Glass Processing Technology
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Lecture – 75
Sustainability on Glass Processing

So, next move on to the Sustainability on Glass Processing. So, what the agenda is cullet segregation, reduced material consumptions, reuse glass wastage in reductions and saving of on energy.

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Why Sustainability? Will have to reuse reduce recycle of products. So, raw glass receipt, storage, cutting, grinding, drilling, washing, tempering, IGU, lamination and dispatch. So, these are the typical processing line. So, where all you can achieve this sustainability, that is all we are going to talk about now.

If you, do it, if it handle I mean if you enable I mean if you able to do a proper reuse, reduce recycle through with this process from starts from raw glass material receipt to dispatch. If you start using, you are applying mind on it towards re reuse reproduce I mean recycle it, we can achieve, we can sustain in the world with the people and planet and that we will have a better profit as well, we are going to discuss about it.

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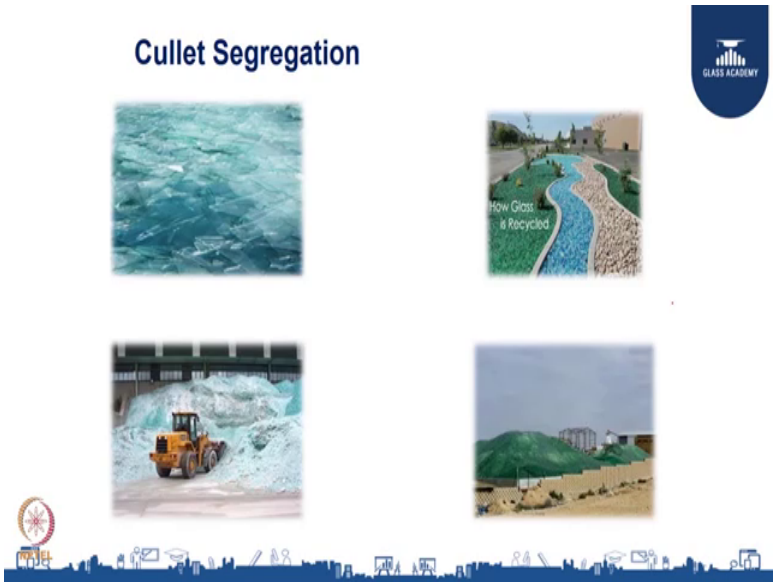

Cullet segregations, so, what is meant by cullet? It is nothing, but it, it is a broken pieces of the glass; you can see this is a cullet yard ok. You can segregate with the type of the cullet basically, cullet which is a broken pieces that is it.

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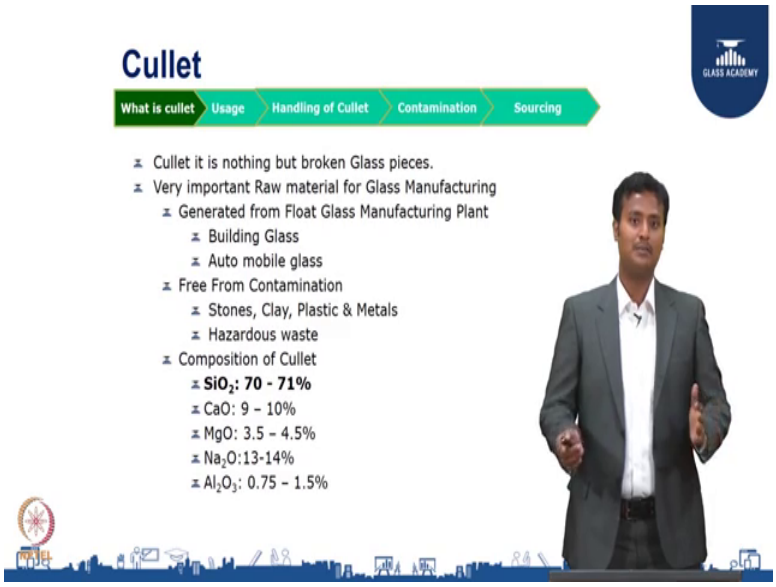

So, what is cullet? Cullet is nothing, but broken pieces it is very important raw, raw material for a glass manufacturing. So, all the processes should understand that what are the glass breakages you have so, that can be recycled. So, if you properly keep it on respective place, you split into the coated, non coated, basically a clear glass then there

by we can achieve this. So, generated from float glass manufacturing plant building glass automobile glass it is, it has to be free from contamination such as stones, clay plastic metals and hazard wastages.

