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Board treatment mostly underestimated

Production boards and their importance in concrete block factories are gaining more and more attention. While years back most production boards were made from softwood or hardwood, todays choices of boards are plenty. Going from wood to higher quality products like the Wasa Uniplast® fully plastic boards requires longer-term investment since the investment and longevity compared to wooden boards is greater. This investment needs to be protected. The lifespan with higher quality boards is not comparable with wooden products. There are still some plants for example using the Wasa Uniplast boards from the first batch ever produced which means that these boards are around 22 years old now. This longevity is surely due to these plants taking good care in the cleaning of the boards which is a very important factor and should not be underestimated, no matter what board type you are using. The following report provides some directions on what you can do to extend the lifetime of a production board with just a few small changes in your system or simply a planned weekly control.

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Production boards transfer the energy from the vibration table directly into the concrete. You probably agree that is most effective when the vibration energy is transmitted trouble free because this gives you great compaction results and therewith this has a very positive influence on your product quality. Good vibration transmission saves you production time or even energy cost because an effective board will transfer the vibration much faster than for example an old worn out board.

Good Production boards → better vibration transmission → good product density → less complaints → faster production!

Saying that raises the next topic which is what type of boards are out on the market and what treatment do they need.

Currently on the market you'll find PU coated boards with full-wood-core, PU coated boards with plywood core, plywood boards with a top and bottom coating, fully plastic boards, pine or larch wood boards, plastic boards with a honeycomb in the centre, hardwood boards and softwood boards.

There are probably depending on the area you are living in some other types as well but basically all of these boards need to be cared for in order to extends their lifetime. The standard treatment every board needs to have:

Board brush

It is very important to have a brush especially for the boards-surface installed in your system since this enables a cleaning of the surface just before you turn the boards. It should be really mentioned that it is not only enough to have a brush it is even more

It is very important to monitor and maintain the board pushers.

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important to have this brush running and maintained well. If the brush is not running or worn out there actually is no cleaning at all. It should become part of your daily maintenance routine to check and control the power and cleaning function of the brush. Just check if there is enough contact with the board and whether the board comes out clean after brushing. If you see that the brush is worn out – replace it fast – it will save you money as well as complaints. