International Labour Organization

Maintaining the factory

Factory systems

Factory Improvement Toolset

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Factory Improvement Toolset

The Factory Improvement Toolset (FIT) is an innovative self-facilitated, activity-based learning approach designed by the International Labour Organization (ILO) to create more decent and sustainable employment. FIT supports manufacturers in global supply chains to improve productivity, competitiveness and working conditions by upgrading production systems and factory practices.

FIT has been developed to be a sustainable, time- and cost-efficient option for supporting factories to enhance productivity through improved business practices and working conditions. FIT focuses on areas of production improvement and actions to be taken specific to each participating factory. It can be utilized as stand-alone learning tools or to complement other training programmes.

With each module lasting no more than 2.5 hours, FIT enables factories to train personnel, whilst minimizing interference with production realities. The easy-to-use methodology makes it possible to rapidly scale the implementation to reach a large cohort of trainees across multiple production facilities.

Working in small groups, participants review real-life situations and engage in discussions to determine improvements to be made in factory without an external trainer or specialist. This self-facilitated, activity-based and highly participatory learning approach positions participants as both student and teacher and makes the toolset self-tailored to the needs and interests of each group.

About this module

The FIT module on Maintaining the factory is a training for garment manufacturers to improve systems that support the factory. Participants will work on improving premises and housekeeping systems in the factory, as well as factory appearance. This module takes about 2 hours to complete.

Upon completion of the training, participants should have:

- Understood the importance of maintaining the factory for efficiency, quality and safety.
- Learnt practical ways to make factory premises more adapted to workers and production.
- Learnt how to set up and sustain maintenance and housekeeping systems.
- Discussed how to improve the appearance of their factory to attract and retain workers.

The **Factory Improvement Toolset** of the **International Labour Organization (ILO)** are developed and provided by the ILO's **Enterprises Department**.

Authors: Alix Machiels, Sara Andersson, Charles Bodwell, Jayantha R. de Silva.

Guidelines for successfully using the training tool

Read out-loud

The FIT tool is designed for participants to take turns reading the instructions in the modules out loud to the group. At least one member of the group should be selected in the beginning of the session to take this responsibility.

Work as a group

Always work in groups of 5-7 during a FIT session. The programme will not be successful if participants work independently or do not collaborate with each other.

Be active

Encourage everyone in the group to actively contribute to the discussion. Ensure that no group member dominates the discussion or does not participate at all.

Monitor the time

Select one member of the group to monitor the time for each activity and remind the group when it is time to move to the next exercise.

Complete the action plan

Complete the action plan at the end of the session. This will help ensure that FIT results in improvements in the factory. Review the plan a while after the session to make sure that actions in the plan has been completed accordingly.

Icons

A set of icons is used throughout the modules to provide easy to recognize reference points for different tasks within each session and activity.

Read out loud

One member of the group should read out loud to the rest of group.

Knowledge link

Knowledge and skills are linked to other FIT learning resources and support.

Time allotted

Indicates how much time each sessions and activity should take.

Supplies needed

Indicates that supplies may be necessary to complete the session.

Begin step-by-step instructions

Indicates that the step-by-step instructions for an activity are beginning.

Think about it

Indicates additional information for the participants to think about.

Measuring your performance

Measuring operational efficiency is a key aspect of running a productive factory. The box(es) below guides you in understanding which measurement indicator(s) can be used to measure and evaluate the performance of your factory in relation to the topic of this FIT module.

