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In *"Growing Your Own: Part I,"* we explored proven ways to begin growing your own maintenance technicians: defining entry-level requirements; seeking candidates; interviewing and checking references; and looking for demonstrated ability.

With regard to that "demonstrated ability" detail, I outlined a straightforward process your operations can use to verify that a candidate actually has the skills and knowledge with a "potential to succeed" as a maintenance technician in your maintenance job roles.

In *"Growing Your Own: Part II,"* we take the next steps: how to set up your own basic maintenance-skills training program using in-house talents. Here, we'll address where to start; planning and preparing for training and conducting on-job training.

The era of maintenance-skills shortages has been growing for more than two decades. It's because of the "perfect storm" conditions we discussed in previous columns: aging Baby Boomers; fewer young people entering careers in industrial maintenance; the precipitous decline of vocational-technical education in our schools; and an over-emphasis on a "college education" by our society, our politicians and our schools. Couple these conditions with the myth that manufacturing is on the way out in America and you have the "perfect storm." Riding this one out will take foresight, planning, out-of-the-box thinking and leadership.

Starting with the basics

Once the candidates for the "maintenance technician in training" have been selected and brought on board, the training process should begin with a basic orientation to your "world of maintenance." If the candidates have been selected from the ranks of production workers, they already know their way around the plant, company policies and procedures. However, their knowledge of maintenance may be based on assumptions, rumors or just pure myths about plant maintenance. Think of this introductory training phase as Basic Training Boot Camp—"everything you wanted to know about maintenance but were afraid to ask."

First, develop a plan, since, like all good maintenance work, there should be a plan. List basic maintenance orientation and training activities and organize a process to assure things happen

the way you expect.

Without a plan, the new maintenance technician in training can turn into a decent helper—*but one with very little knowledge*
. Training/learning by simply following someone around doesn't work either. (Unfortunately, this type of "training by osmosis" or "shadow training" is quite common.)

Here are types of orientation activities/topics to include in your Training Plan for the basics:

- Describe how the training process will work, including topics, sequence, timeframes, etc.
- Meet the crew: maintenance staff and technicians.
- Assign the new technician to a senior "maintenance coach."
- Review plant or facility safe work requirements.
- Conduct plant equipment orientation: names of departments, processes, lines, equipment, etc.
- Meet the operations leadership and teams.
- Review maintenance policy and procedures.
- Describe how maintenance requests get processed through completion.
- Tour plant maintenance shops and stores.
- Present a week in the life of a maintenance tech.

Organize the topics/activities in a logical learning sequence—*from the essential basic skills and knowledge to the more advanced* .
Use this Training Plan to organize yourself; manage the training process; and serve as a guide for the maintenance trainee and their mentors, coaches and trainers along the way.

Second, define the desired results from the topics listed for the Basic Training Boot Camp. What do you expect the maintenance technician trainee to be able to do upon completion of each segment of the training? Here's one example:

"Upon completion of the training, the trainee will be able to identify and explain all major departments, processes, lines, equipment locations, functions and safety"

Preparing for training
It is critically important to prepare yourself and others to facilitate an efficient and effective Basic Training Boot Camp. This step assures that the people, materials and schedules are prepared in advance. Here are four activities to prepare for instruction—*preparing yourself as the "instructor" or "on-job coach."*

Prepare yourself to instruct...

- Make a timetable for training.
- Who to train on which task by what date

- Break down the task.
- Important steps
- Key points and their reasons
- Safety (always a key point)

- Get everything ready.
- The right equipment, materials and supplies

- Arrange the work area.

Let's see how this really works. We'll select one of the orientation activity topics from our Training Plan. Write this down and keep it in a training file labeled with the activity topic.

Example Topic: "Plant Equipment Orientation" (departments, processes, lines, equipment)...

- **Timetable**
- Task: "Identify and explain all of the major departments, processes, lines, equipment locations, functions and safety."
- 8 hours, Friday, 1st shift, training room, plant tour
- Larry Smith, maintenance tech trainee
- Joe Riley, maintenance on-job coach

- **Break down the task**
- Safety gear (shoes, glasses, ear plugs)
- Maintenance work requires that we KNOW this plant and all equipment in it.
- Start in shipping and follow the process flow backward: department names, process descriptions, equipment names, functions & safety.
- Powerhouse: equipment names, functions & safety
- Roof units: equipment names, functions & safety
- Cooling towers: equipment names, functions & safety
- Sub-station: equipment names, functions & safety

- **Get everything ready**
- Plant floor plan, equipment arrangement drawings
- Major equipment list by area and department
- Should we label the equipment names and asset numbers?
- Safety gear
- Schedule Larry Smith, trainee, and Joe Riley, coach for the tour

- **Arrange the work area**
- Advise area management and supervision of Friday's orientation tour.
- Lay out drawings and major equipment list in the training room.