And composition of cullet, nothing, but, the glass manufacturing itself I mean raw material is silicon dioxide I, mean silicon oxide 70 to 71 percentage, you can get it from cullet. So, calcium oxide, magnesium oxide, sodium oxide, aluminum oxide so, this are the percentage of cullet proportions is composition has it.

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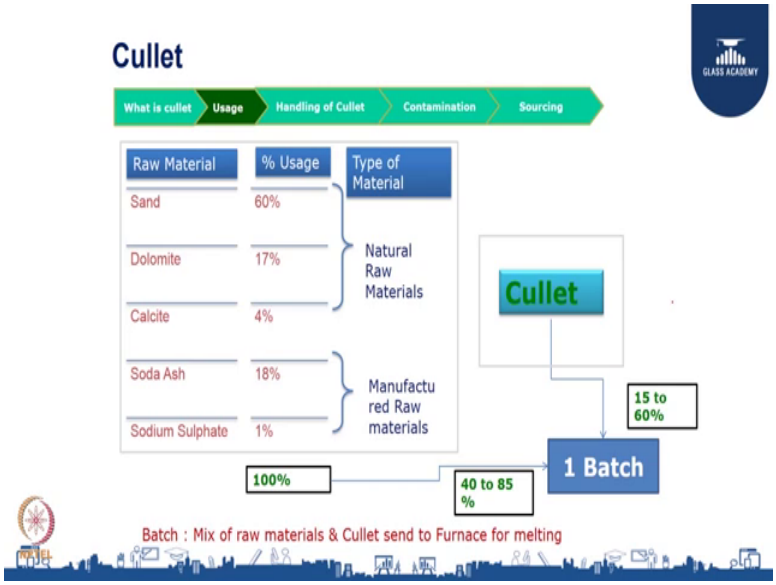

So, raw material the percentage usage of you know raw, I mean like types of material when you float glass manufacturing. So, these are the raw material highly used like sand, dolomite, calcite, soda ash, soda sulphate, sodium sulphate, sorry. So, if you not to get this 100 percentage so, these are the percentage will helpful for producing the fresh float glasses.

So, you can see cullet 15 to 16 percentage will be keep on to the first batch. The batch is nothing, but mix of raw materials and cullets into the furnace for melting. And after batch 40 to 8 percentage will goes to the 100 percentage basically, the cullet compositions 15 to 60 percent of cullet will help will aid for a manufacturing the float

glass. So, cullet is one of the important resource for glass manufacturing. So, this cannot be wasted, this waste is completely is wealth for float glass manufacturing process.

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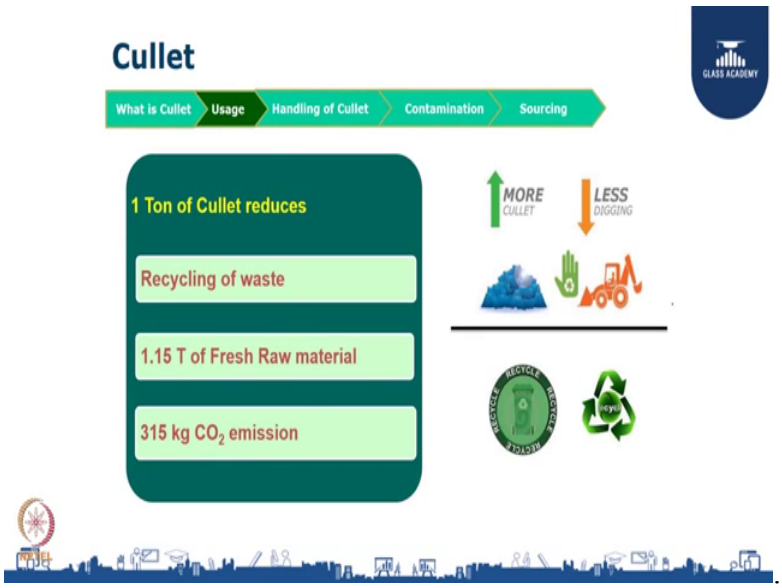

Usage 1 ton of cullet reduces recyclic of wastage, ok. We can recycle the complete wastages what we have as a broken pieces. 1.5 ton of fresh raw material if you have, it is just you know such a huge resource for raw glass processing. And this is reduction of you know I mean a 315 kg carbon dioxide emission it helps. Basically, it do not want to burn the fuels such as like this you can get it through this.