Indicator 1	**Turnover rate (%)**
Definition	The amount of employees who leave the factory over a period of time and must be replaced, as a percentage of the total amount of employees.
Purpose	To understand how high your turnover rate is, set a turnover reduction target, and identify solutions to reduce turnover in your factory.
Calculation	(# of employees who left and must be replaced / average # of employees) x 100% Note: Average # of employees = (# of employees at the start of the time period + # of employees at the end of the time period) / 2
Frequency	Calculate monthly.
Responsible	HR manager

Indicator 2	**Pieces per employee**
Definition	The amount of accepted pieces that each employee contributed to producing over a certain period of time. The higher, the more productive your employees are.
Purpose	To understand how productive your employees are, set a personal productivity target, identify ways to increase productivity in your factory, then track improvements by comparing with previous results.
Calculation	(Total # of pieces produced / total # employees in the factory) Note: Total # of employees includes ALL employees in the factory, including managers, administration, etc. – not only workers.
Frequency	Calculate monthly.
Responsible	Production manager

Session 1

Business case study

Goals

Preparing you for the type of discussions you will have with other group members throughout the learning module and understanding the benefits of being exposed to different perspectives.

Understanding better why having good maintenance practices is important in the factory.

Session 1

Overview

One member should read the full session out loud to the rest of group

15 minutes

Learning manual, pens, markers and poster paper

A business case study presents a real-life situation for learners to reflect on and discuss with other group members. By discussing the case, students learn from others' ideas and perspectives, and develop an understanding of the topic at hand within the workplace.

One group member reads the case study out loud

The whole group discusses the case study

Everyone develops a deeper understanding of the topic

Activities

Activity
1

15 minutes

Case study

The case study below presents a situation that could happen in real life.

Instructions:

1) As a group, listen to one member read the case study below while following along in your learning module.

Anil is a new factory manager at the HS garment factory. The factory is dirty and badly maintained. It gets very hot and humid, with little air flow. Workers get dehydrated, and often complain of headaches. Mould and dust accumulate. The floor is stained and wet. There are cracks and holes in the floors and walls, and water is leaking in several areas. As a result, garments and materials get dirty or damaged, and quality is low. Workers trip on uneven floors or slip on wet surfaces. Recently, a visiting buyer criticized the condition of the factory, and decided not to place orders, saying that it looked unprofessional and unreliable.

To solve these problems, Anil consults managers, supervisors and workers, then comes up with a plan to improve the factory's look, environment and cleanliness. First, he installs shades by all windows, leaves these open, and installs exhaust fans in the hottest areas to reduce temperature and create air flow. Then, he sets up a cleaning team, and drafts housekeeping checklists. Inspections are carried out monthly. Areas that need repair are identified and tended to. Last, Anil stops production for a day. All staff work together to sort and dispose of trash, repaint the entrance, and plant grass and bushes around buildings.

Thanks to these changes, the factory becomes much cleaner, and looks much nicer. It is also a more comfortable and safer place for all staff. Damage is avoided, and buyers get a positive impression of the factory.

2) Together, discuss Anil's situation by answering the three questions in table 1 on the next page.

Table 1. Questions about Anil's situation
1. What problems has Anil identified? What impact do these problems have on the factory and its workers?
2. What does Anil and the staff do or change in order to solve these problems?
3. What are the results of these solutions for the factory and its workers?

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Session 2

Learning about the topic

Goals

Discussing the importance of keeping the factory well-maintained for the factory and its workers.

Learning how to adapt factory premises to production and workers' needs, to improve safety and productivity.

Learning how to improve maintenance and housekeeping systems to keep the factory clean and in a good state.

Discussing low-cost ways to improve the appearance of your factory.

Session 2

Overview

One member should read the full session out loud to the rest of group

90 minutes

Learning manual, pens, and markers

This training module will help you improve your factory premises by guiding you in improving your maintenance systems. Factory maintenance involves keeping the factory clean and healthy for all staff, adapted for production, and in good condition. Good maintenance is important to make production operations more efficient, protect your workers' health and safety, avoid material waste or damage, and attract new staff and buyers. Throughout this module, you will go through the three topics below.

Improving factory **premises**

Improving factory **housekeeping**

Improving factory **appearance**

First, you will discuss the importance of good factory maintenance. Then, you will learn more about insulation, ventilation, cleaning and maintenance, and discuss how to improve your own factory premises, housekeeping systems and factory appearance.

