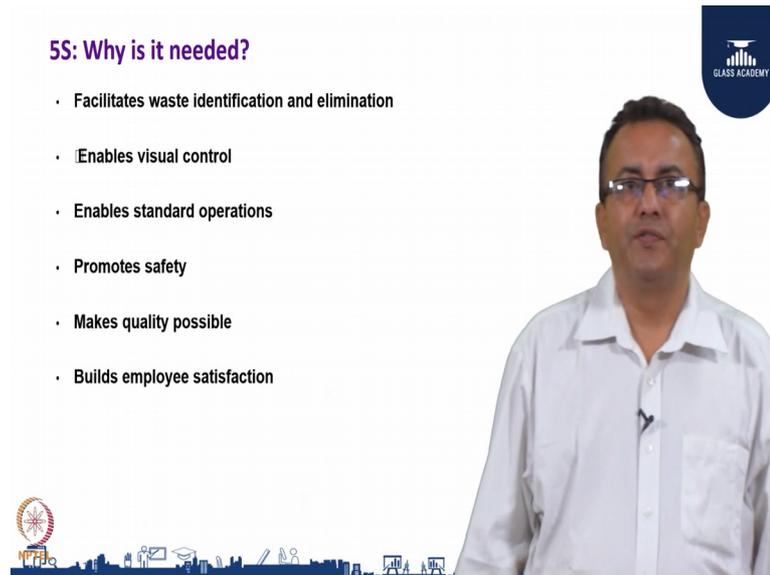


**Glass Processing Technology**  
**Prof. Mr. Anil Pant**  
**Departments of Civil Engineering**  
**Indian Institute of Technology, Madras**

**Lecture - 70**  
**5S in Glass Processing**

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**5S: Why is it needed?**

- Facilitates waste identification and elimination
- Enables visual control
- Enables standard operations
- Promotes safety
- Makes quality possible
- Builds employee satisfaction

The slide features a speaker, Prof. Mr. Anil Pant, on the right side. The background includes a blue silhouette of a city skyline at the bottom and a blue shield-shaped logo with a white building icon and the text 'GLASS ACADEMY' in the top right corner.

5S in glass processing, chapter 1 introduction to 5S. 5S why is it needed in glass processing? First of all, it facilitates waste identification and it is elimination from the work place. It enables visual control, enables standard operations, promote safety and makes quality possible. It is highly recommended because it fills employees satisfaction.

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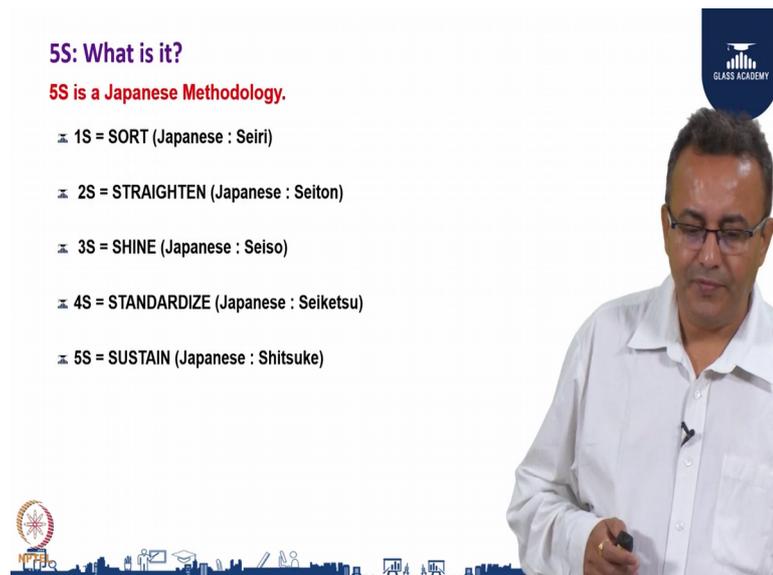
**5S: Key to success?**

- Involvement across the board, including senior management
- Integration into daily work requirements
- Communication of roles and implementation procedures
- Consistency of usage in all areas
- Follow through and Audits

The slide features a presenter on the right side, a 'GLASS ACADEMY' logo in the top right corner, and a decorative city skyline with icons at the bottom.

What is it that we must do to make 5S as success? First of all, we should involve everyone in 5S, including single management we must integrate into our daily work requirements, we should communicate the roles and implementation procedures to all. And consistency is main requirement we should be consistent with our 5S efforts and after implementation 5S, follows ups and 5S order it is are recommended for making 5S as a success.

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**5S: What is it?**

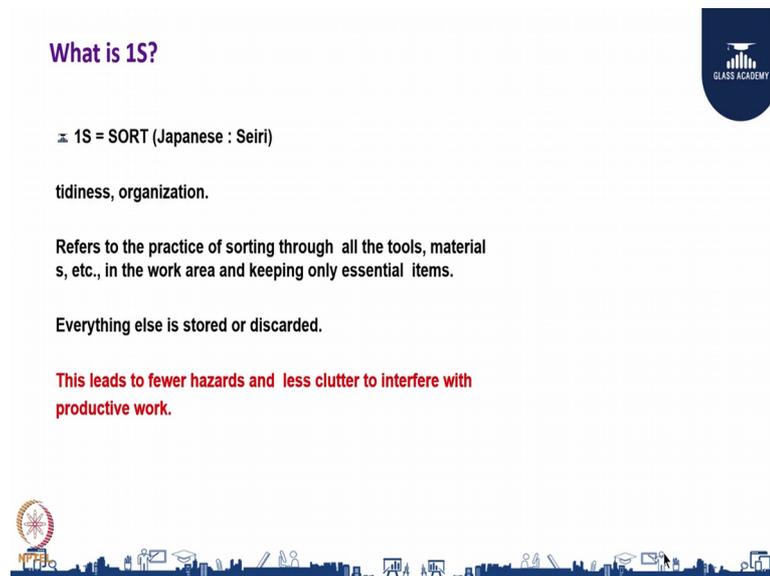
**5S is a Japanese Methodology.**

- ≈ 1S = SORT (Japanese : Seiri)
- ≈ 2S = STRAIGHTEN (Japanese : Seiton)
- ≈ 3S = SHINE (Japanese : Seiso)
- ≈ 4S = STANDARDIZE (Japanese : Seiketsu)
- ≈ 5S = SUSTAIN (Japanese : Shitsuke)

The slide features a presenter on the right side, a 'GLASS ACADEMY' logo in the top right corner, and a decorative city skyline with icons at the bottom.