So, you can see the right side, the more cullet the less of digging. Basically, if you provide the more cullet manufacturer would not get dig which means the reservoir I mean sand mining, you need not to go dig it for a glass manufacturing process. So, whatever you produce it, you break it, you give it to them so, it will be useful, so, it will be recyclable. So, the more cullet you will have a less digging process. So, there by you can use a recycling and reduce your raw material process can be taking place.

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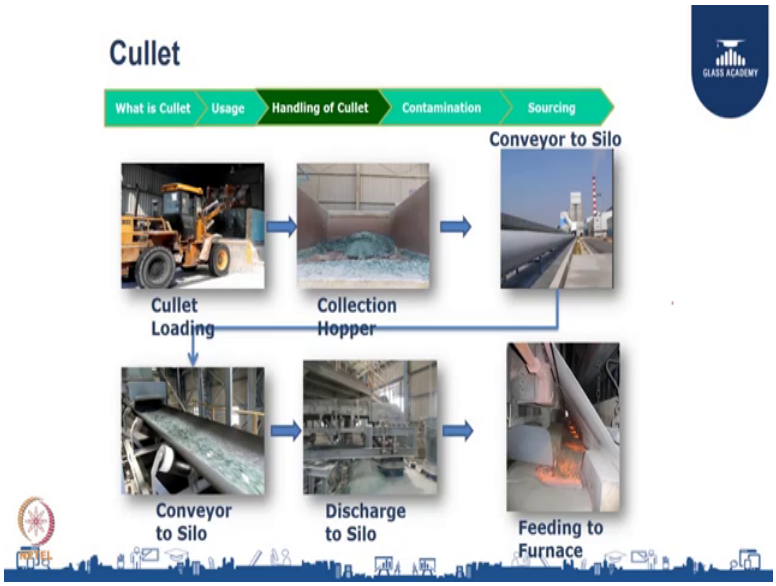

So, this is the handling of cullet basically the cullet loading and cullet hoppers and convey to the silos. And convey silos will pass on to the one place to other place through this conveyor. And discharge silos, basically the silos which has furnace the top end. And feeding to the furnace on the mouth of the furnace will be fed into the furnaces for burning the material for production of the raw glass.

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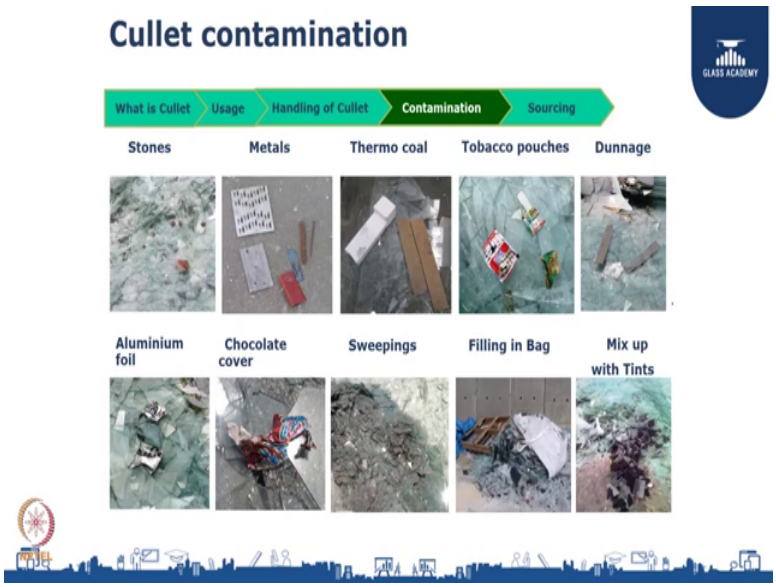

So, let us see what is the contamination? Stones, metals, thermo coal, tobacco pouches and dunnage pads, aluminum foil, chocolate cover, sweepings and filling in the I mean

the fill in the bags and mix of with a tins should, so, these are the contaminations. So, stone, metals, thermo coal, tobacco pouches, dunnage, aluminum foil, chocolate cover, sweepings, filling in the bags mix up with the tins. So, these are the normal contamination as you able to see in your respective processing place.