What you will learn today is part of the **5S** model, a globally-recognized method to improve house-keeping leading to improved productivity in factories. The 5S are:

- **Sort**: Reduce waste, dispose of unnecessary items
- **Straighten**: Organise your locations, keep tools and facilities in order
- **Shine**: Clean and improve the look of the factory
- **Standardize**: Document and record work processes
- **Sustain**: Train workers to follow good 5S practices

Activities

Activity
2a

15 minutes

Factory maintenance

Keeping the factory **well-maintained** helps you improve quality, safety, reputation and productivity. In this activity, you will discuss what a well-maintained factory is and why maintenance is important.

Instructions:

1) Have a participant read aloud the text box below. Then, discuss: Do you think your factory is well-maintained? Why, or why not?

2) Together, discuss the three questions in table 2.

In a **well-maintained** factory:

- The factory premises are adapted for workers and production.
- Factory premises are kept clean and in good state.
- Factory premises have a good, neat appearance.

Table 2. Why is it important?
1. What can happen if premises are unadapted (dark, noisy, humid, hot, etc.)? How can improving them help you become more productive and prevent accidents?
2. How can keeping the factory clean help you improve quality, avoid material waste and prevent accidents? What can happen if the factory is dirty?
3. How can improving your factory's appearance help you improve your reputation, and attract and retain new workers and buyers?

Activity

2b

25 minutes

Improving factory premises

Making sure that your **premises** are well-suited to workers and production helps improve productivity and keep workers safe and healthy. In this activity, you will learn more about insulation and ventilation, then discuss how to improve your own premises.

Instructions:

1) Good insulation ensures that the factory does not get too hot or too cold. Have a participant read aloud the five tips for insulation in table 3, then discuss: How could you improve insulation in your factory?

2) Good ventilation ensures that there is enough fresh air in the factory. Have a participant read aloud three simple methods in table 4, then match each one with the right image by writing its number.

3) Together, read through the four problems listed in table 5, then match each one with its solution by writing down its letter in the column on the right. Solutions are at the bottom of the page.

Table 3. Improving insulation

1. Build an insulated ceiling under the roof to prevent heat from entering the building through the roof. Never use asbestos as it is highly toxic if inhaled.
2. Install shades by the windows to help absorb outside heat and prevent it from entering through windows. Ensure that they do not block natural light too much.
3. Use sun-reflecting films, coloured glass, or paint the upper half of windows using water and blue dye to prevent heat entering through windows.
4. The external side of walls and roofs should be smooth, and in a light colour (white preferrably) to help reflect the heat rather than absorb it.
5. Plant trees, grass and bushes on factory premises and around buildings to help block sun radiation, provide shade and filter the dust coming from outside of the factory.

Bad ventilation and high temperatures causes dehydration, headaches and fatigue, which in turn lowers productivity. A healthy, comfortable temperature is in a range between 20 and 25 degrees. As to air, it needs to be renewed constantly to remain healthy and prevent it getting contaminated by dust and vapours.

Table 4. Simple ventilation methods

Methods	Image
1. Open windows to provide horizontal air-flow, especially near work stations that produce more dust or vapours. Cover windows with wire-mesh screens to block insects and small particles.	
2. Hot air rises. Provide an opening in the roof for hot air to escape a room (especially large ones) and avoid it staying in the middle of the room.	
3. Use fans and ventilators to avoid having no air movement at all in certain areas (the middle of the room, for instance). There should be no obstruction between fans and openings (door, window, or other).	