Now, let us understand what is 5S. 5S is a Japanese method 4 work place management and housekeeping. It is made up of 5 words which start with S; that is why the name is 5S. The first word is in Japanese called Seiri and in English, it is translated to sort. Second S is in Japanese called Seiton and in English, it is translated to straightened. Third S is in Japanese Seiso and in English it is translated a shine. 4th S is in Japanese Seiketsu and when it is to translated into English is standardize. And 5th S is Shitsuke in Japanese and sustain in English.

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**What is 1S?**

1S = SORT (Japanese : Seiri)

tidiness, organization.

Refers to the practice of sorting through all the tools, materials, etc., in the work area and keeping only essential items.

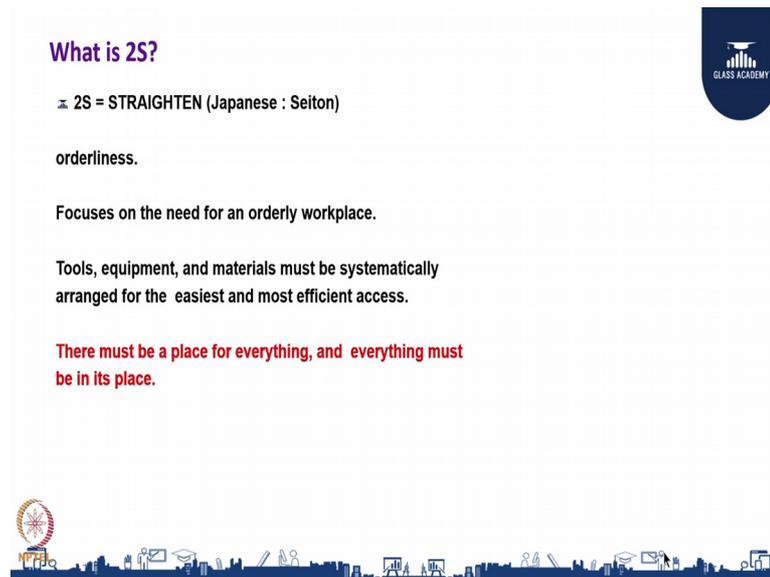
Everything else is stored or discarded.

This leads to fewer hazards and less clutter to interfere with productive work.



So, let us understand what is 1 S, 1 S is sort; it means how to make work place tidy. So, it refers to the practice of sorting through all the tools, materials in the work area and keeping only essential items. Everything else which is useful is stored or everything which is waste is discarded. The 1 S leads to fewer hazards on the shop floor less letter to interfere with the productive work.

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**What is 2S?**

2S = STRAIGHTEN (Japanese : Seiton)

orderliness.

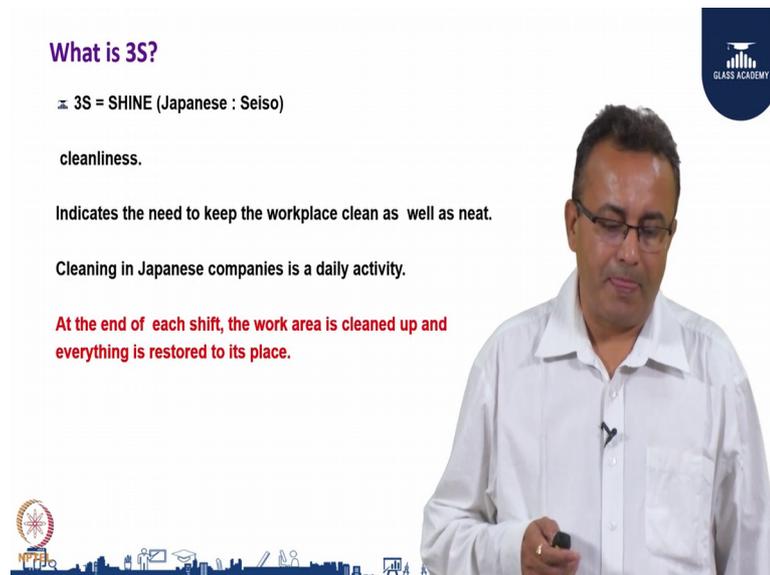
Focuses on the need for an orderly workplace.

Tools, equipment, and materials must be systematically arranged for the easiest and most efficient access.

**There must be a place for everything, and everything must be in its place.**

Now, let us understand what is meant by 2 S; 2 S means straighten means orderliness on the shop floor. It focuses on the orderly work place where tools equipment materials are systematically arranged for the easiest and most efficient access. There must be a place for everything and everything must be in it is own place.

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**What is 3S?**

3S = SHINE (Japanese : Seiso)

cleanliness.

Indicates the need to keep the workplace clean as well as neat.

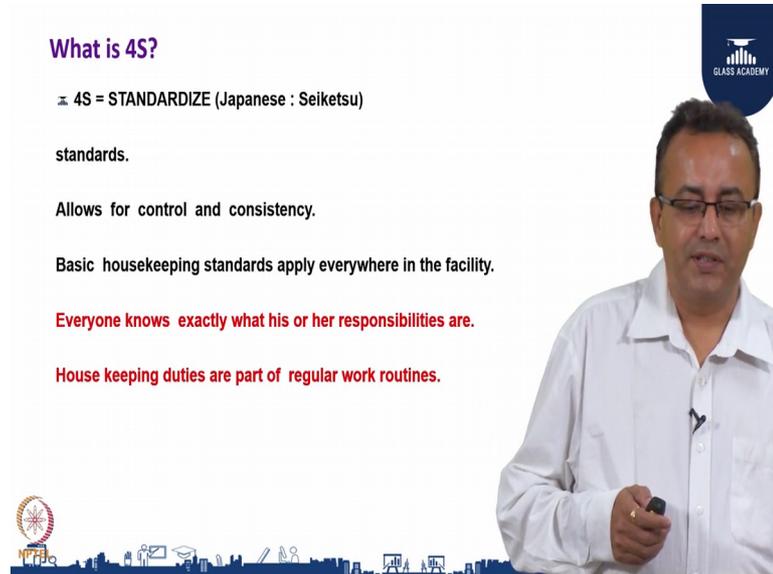
Cleaning in Japanese companies is a daily activity.