When they are stacking or near to the cutting process, we can see there is a one yard which a processor usually have it would not most of the processor have to think whether they have such contaminating contamination, they have it the it can be many of the items would have been rather mixed with is your cullet so, glad to identify that one.

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Sourcing basically, currently cullet being collected from the glass processor, distributors, retailer shop owners. Basically, ours glass user or glass processor whose able to produce the cullet, basically when the glass breaks you can have to store by suppliers like Omega enterprises, Shah the there are so, many suppliers.

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Processor responsibility, which means you have know respective place for storing this cullet. We have to make a proper cullet bin and segregation with the different types of the glass, clear glass, coated glass, ceramic glass, such we have to split it. So, it will be enable and for you to sell it will be easy and who is going to come and pick your cullet, you can able to know picked up easily. So, need not to worry about it so, this will help for producing the raw glass manufacture, reduce material consumption, reuse it on naked the glass receipts.

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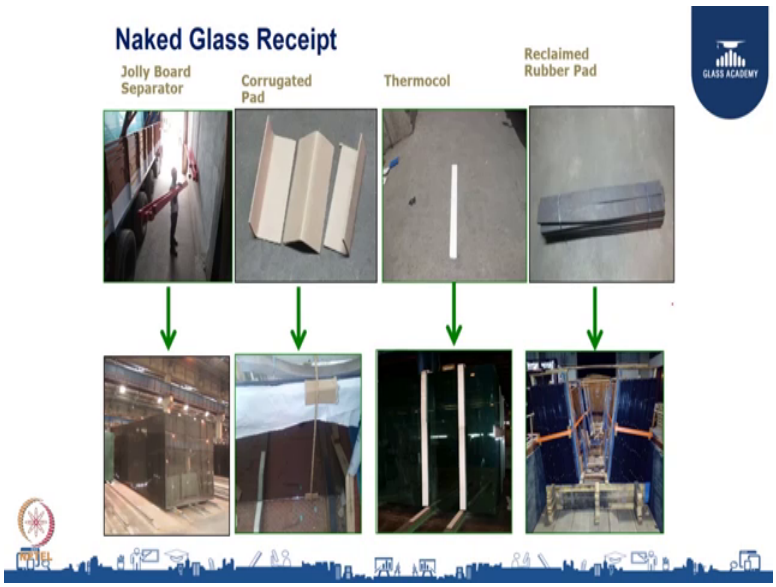

So, when you get a naked glass receipt, basically naked glass means the truck has only the a frame with, with polythene car with a jolly board. Basically, you do not have protection of the glass which is not a solar or thermal insulating glass, I mean thermal coated glasses. Basically, it is a clear glasses where you do not spent for packing. So, this is basically, this is called the naked glass from manufacturer to processor or dealers distributor. In the manufacturer would dispatch through the glass, through the truck in a naked conditions not packed conditions that is all.

So, this is the naked glass and corrugated pads, it can be used your old dispatches of your vehicle on when you are processed glass, you are dispatched respective sizes, those when you get the raw, raw material these are the corrugated padded can be reused. And thermocols, this basically thermocol as a pile separator widely used for raw glass well, the dispatch from one place to other place. So, the same thermocol can be used at the edge of places, need not to throw it outside or need not to burn it or know misuse it, you can reuse it and reclaim to rubber pads. Yes, this are though for identification of dunnage of like how many sheets of you receive that you can identify through this dunnage pad, it is reclaimed rubber pad.

So, if you can identify for the number of receipts of glass through you can easily identify, you can count 1 2 3 like this. So, however, much the glass has been stacked on the rubber pads, the impression would be printed on the reclaimed rubber pad, you can measure it. So, we need not to throw it so, this can be used when you dispatch from your place to I mean processor place to customer site, this can be reusable.

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Next, you will move on to packed glass receipt so, basically packed glass would have a wood. So, naked glass would not have a wood so, that is the most important point which have to look at here. So, these woods like a nyle, endcap know this a endcaps and blue polythene reclaimable pads steel straps for you know winding the surfaces from manufacturer to processor, this would have, would have noticed the steel strap have been tied on over of the wooden pile.

So, the same can be used for your own dispatches. For example, if use export dispatches, the same wood can be used along with the steel straps, you need not invest for new. And aluminium foil you can store it in a properly in your solar and thermal coated glasses like high performance glasses, silver coated glasses. Basically silver, double silver coated glasses can be protected with the help of aluminium foil. Teesa tape, basically it is pereferry of the edges basically this will, you will see on only the quoted surfaces like especially for double silver, singer silver, triple single glasses should have this teesa tape to protect glasses from oxidization.

So, this tapes can be reusable at the time of use storage, I mean you are using it this desiccant yes, all the packed glass condition receipt you would have identified this desiccant. So, basically the desiccant which nothing, but it will absorb the moisture, so, this desiccant can be used and for your own processing.

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Next glass off cut utilizations, so, basically how effectively you can use your off cuts? So, you have to name it like a name of the product, product code, glass thickness, invoice number, fische number, date of opening, date of packing name of the person who is doing at this receipt and taking back and whatever remark you want to give it with a pile is broken or scratches, whatever you want name it, you can give here.

So, this is the off cut utilization chart where people can easily identify and can be take into the processing. If you are not using this, you cannot identify what it, what the glass it is, weather it is solar control or it is a coated glass, it is a hard coated or soft coated, what size it is, when the process when the it was come what is the self life which cannot be addressed? So, if you use this such a label, you can easily utilize this off cut on your processing.

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Glass powders (Refer Time:12:22) grinding operation of the time of dry grinding, you would have understand the glass powder spillover around the surfaces where you can collect those glass powders, glass powder can be you know collected from like this.

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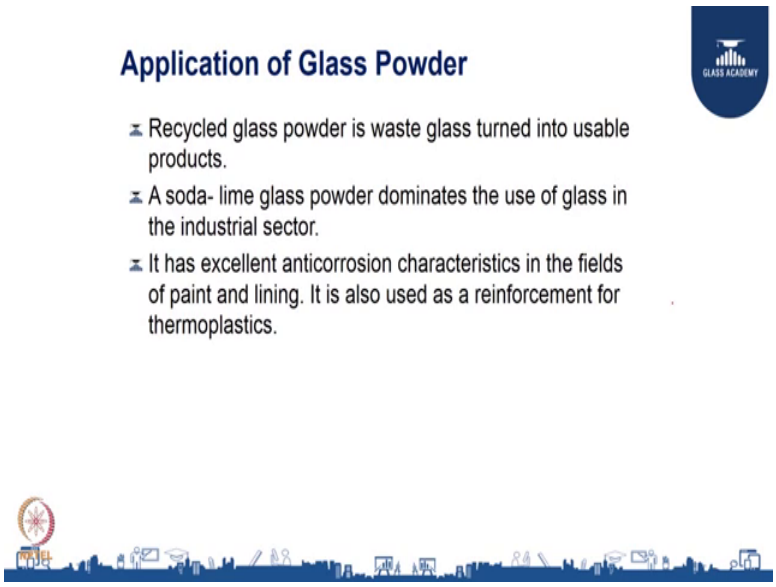

So, single edger, double edger you can get a glass powder. So, application of glass powder recycled glass powder is waste a turn into the usable which is basically waste is you know come converting into the wealth with. The soda lime glass powder dominates the use of the glass in industrial sector in various industry like; paint industry, it has a anticorrosion characteristics in the field of a paint and lining, it is also used and the reinforcement of thermoplastics.

So, basically these glass flake, these minute these granule powder will be used for paint manufacturing or lining whose (Refer Time: 13:18) going to coat for on anti corrosive. For example, sea water piping, if a inside, you want to coat it those pigment along with the pigment paint should have this glass flakes.