Conducting on-job training

Continuing with a four-step approach, we'll follow an easy-to-use method for the actual on-job instruction of the trainee. This Four-Step Method of Job Instruction is a proven approach for almost all the skills and knowledge to be taught AND learned on the job. These four steps and their activities are as follows:

- **STEP 1. Prepare the trainee**
- Put trainee at ease.
- State the task to be learned.
- Find out what the trainee already knows.
- Get trainee interested in learning the task.
- Put trainee in the correct position.

- **STEP 2. Present the operation**
- Tell, show and illustrate—*one important step at a time.*
- Stress each key point and its reason.
- Instruct clearly, completely, patiently—*giving no more than the trainee can master at one time.*

- **STEP 3. Application: Try out performance**
- Have the trainee do task—*coach corrects errors.*
- Have the trainee do the task—*coach explains key points and reasons.*
- Make sure the trainee understands.
- Continue until you know that the trainee knows.

- **STEP 4. Follow-up & evaluation**
- Put the trainee on his/her own.
- Identify who to go to for help.
- Check frequently.
- Encourage questions.
- Taper off coaching.

Let's see how this works with the topic of "Plant Equipment Orientation" using the Four-Step Method of Instruction. Write this down and have it with you throughout the training and coaching. Keep it in the file labeled with the training topic.

- **STEP 1. Prepare the trainee**
- Introduce yourself as the on-job coach, noting experience and how important it is to know one's way around the plant and all its equipment.
- State the task to be learned and outcomes: *"Upon completion of training, the trainee will be able to identify and explain all major departments, processes, lines, equipment locations, functions and safety."*
- Find out what the trainee already knows.
- *"Imagine when you get a maintenance request or an emergency call, how would you know where to go?"*

- *"Before the plant tour, let's start by looking over these plant drawings and equipment lists."*

- **STEP 2. Present the operation**
- Don the required safety gear (shoes, glasses, ear plugs). Explain why it is important.
- *"Maintenance work requires that we KNOW this plant and all of the equipment in it."*
- Start the tour in shipping and follow the process flow backward. Key points: department names, process descriptions, equipment names, functions & safety.
- Powerhouse: equipment names, functions & safety
- Roof units: equipment names, functions & safety
- Cooling towers: equipment names, functions & safety
- Sub-station: equipment names, functions & safety

- **STEP 3. Application: Try out performance**
- After each department, ask the trainee to explain what he/she knows about the area.
- Using equipment arrangement drawings, have the trainee explain what he/she learned.
- Have the trainee point out the equipment in the area and explain its function(s) & safety.
- Don't leave the area until the trainee can identify the equipment and show it on the plant floor layout or drawings.

- STEP 4. Follow-up & evaluation
- After the orientation tour, meet back in the training room to recap the tour.
- Discuss any trainee questions and/or comments.
- Ask the trainee to look at the plant layout and explain the department, process, equipment, functions, & safety in that area.
- Encourage the trainee and on-job coach to re-visit areas in question during the next week.

- Review the trainee's knowledge on a 30-minute tour each day during the following week.
- Measure knowledge against the task outcome statement (see second bullet, STEP 1, this page).

In summary

In this installment of our "Growing Your Own" series, we've focused on the basics of what every

maintenance technician trainee needs to know, but may have been afraid to ask. After all, this IS "basic." The knowledge of the basics, though, is the foundation of efficient and effective training and learning.

Of the approaches discussed here, the Four-Step Method of Instruction dates back to World War II. That was when the U.S. Government had to train millions of workers to build equipment and armaments in support of the war effort—*the labor pool from which it drew included countless housewives who had never before worked in factories.*

Next month, in "Growing Your Own Part III," we'll outline approaches for training in more technical skills and knowledge for maintenance technicians. Remember: We must begin training our maintenance technicians of the future to assure our competitive levels of equipment performance and reliability. **MT**

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