**At the end of each shift, the work area is cleaned up and everything is restored to its place.**

Let us understand what is 3 S. 3 S is shine means cleanliness. It indicate the need to keep the workplace clean as well as neat cleaning in Japanese companies is a daily activity, at

the end of the each shift the work area is cleaned up and everything is restored to it is demarcated place.

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**What is 4S?**

≈ 4S = STANDARDIZE (Japanese : Seiketsu)

standards.

Allows for control and consistency.

Basic housekeeping standards apply everywhere in the facility.

Everyone knows exactly what his or her responsibilities are.

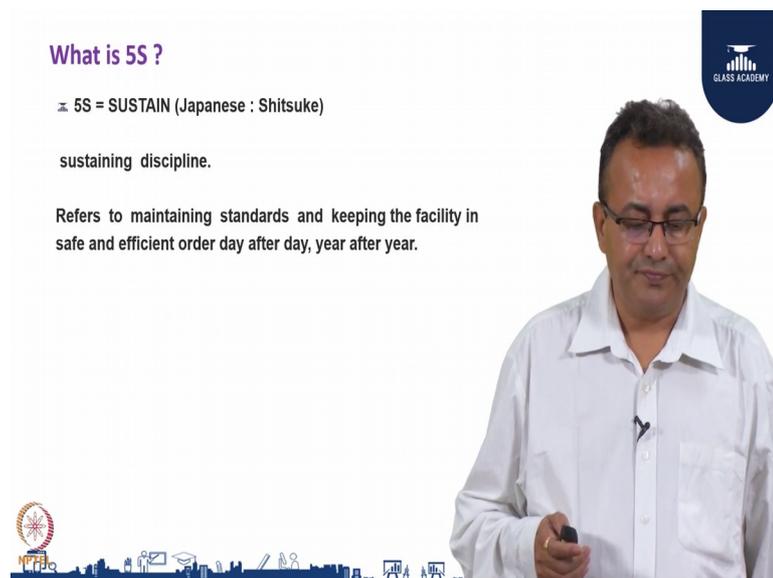
House keeping duties are part of regular work routines.

The slide features a presenter in a white shirt and glasses on the right side. The background includes a blue header with the 'GLASS ACADEMY' logo and a decorative city skyline graphic at the bottom.

What is 4 S? 4 S means standardization it means following the standards.

It allows for controlling consistency basic housekeeping standards apply every everywhere in the facility. Everyone knows there is a exactly what his or her responsibilities are and housekeeping duties are part of regular work routines.

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**What is 5S ?**

≈ 5S = SUSTAIN (Japanese : Shitsuke)

sustaining discipline.

Refers to maintaining standards and keeping the facility in safe and efficient order day after day, year after year.

The slide features a presenter in a white shirt and glasses on the right side. The background includes a blue header with the 'GLASS ACADEMY' logo and a decorative city skyline graphic at the bottom.

5S the last is 5S means sustaining discipline. It refers to maintaining a standards and keeping the facility in safe and efficient order day after day year after year. Chapter 2 how to plan for 5S.

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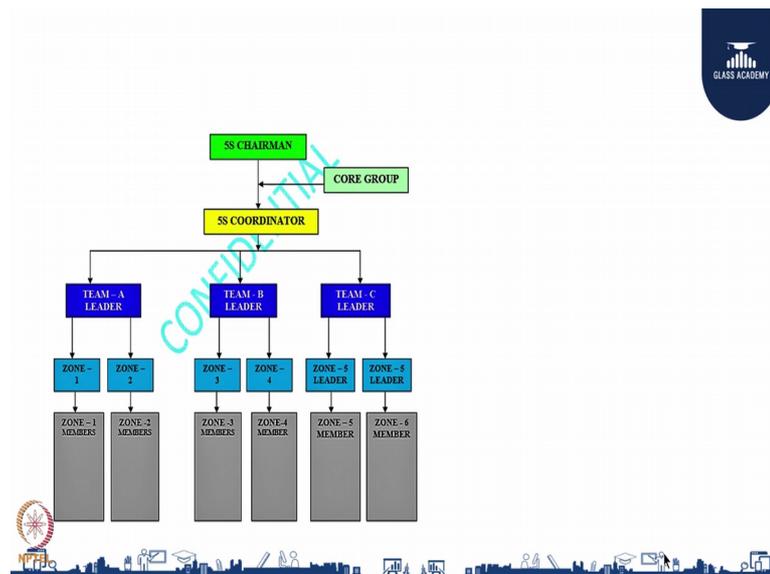
## Planning for 5S

1. Create a 5S Organization Structure
2. Divide Work place in zones (Zones identification)
3. Select Zone team leader & members
4. Define Role & Responsibilities



Planning for 5S involves creating a 5S organization structure, dividing workplace in zones, selecting zone team leader and members and defining roles and responsibilities.

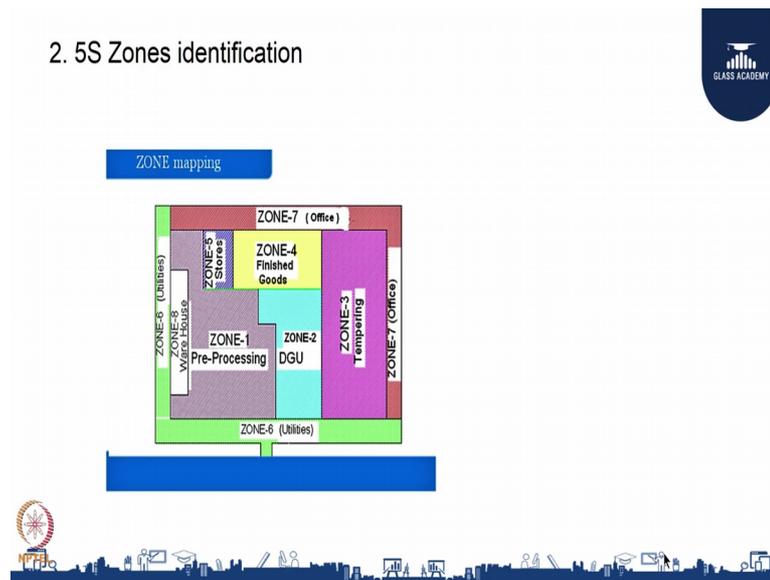
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So, as an example of 5S organization; starts with a top management with 5S chairman and a core group, then they point a 5S coordinator which interacts with the team leaders of each zone; zone contains of zone members.