So, glass would it will protect that seawater corrosion. Basically the erosion, the sea which is if you draw from the sea for thermal power plant so, those pipe line inside should not to get corroded, because those pipelines or ms pipe lines. So, inside lining when use it so, these glass flakes are widely used to those applications as a anti corrosive nature.

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So, applications like you can have a decorative purpose fusing can be done. You can have such beautiful a bowl for interior application, you can have it a. Having said that like you can see the inside of the pump where in order to avoid from the, because these are the pump widely used for see water collecting pump will be it should be sucked from the sea, will be passed to the clear water station to the thermal power stations. So, those lining those inside the chamber of pumps has been painted with help of glass flakes.

So, this like chemical or any substance any reservoir, chemical resistance, you want to use inside lining this glass flakes are been widely used. Having said that these are the pipelines which (Refer Time: 14:46) from water from sea.

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Cutting oil, so, cutting, how effectively can use it basically the amount of cutting oil if you use less the cutting oil uses only for cutting the glass alone, we should not spread like more than 10 centimeters. So, you can see that widespread, basically you are wasting your cutting oil.

Thereby it is spread across of the glass and will be coating defect would come during the post I mean during tempering. Post tempering, you can see that the cutting oil burnt on the coating so, you should not allow this. So, cutting oils only to all to resist the when the cutting is happening that will be a there will not be a aberration nature which is, it is give a lubrication purpose to the cutting wheel. So, there by the cutting wheel is life is increased.

So, recommended standard cutting oil like ace cut 5 2 5 0 double 5 0 3. So, these are the cutting oil. So, why I am saying this will be easily operated, this not be retain. Again, if it is these oil for example, this cutting oil you may bought this sometimes people would go and mix with this kerosene, if you mix with kerosene what happen again it, it will not solve your purpose of processing. Again, it will goes to washing machine, it will increase the PH conducted will be go up so, you will not get a proper washing out of which. So, that is why the cutting oil usage is very important for effective utilization of a process in process industry. So, you can see the scoring so, when the scoring is happening the only the lubricating purpose of cutting oil not for the spreading across this.

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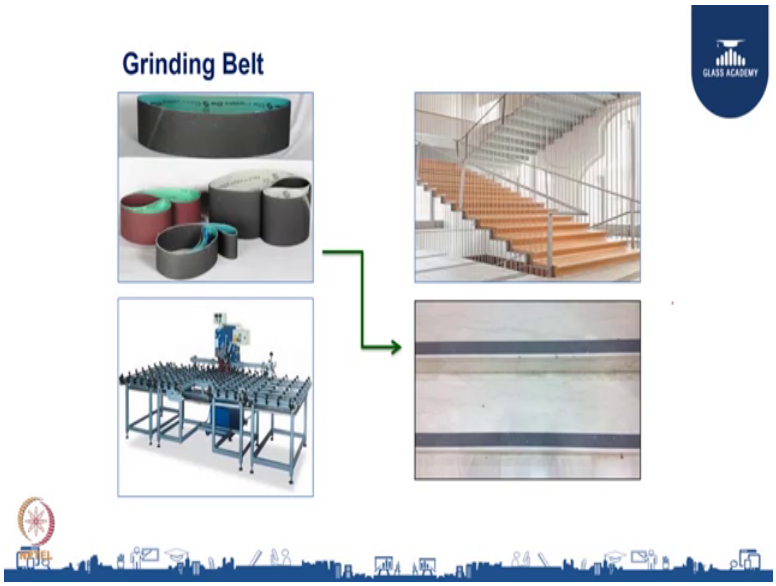

So, yes grinding belt, most of the people not aware of how effectively this can be used as. Basically this is the triple cross belt horizontal operation in arising machine where people are using this like 80 to 120 grade sizes are there after usage of this people will throw it away. So, in order to use in effective way, you can use on your stair cases which will have a more know frictions so, people step into step down. So, we will have more friction so, that people will not spill over I mean fall.