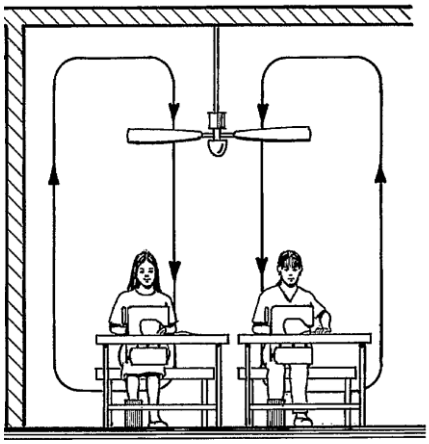
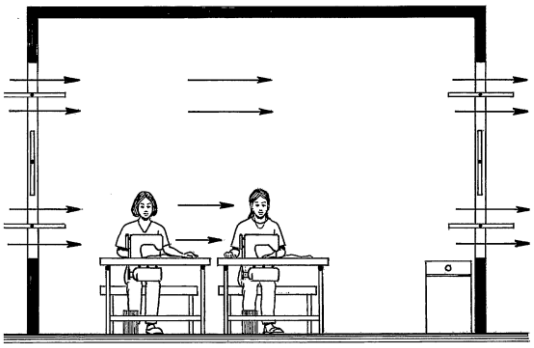


Image 1

Image 3



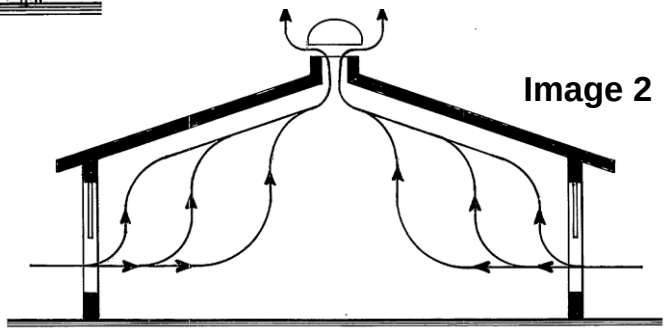


Image 2

Solutions: 3, 2, 1.

Table 5. Keeping the factory tidy

Problems	
1.	The factory is very noisy. Staff cannot hear each other talking, and complain of headaches.
2.	The factory building is very humid. There is mould forming on the walls, and rust on machines, which is dangerous for your staff's health and damages materials.
3.	The factory is very dark. Workers cannot see well and complain of eye strain. Management does not want to spend money on new lights and electricity costs.
4.	Floors are slippery and not well-maintained. Workers trip over holes or small elevations. Trolleys get stuck on cracks and are damaged. Floors get dirty easily.

Solutions	#
Use concrete, plastic or ceramic tile floor coverings. Keep floors even, removing, filling or bridging height differences which obstruct transport and cause accidents. Install strip bands to avoid the risk of slipping without obstructing trolleys. Repair floors whenever holes or cracks appear.	
Use mats and building materials such as foam to absorb noise (noise gets reflected and amplified by walls, ceilings and floors). Give ear plugs to workers nearby noisy machines. Group noisy machines together and away from rest areas. Shield them using screens or partitions.	
Ensure good insulation and ventilation. Add fans or ventilators in areas or near work stations producing steam and heat (such as the ironing section). Avoid leaving things wet after cleaning, and ensure that there is no water stagnating anywhere.	
Use daylight as much as you can by installing more windows, skylights or openings in the ceiling. Use light-coloured wall paint and equipment to better reflect the light. Install lighting (lamps / spots) where necessary, such as for precision tasks. Maintain and clean windows and lamps regularly.	

Good lighting in the factory is very important to improve quality and productivity and prevent eye strain, eyesight loss and headaches for workers. To learn more, ask for the "Better ergonomics" module!

Solutions: 4, 1, 2, 3.

Activity

2c

25 minutes

Improving housekeeping

Keeping the factory clean and ensuring that repairs are made when necessary is very important for productivity and quality. Factories should have a **housekeeping** system to ensure regular cleaning and maintenance. In this activity, you will learn how to set up this system.

Instructions:

1) Together, discuss: Would you say your factory is clean and in good state? Why or why not?

2) Together, read through the list of good housekeeping and maintenance practices in table 6, and put a ✓ in the column on the right if you do these things in your factory.