So, you can understand the most important people for implementation of 5S are 5S coordinator, team leader and zone members.

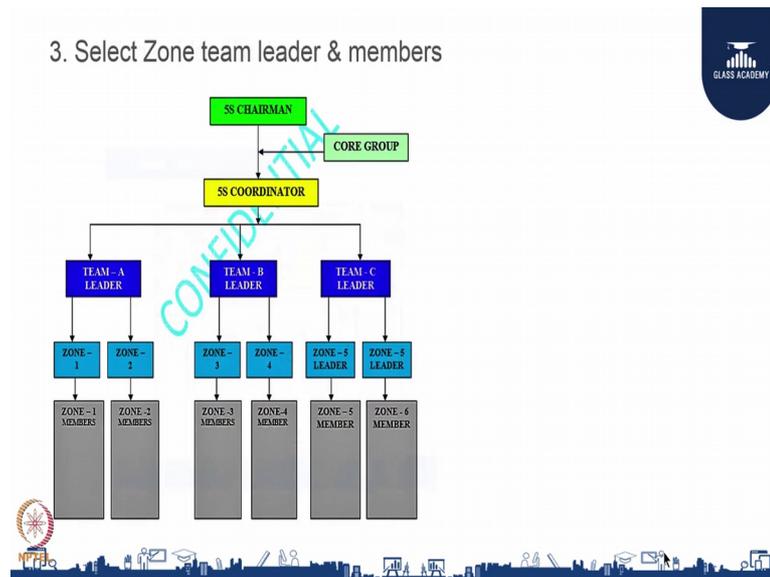
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Now, (Refer Time: 05:08) is zone mapping you divide the workplace into different zone like here you can see; the zone 1 pre-processing is zone 1 DGU is zone 2, tempering is zone 3, and finished goods are zone 4, stores are zone 5, warehouse is zone 8, utility are zone 6, office is zone 7.

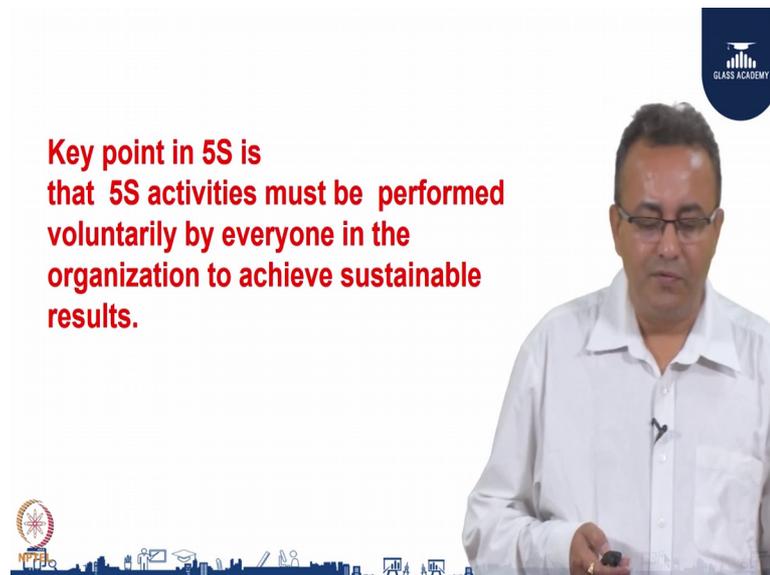
And this way you can map your zone depending upon the layout of or location of different areas in your company. The second step is 5S zones identification; as per your companies layout you can divide the company (Refer Time: 05:54) you know the workplace into different zones. For example, here you can see the pre-processing is zone 1, DGU is zone 2 and tempering is zone 3. Similarly, you can also demarcate on paper different zones in your workplace.

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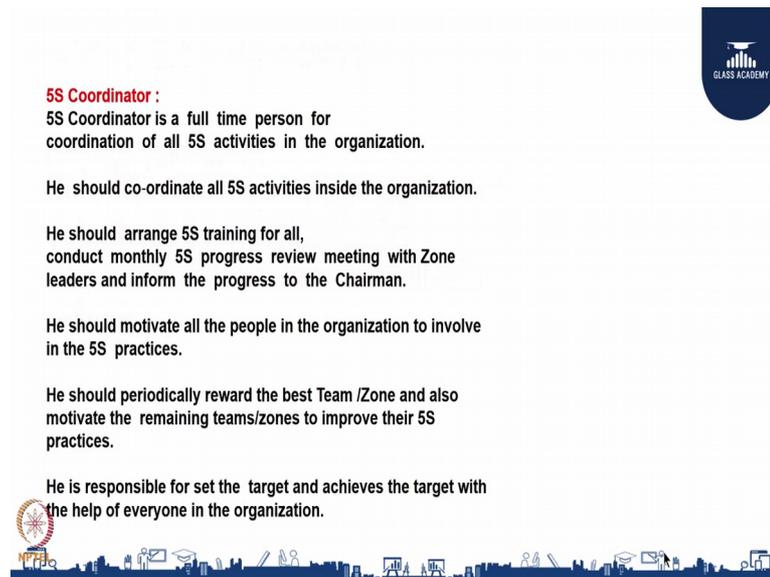
Now, select zone team leaders and members, 5S coordinator is the most important key between the teams; at different zones like pre-processing or DGU tempering their HODs are normally made as the team leaders who coordinate with the 5S coordinator, and 5S coordinator reports to the core group or the chairman.

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Key point in 5S is that, 5S activities must be performed voluntarily by everyone in the organisation to achieve sustainable results.

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**5S Coordinator :**  
5S Coordinator is a full time person for coordination of all 5S activities in the organization.

He should co-ordinate all 5S activities inside the organization.

He should arrange 5S training for all, conduct monthly 5S progress review meeting with Zone leaders and inform the progress to the Chairman.

He should motivate all the people in the organization to involve in the 5S practices.

He should periodically reward the best Team /Zone and also motivate the remaining teams/zones to improve their 5S practices.