So, we can hold basically they will have a abrasions belt. So, if you effectively, if you stick that if you used on your building a (Refer Time: 17:11) appealing for performance as well as safety aspect also, you can use it. So, prime glass processing industry people has to think how effectively this can be used.

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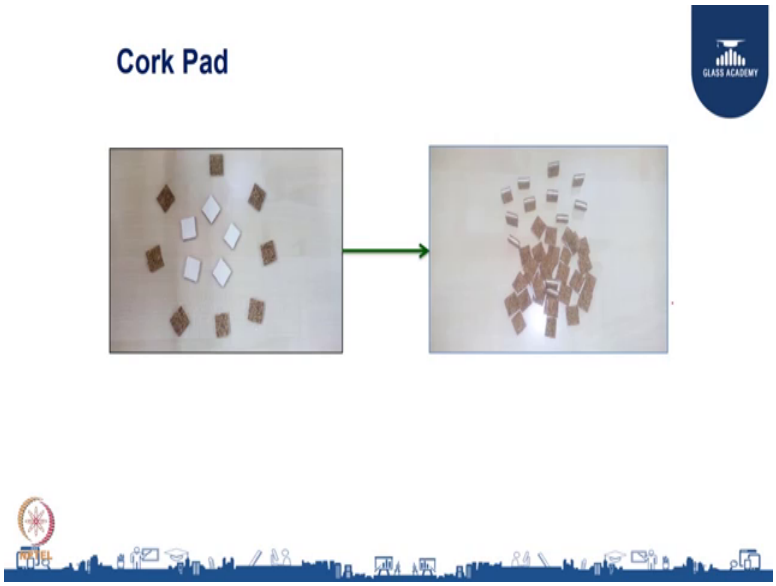

Next cork pad, this is cork pad basically this is for glass separates widely used. So, these cork separates once, you used it, you can see the (Refer Time: 17:32) side white color patches side, you can know stick with each other whenever you want it you can open it and stick that. So, you can reuse it need not to purchase again and again so, you can wealth is your money is saved, if you used properly on cork pads.

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Glass wastage reduction, it is a most important point which I would like to emphases here First In First Out FIFO, which is called FIFO. So, basically when you receipt it,

when you process those classes are to be process at the earliest. The next slot comes, so, accordingly you have to give priority to the first in first out ok. You have to keep in mind and off cut utilization we have discuss about it during your project. So, there may be lot of off cuts so, people are going to be waste it like in a cullet form, cullet can be recycled. Even then if you keep it in a such a big panel for example, as a off cut you can keep it, stack it separately so, you can reuse it and protect and I mean protection of a coated glasses like basically glass wastage in reduction.

So, this aluminum foil it can be a widely used for protecting your silver coated glasses. So, it cannot be you know thrown away, it can be where know used. And effective optimization so accordingly you have to plan so, you should have a software where according your project basis. So, you can select a proper glass sizes, accordingly you can use it so, you have a more optimization in effective manner there by you will have a considerable reduction in glass wastages.

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Next move on to energy saving, use glass allow like say allow it is a direct light sunlight comes in ok there is no blinds up light is off ok. So, you can see this and use less power consumption monitor for example, this monitors know there are no upcoming, there is powerless if conception less power is it will be very consume CPU, I mean Computer Process Units are there. So, those if you buy and can be is useful again whatever you have a old computers it can be donated to the your near schools. So, thereby, they can,

they can get it I mean they can get benefit out of which and switch off your computers when you are leave a office so, again.

So, these are the small factors, but we will have a more effective saving on as. And use CFL Chloro Fluoro Lamp CFL lamp energy saving lamp. Basically nowadays, every bulb manufacturers come out innovative ideas so, you can use LEDs bulbs or the see a less usage of energy consumption energy saving bulbs can be used. Basically, switch off when it not in use, you keep it in mind and work accordingly, so you can save energy in your office.