3) Together, list all areas of your factory that need cleaning in table 7. Don't forget the outside, the entrance, the gangways, etc.

4) Together, look at the example of a housekeeping checklist in table 8. Then, choose an area listed in table 7, and fill in your checklist in table 8 (bottom part) by indicating cleaning points and frequency.

Table 6. Good housekeeping practices

Good practices	✓
1. Make a list of everything that has to be cleaned in every part of the factory, daily, weekly and monthly. This should be used for inspections.	
2. Set up a cleaning team, and make sure they receive appropriate training on using cleaning materials and following and filling in the checklists.	
3. Cleaners are exposed to dust, vapours and harmful chemicals. Provide them with protective equipment such as overalls or aprons, gloves and masks.	
4. Provide a special storage area for cleaning equipment and supplies. Dangerous cleaning chemicals must be stored in ventilated chemicals stores.	
5. Carry out regular inspections in all areas to ensure that they are kept clean and in a good state. Use checklists to make sure that nothing is forgotten.	
6. Carry out regular inspections to detect any area that needs maintenance or repair (leaks after rain, missing roof tiles, broken window, etc.).	

7. Involve all staff in housekeeping and maintenance by encouraging them to keep the factory clean and report any damage or area needing repair.	
8. All machines and equipment should also be cleaned regularly. Workers can carry out basic tasks. More complex maintenance must be left to mechanics.	
9. All lighting equipment and windows should be cleaned regularly, as this impacts visibility and productivity.	
10. Provide small waste bins in each production room and by each work station to collect production waste (thread, fabric bits, etc.).	
11. Provide larger bins (labelled) for other waste disposal (bottles, food waste, etc.) outside production areas. Keep them clean and empty them regularly.	
12. Garment manufacturing produces a lot of dust. Avoid blowing dust (it will stay in the air). Use an industrial vacuum cleaner instead. .	

Many cleaning chemicals are toxic, and harmful to people and the environment. Consider replacing them with less toxic options. Also think about your water consumption – floors do not necessarily need to be cleaned with water every day!

Table 7. Your ideas
List all areas of your factory that need cleaning below. Example: Toilets; Gangways; Cutting room.

Once you have identified all areas that need cleaning, you can start drafting a cleaning **checklist** for each, listing cleaning tasks to complete and their frequency (daily, weekly, monthly). These checklists should be posted in each area and filled-in by cleaning staff to track cleaning.

Table 8. Monthly housekeeping checklist

Example checklist

Room: Toilets	**Month**: March	**In-charge**: Sid

#	Cleaning points	Frequency	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	…
1	Clean and sanitize all sinks and wash basins	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
2	Clean and sanitize toilets	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
3	Clean and disinfect the floors	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
4	Empty waste bins and change the plastic bag	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
5	Clean mirrors	Weekly		✓							✓							
6	Refill all soap containers	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
7	Change water in the buckets	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
8	Refill toilet paper	Daily	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
9	Refill the hygiene products distributor	Weekly	✓							✓								
10	Remove dust and cobwebs on walls and ceilings	Weekly			✓							✓						

Your monthly housekeeping checklist

Room:	**Month**:	**In-charge**:

#	Cleaning points	Frequency	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	…
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

Activity

2d

25 minutes

Factory appearance

A neat **appearance** will create a positive impression on visitors and buyers, improve your reputation, and attract and retain workers by making it more comfortable and pleasant to work in. In this activity, you will discuss simple, low-cost ways to improve your factory appearance.

Instructions:

1) Together, look at the four pictures of two different factories in table 9, and discuss for each factory:

- If you were a (new) worker, what would you think? How would you feel?
- If you were a visiting buyer or agent, what would be your impression of the factory

2) Together, read through the list of simple things you can do to improve your factory appearance in table 10, and put a ✓ in the column on the right if you do these things in your factory.

3) Together, brainstorm simple, low-cost changes that you would like to make in order to improve your factory's appearance. Write down your ideas in table 11.