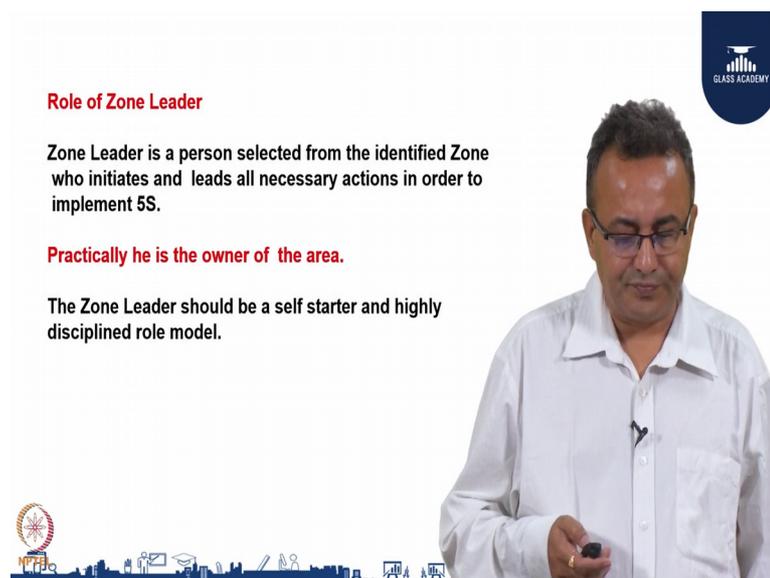
He is responsible for set the target and achieves the target with the help of everyone in the organization.



5S coordinator is a full time person who coordination all 5S activity in the organisations, he plans all cook 5S activities in coordinate trainings and 5S audits. His job is also to motivate the teams and periodically reward the best team or zones, and motivate the remaining team zones to improve their 5S practices.

He is also responsible for setting up the targets and a motivating helping a teams to achieve the targets.

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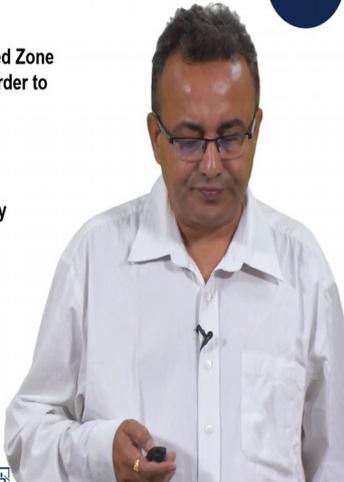


**Role of Zone Leader**

Zone Leader is a person selected from the identified Zone who initiates and leads all necessary actions in order to implement 5S.

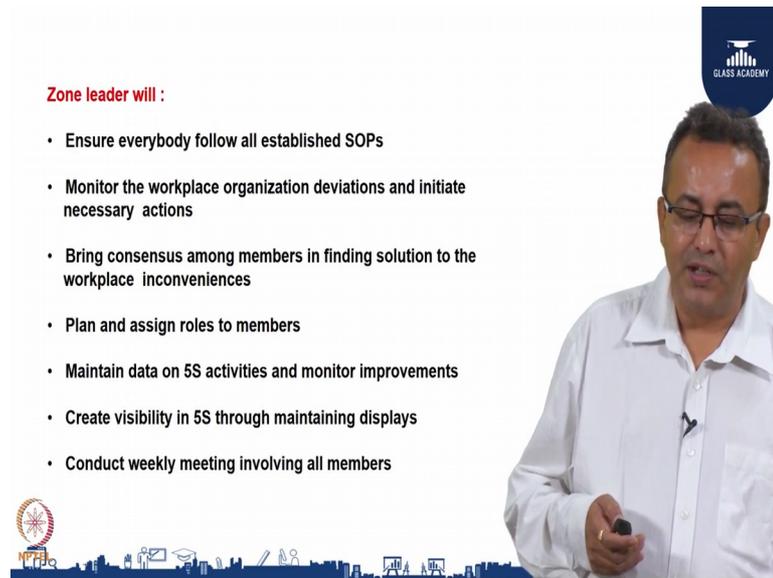
**Practically he is the owner of the area.**

The Zone Leader should be a self starter and highly disciplined role model.



Zone leader; zone leader is the person selector from the identified zone who initiates and leads all necessary actions in order to implement 5S, practically is the owner of the area HOD of the department, zone leader should be a self-started and highly disciplined role model for others to follow.

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**Zone leader will :**

- Ensure everybody follow all established SOPs
- Monitor the workplace organization deviations and initiate necessary actions
- Bring consensus among members in finding solution to the workplace inconveniences
- Plan and assign roles to members
- Maintain data on 5S activities and monitor improvements
- Create visibility in 5S through maintaining displays
- Conduct weekly meeting involving all members

Now, zone leader will ensure that everybody follow all established standard operating procedures SOPs. He will monitor the workplace organisation deviation and initiate necessary actions, he will bring consensus among members in finding solution to the workplace inconveniences. Help lan and assign roles to the members he maintains data on 5S activities and monitor improvements. He creates visibility in 5S through maintaining displays conducts weekly meeting involving all members.

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**Role of Zone Members**

All personnel working in the organization are called Zone Members in their respective work areas.

He/ She become a member by virtue of working in that particular zone.

The Zone Members will:

- Understand the 5S steps and principles
- Participate in the leader's call for ideas
- Follow all established Standard Operating Procedures (SOPs).
- Monitor the workplace organization deviations and report to the Zone Leader
- Contribute in finding solution to the workplace inconveniences
- Suggest improvements to the Zone Leader
- Participate in 5S auditing



Zone members, zone members are the basic team members of one particular area.

They will be basically trained on 5S steps and principles; they will participate in that zone leaders call for ideas. They will follow all standard operating procedures, we will monitor the workplace organisation deviation their area report to the zone leader, will they will contribute to the finding solution to the workplace 5S management, removing inconveniences, suggest improvements to the zone leader and participate in 5S auditing.