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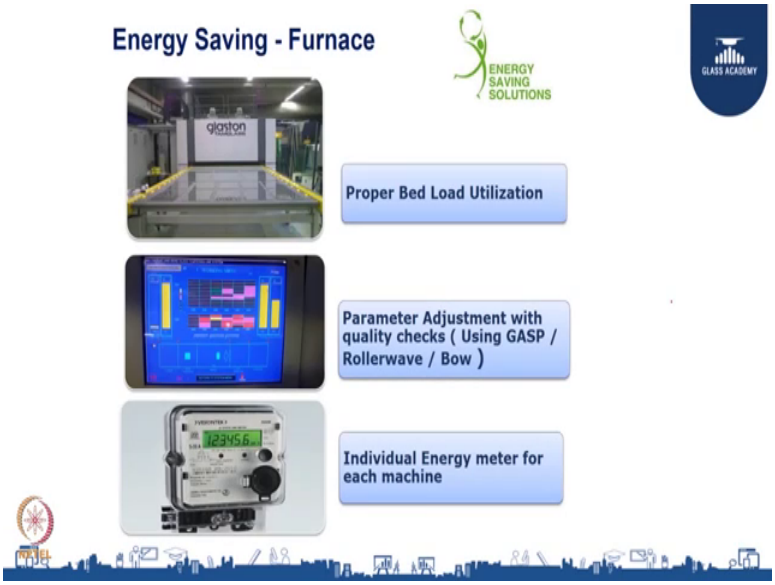

And energy saving in furnaces, proper bed load in utilization basically, when you plan a tempering in production, how you how can do in start the production you hope you are understand. First you have to start the, the higher thickness where the temperature is less temperature is required to temper the higher thickness of the glass. So, basically you have to put a first 12 mm, 10 mm, 8 mm, 6 mm, 4 mm.

So, if you plan such a sequential do not you know mixed up like a start with 4 mm and go with 12 mm again 6 mm if you do it so, you have a teeth loss, it is going to be play playing a major role here. So, you have to start like big thicker less temperature on the

furnace, this is how it is works like that. And moreover, how effectively you can utilize your bed so, get the orders plan accordingly how much you can load per load you can get it and accordingly you have to run a shift.

And parameter adjustment with its quality checks using gasp process glazing angle surface polar meter which will helpful for distortion level and roller wave either will be a form of digital or will be a radial level and bow we can test it. So, accordingly you can change your parameters, if you able to get the proper as per the standard.

So, in terms of reduction of heat, heating tank, crunching tank, cooling tank if you considerable and maybe 5 second, 2 second, if you frozen parameters to if you reduce it there by you can you can achieve energy saving as well. And individual energy meter for each machines is most important. So, how much it consumed? If you are planning today, if you are doing this is effective manner how much it is reading is there. Tomorrow if you go and come up with a new plan how much energy reading can be know saved. So, this will help enable you to understand the energy saving on the furnaces. So, this is all about today thank you so, much for your patience.

Thank you so, much.

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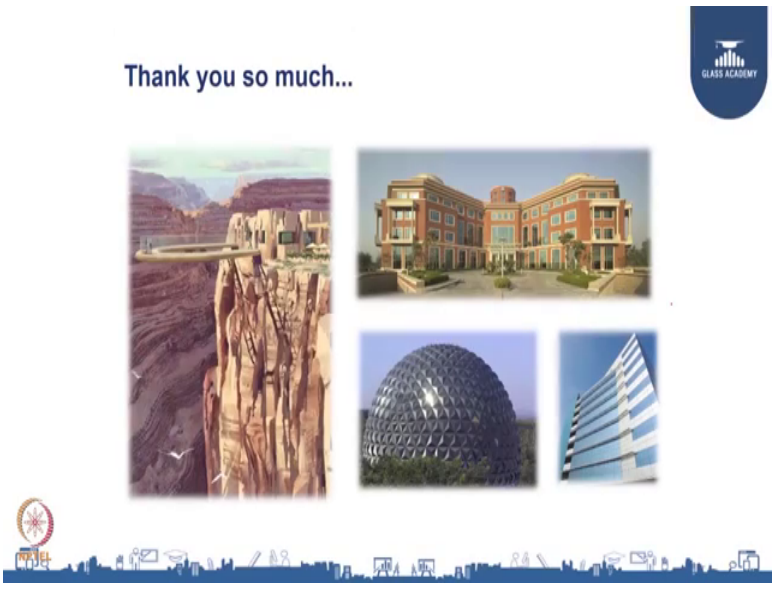

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