri” which is a foundation stone of “Monozukuri”

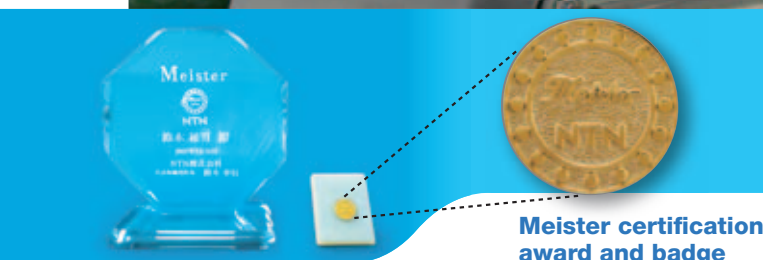
### Improving on the knowledge and skills we are passing on to the next generation



The knowledge and skills developed by our experienced workers are the core elements of this “Monozukuri (manufacturing)” enterprise and a prime source of our competitiveness.

As the baby boomer generation continues to retire, developing the human resources to respond to globalized production is becoming increasingly urgent. It is important to find a way to pass on the knowledge and skills of veteran workers so the next generation will also be capable and improve upon the heritage of NTN experience. We describe our “Hitozukuri (developing the individual)” efforts from the standpoint of passing on skills.

A Meister demonstrates how to use a general-purpose lathe at Kuwana Works



Meister certification award and badge

#### Passing on skills based on OJT in a Monozukuri work site

One of the basic approaches within the NTN Group is to realize our corporate philosophy through individual growth, and it is through long-term thinking that we develop our human resources.

The people responsible for “**Monozukuri**” form the core elements of any manufacturer, so to develop these human resources, we are carrying out various activities to improve the technical skill level of our production departments.

Our training is made up of OJT (on-the-job training) and self-improvement for the basics combined with supplemental OffJT (off-the-job training). OJT is not just about working in the workplace. At NTN, it means that a supervisor methodically develops the people he/she is in charge of with a clear plan. This arrangement allows both the supervisor and the people he or she is in charge of to grow and allows valuable skills to be passed on.

#### Meisters, with a high level of specialized knowledge, are the key to passing on skills at NTN

In “**Monozukuri**,” the technical skills of the skilled employees who actually carry out the heat treatment, forging, etc. are vitally important because they can affect the actual quality of the products. Thus, it is necessary to continuously develop human resources with a high degree of technical skill. The **Meisters** play a large role in their development.

Meisters are skilled employees who have developed a high degree of professional ability in their field. Our company methodically works to raise the standard of engineering and technical skills of our skilled employees, and has identified the strategic employment categories used regularly by the NTN Group that need to be passed on. In 2005, we created a system to certify and utilize Meisters.

Only employees recognized by the entire company to have a high level of knowledge and skills as well as extensive experience in the actual execution of work in fields that need to be passed on to the next generation — fields such as grinding, heat treatment, and machine maintenance — are certified as Meisters. The NTN Meister Certification Committee, which is made up of directors in charge of production, certifies Meisters. There are 11 active



**We are developing people who think for themselves and don't do only what they're taught**

**Kazuo Suzuki**

Supervisor, Planning and Promotion Section  
Mono-zukuri Center, Iwata Works (Grinding Meister)

I teach trainees the engineering and technical skills related to grinding that were developed by people who came before us and that allow us to achieve levels of precision on the order of a ten-thousandth of a millimeter. I teach the trainees in a practical way so that they don't just repeat what they learn, but so that they make them their own by thinking about the technology and techniques.

I believe that my duty as a Meister is to develop personnel who think critically based on the five “Gens” — Genba (actual place), Genbutsu (actual object), Genjitsu (actual conditions), Genri (principles), and Gensoku (rules).



**I'm going to take what I learned about 5S at Okayama Works back to Thailand and put it to use**

**Suphichai Phawang**

Assistant Manager, HUB Production Section  
Automobile Plant Production Department  
NTN MANUFACTURING (THAILAND) CO., LTD. (NMT)

What surprised me when I first visited Okayama Works is how beautiful the plants were both inside and outside. The passageways in the plants were orderly and the passageways for the forklifts and employees were clearly divided. Daily records on the production line were organized, measuring devices were tagged and well-ordered, and it was in this clean and orderly environment that I learned in detail about 5S\*.

I will go back to NMT and use what I learned to start 5S activities right away.



(left to right) Exterior of the Technical Skill Training Center, its interior, and the Skill Training Room, at Kuwana Works

Meisters at NTN (as of June 2009). Each operating site also chooses Junior Meisters out of their experienced skilled employees as possible Meister candidates.

Meisters not only work to ensure that the unique skills and knowledge that the NTN Group cannot allow to fade away are passed on, but also solve engineering problems faced by production departments. In all of these ways, they contribute to an overall increase in skill level.

**“Skill Training Rooms” were set up to systematically and efficiently pass on unique skills at NTN**

The NTN Group has opened “Skill Training Rooms” at the operating sites where most of the **Meisters** are found: Iwata Works, Kuwana Works, and Okayama Works. By establishing a place where trainees can learn all the elements necessary for production activities such as quality, safety, environmental issues, 5S-3TEI\*, and visualization, our company is able to systematically and efficiently teach and pass on vital technical skills.

Each operating site has also built up its own set of unique skills, and these different characteristics are reflected in each Skill Training Room. For example, Kuwana Works focuses on skills related to grinding and heat treatment as the skills they want to pass on. This is why its Skill Training Room is equipped with facilities to carry out the General Heat Treatment Skill Test, a national certification, and it has been designated a skill testing area since 2008.

In each Skill Training Room, the Meisters and Junior Meisters work together to teach theory and practical skills according to the skill level of the trainees in order to develop them into the next generation of skilled employees. The Skill Training Rooms also

**A Meister demonstrates how to inspect high-voltage transformer station at Kuwana Works**



accept overseas trainees to raise the skill level of the NTN Group, which is expanding globally.

\* 5S-3TEI: These are the basic activities for improving productivity. 5S refers to five Japanese words beginning with S: seiri, seiton, seisou, seiketsu and shitsuke. These mean, respectively, organization, arrangement, cleaning, standardization, and sustained discipline; and 3TEI refers to three Japanese words beginning with tei: teichi, teihin, and teiryuu. These mean, respectively, prescribed position, prescribed item, and prescribed amount.

**Passing on safety know-how with “hazard experience corners”**

In “**Monozukuri**,” safety comes first. Our company gives employees a thorough safety education to secure a safe work environment. In addition to regular classroom training, we have set up “hazard experience corners” at each operating site in order to pass on all the practical safety know-how we have developed over the years.

In the hazard experience corners, we use a safety experience simulator to recreate situations in which accidents such as pinch-point accidents, dragging, tripping/falling, and flying/dropped objects can be experienced. By having our skilled employees learn what kind of hidden dangers there are in the workplace, avoid these dangers, and instinctively understand safety know-how that is so difficult to teach in a classroom, we are encouraging them to work safely.

**Supporting our young skilled workers in their efforts to become certified technicians to encourage their development**

The NTN Group supports employees in their efforts to become Ginoshi (certified technician). The Ginoshi certification is a national certification that is given to those who pass a skill test that is based on Japan’s “Promotion of Human Resources Development” law. These categories include machining, heat treatment, and machine maintenance.

Our company helps employees find correspondence courses related to this skill certification test, and has study sessions at each operating site to support them in their efforts to become certified.

A voluntary study group studying machine maintenance at Okayama Works