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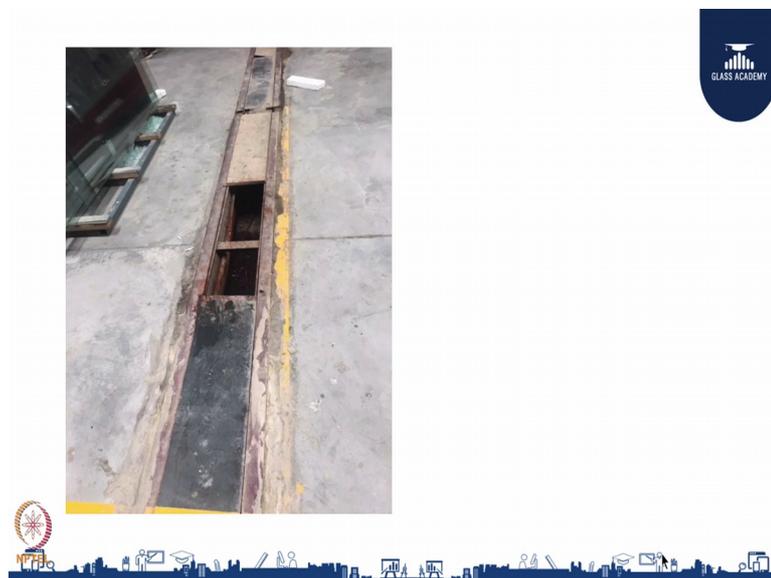


Few example showing need for a 5S, if you see these pictures in your workplace it means; you need to start 5S is not example of management of records in a processing unit you can see the way the records are stored.

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The way the templates are stored, the way the trains are kept open the yellow lines are not repainted.

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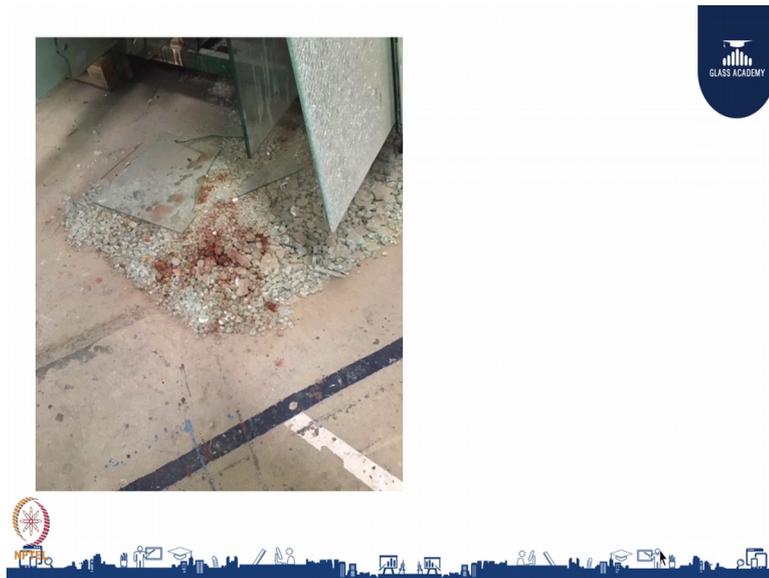
See the way off cards or glass pieces cut glass pieces are kept against the electrical panel.

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The way glass parts are stored on floor.

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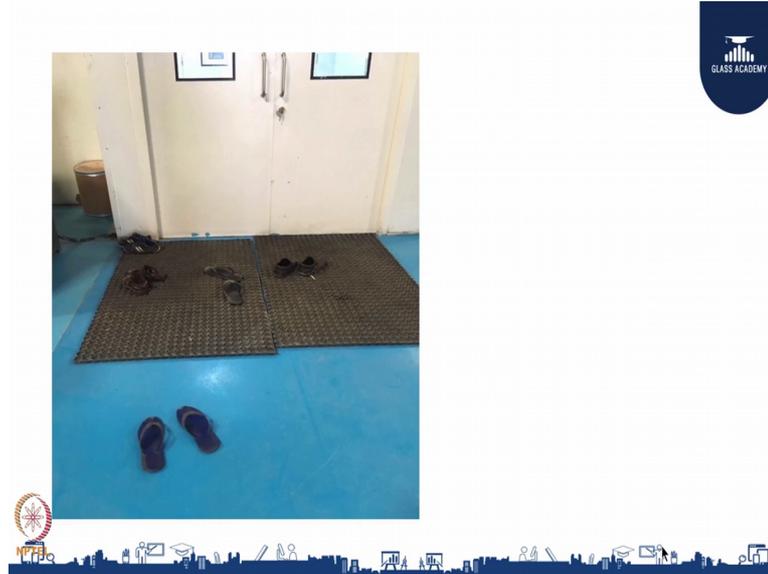
The way the glass scrap is lying around.

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The way the plastic is lying around the factory.

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And the way the shoes were kept outside the lamination room. So, these are the examples which show you need to implement 5S to bring it to a better looking and a safer workplace.

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### How to implement 5S?

1. Draw floor lines to make Gangway/walkway.
2. Install 5S display boards in each zone.
3. Make "Red Tag" area in each zone for keeping unwanted items sorted during 1S. Red Tag area is a temporary storage area for items where decisions are to be taken on sorted items.
4. Make long term storage area
  - a. Value yard to keep Broken or damaged materials or tools.
  - b. Disposal yard to keep garbage or used materials or oil
5. Use Fixed point photography to click pictures.
6. Display pictures of work area for zone members to improve.
7. Conduct regular 5S audit & Display Zone team's 5S audit score and highlight areas for improvements.
8. **Reward good teams & team members based on 5S audit score.**

How to implement 5S? It is a simple steps to implement 5S are number one; draw floor lines to make way gangway or walkways you should draw floor lines to separate the work area from the visitors area. Install 5S display board in each zone. Make red tag area in each zone for keeping unwanted items sorted during 1 S.

So, red tag area is a temporary storage area for items where decisions are to be taken on sorted items. Make long term storage areas for items sorted from different zones during 1 S. Create a value yard to keep broken or damaged material or tools value yard, means corrupt yard where you can arrange material like different area for plastic, for iron, for wood, for glass.

Now, we will go over some basic steps on how to implement 5S. First of all, we have to draw floor lines or popularly known as yellow lines to make gangway or walkways separate from the workplace of machine areas. Then we need to install 5S display board in each zone that we already checked out during our planning phase for 5S.

Now, we have to mark an area on each zone which will be named as red tag area, where items sorted during 1 S phase will be kept for further action. Make a long terms storage area is called scrap yard, where you can arrange material as per their classification like separate area for plastic, separate area for wood, separate area for steel or iron, separate area for glass craft.