Table 9. Factory appearance

Factory A	Factory B
Front: 	**Front:** 
Back: 	**Back:** 

Table 10. Improving factory appearance

Actions	✓
1. At the entrance, clearly display the factory name and logo. Repaint whenever necessary, and make sure that the entrance is clean and tidy.	
2. Hire security guards, and train them in the correct procedures for receiving visitors and allowing workers into the factory.	
3. Use clear signage to help workers and visitors navigate the factory, indicating rooms, directions, toilets, exits and entrances, etc.	

4. Make the factory greener and more comfortable by planting trees, bushes, grass or flowers. This will also cool down the surroundings.	
5. Use light or bright colours to make the factory look more spacious, bright and airy. Try to use the same consistent set of colours through the factory.	
6. Keep the factory clean and tidy inside and outside, including parking spaces, the entrance, the back, worker facilities and production rooms.	
7. Avoid dumping materials, waste or equipment outside or at the back of the factory – unless appropriately sorted and in closed bins or areas.	
8. Decorate the factory for special occasions, such as the factory anniversary or important holidays.	
9. Set up a nice-looking, comfortable room to receive visitors, with chairs, tables and good lighting.	
10. Put notices and other papers on notice boards in a way that makes them easy to read. Put someone in charge of updating the board regularly.	

Table 11. Your ideas

What simple, low-cost changes would you like to make in order to improve your factory's appearance? Write down your ideas below.

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Session 3

Action items

Goals

Summarizing and revising the new knowledge gained.

Identifying concrete applications of the new knowledge that benefit your factory.

Session 3

Overview

One member should read the full session out loud to the rest of group

20 minutes

Learning manual, pens, and markers

Throughout this module, you gained new knowledge on how to improve factory premises, maintenance and housekeeping systems, as well as factory appearance.

Improving factory **premises**

Improving factory **housekeeping**

Improving factory **appearance**

In this session, you will think of ways to apply your new knowledge to improve maintenance in your factory by reviewing best practicles and drafting your own action plan.

A housekeeping checklist template is available online for you to print out and use in your own factory. To obtain it, contact your factory's FIT coordinator!

Activities

Activity
3a

5 minutes

Best practices checklist

In this activity, you will review best factory maintenance practices as a next step for evaluating your own and implementing improvements.

Instructions:

1) Together, look at the list of best practices in table 12, and put a ✓ in the column on the right if you use these practices in your factory.

Table 12. Maintaining the factory

Best practices	✓
1. Factory premises are changed if needed to better suit production needs and provide a more comfortable and safer environment for workers.	
2. The factory is well-ventilated and well-insulated. Measures are taken to improve lighting and floors, and prevent humidity and excessive noise.	
3. The factory premises are kept clean and in a good state at all times. Inspections are carried out regularly to ensure that it remains so.	
4. The factory sets up a cleaning team and a housekeeping system, and drafts checklists to ensure thorough housekeeping and maintenance.	
5. The factory makes low-cost improvements to improve the outside and inside appearance of the factory.	
6. Workers are trained to respect factory premises, keep them clean at all times, and report areas that are dirty or in need of repair.	

Besides keeping the factory well-maintained, it is also important to keep it well-organized. To learn more, ask for the “Organizing the factory” module.

Activity

3b

15 minutes

Your action plan

In this activity, you will think of ways to apply your new knowledge to improve your training systems by drafting your own action plan.

Instructions:

1) Together, fill in the action plan (table 13) on the next page. Identify a key problem that you want to solve and write down the solutions you identified while working on this module.

Table 13. Maintaining the factory – Action Plan				
Problem identified				
Solutions identified	**Action(s) to be taken**	**Person responsible**	**By when?**	**How will improvements be measured?**

Maintaining the factory

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FIT is being piloted in Asia under the regional Decent Work in the Garment Sector Supply Chains in Asia project funded by the Government of Sweden.

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