So, long terms storage area can have 2 parts value yard, where you can keep broker no damage materials for tool which can be repaired further or and a disposal yard to keep garbage or used materials or oils. The used fix point photography to collect pictures if you find any anomaly or inconvenience in any of the zones you can decide a fix place to picture that area and give it to the zone member.

So, that they can improve that area and then you click the photo after 5S from the same point. So, that you can compare and display it on the display board in each zone. Now after clicking the picture you give it to the zone members to improve it, that displayed it on their display board, and after doing 5S you click the photo again from the fix point and put it alongside to the before picture. Conduct regular 5S audit and display zone teams 5S audit score and highlight areas for improvements.

So, 5S audit can be quantified and each score will tell what marks they are getting in 1 S 2 S 3 S 4 S and 5S. Based on the marks you can reward teams and team members, so that they will keep up the good work going

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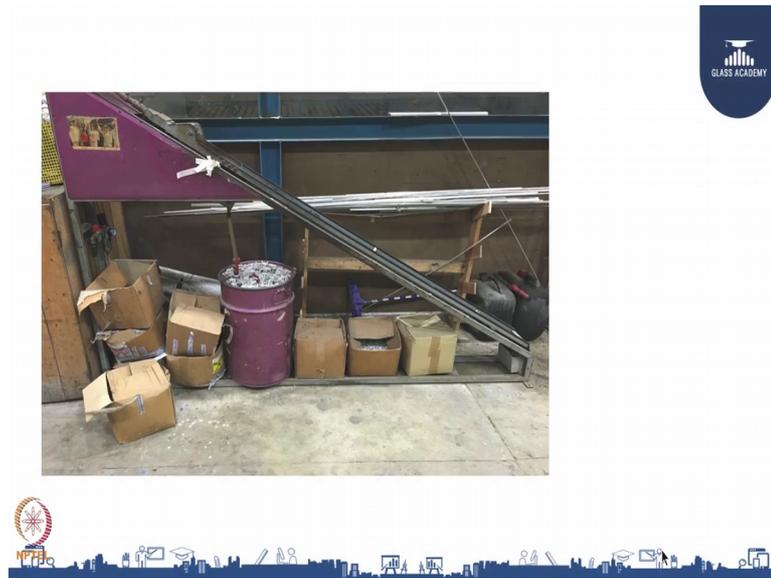
So, he is an example of 5S activity done at DGU line of a processor, here you can see the team member and the zone leader himself getting involved in sorting out things.

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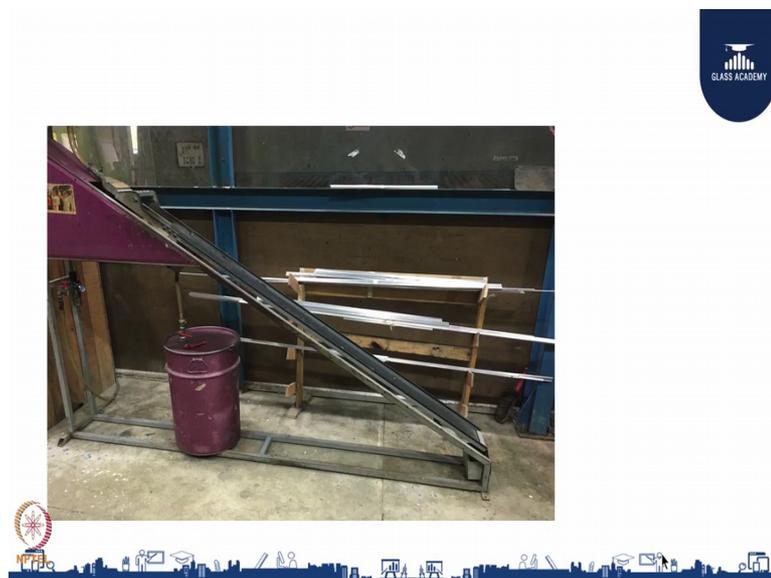
These are the item sorted during the 5S demo exercise that we did in one of the processes.

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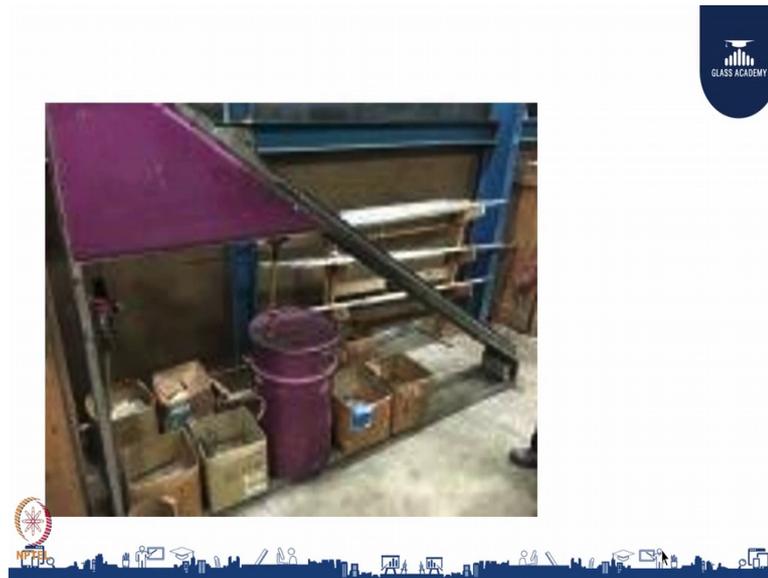
And here you can see the result after doing 1 S 2 S and 3 S.

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So, the area is now looking much much better cleaner and tidier then what we saw earlier. They are the different pictures from the same area.

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Now the material required for the DGU operations, they are kept in boxes later all this curtains were also repaired with plastic boxes duly marked with the item name and his code.

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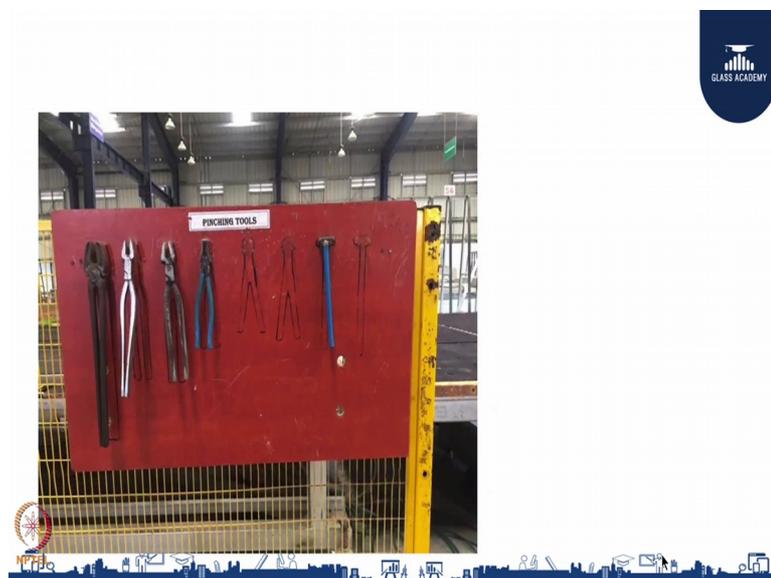
As the team celebration after successful completion of 5S activities.

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5 examples, this is 5 example of one of the processes where, the floor lines have been drawn and the gangway has been covered with epoxy paint.

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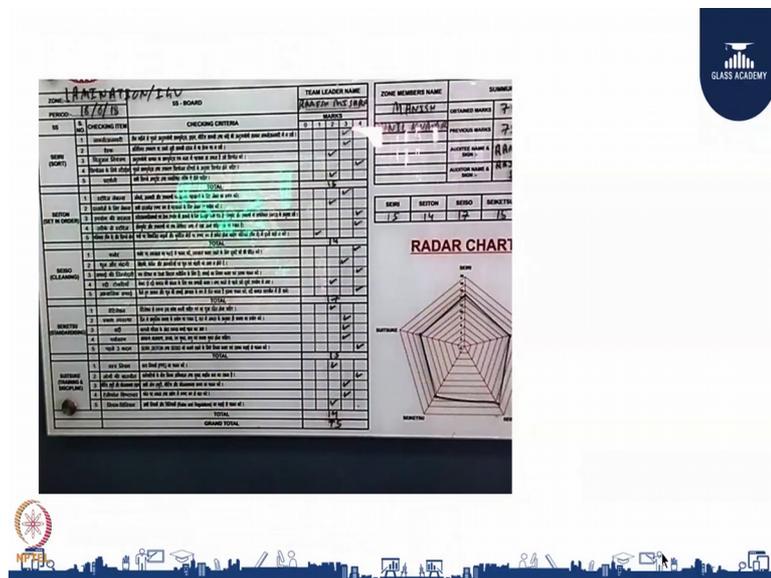
This is the shadow board for arranging tools. So, for shadow of the tool, you can make out which tool is missing you can find it out and again put it on that board.

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This is drill bit area all bits are all little bits are kept at already identified places so that it is easy to find and use.

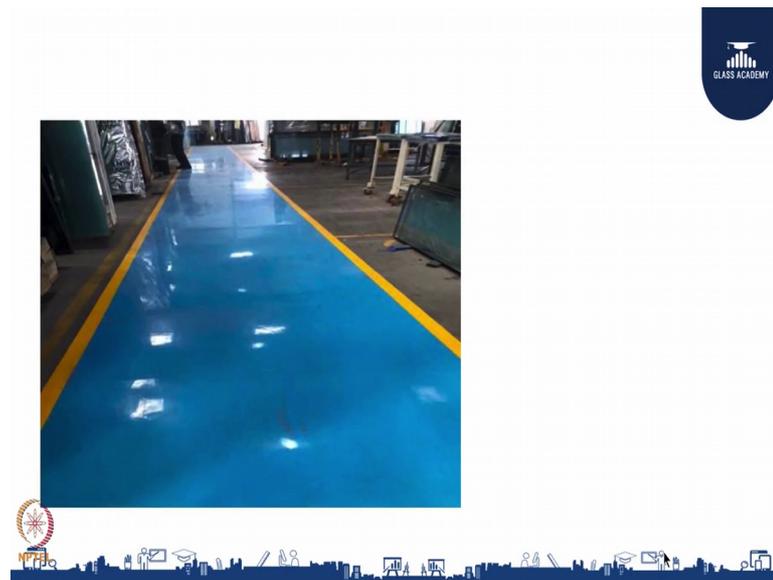
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This is the 5S audit board in one of the company they are displaying it in each zone, and the criteria is also explained, and marks are also given and then they are displayed on the radar chart.

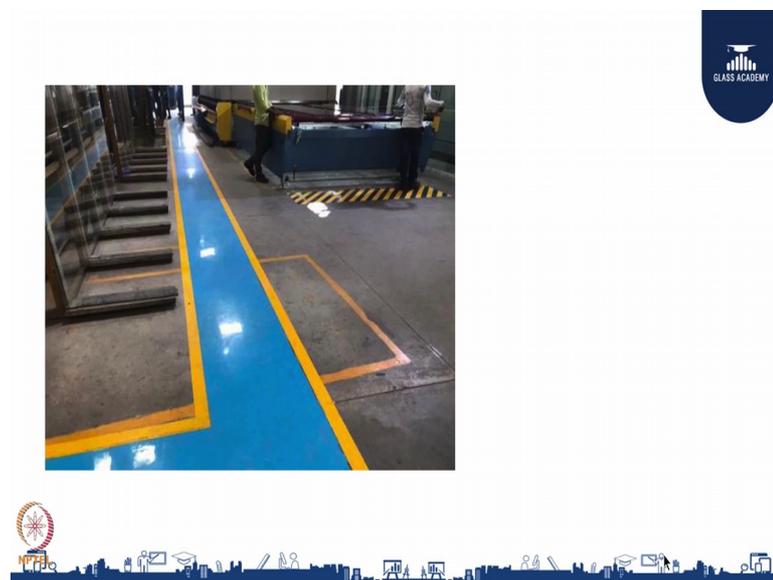
So, that each zone knows about it is 5S performance on the spot, how does a processing plant look after 5S?

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Is an example of a processing plant at the whole plant went implemented 5S? So, this is how the gangway looks like.

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So, you might see the area is looking very beautiful and highly organised.

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So, position for each item has already be the identified with the help of yellow mark and the items are kept there.

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This is a quality lab of that processor.

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I hope you are able to appreciate the look of the plant after 5S implementation.

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All sops they have been made and (Refer Time: 17:52) this is have been displayed, for training purposes and for maintaining the process.

Thanks for your participation, wish you a happy journey to 5S.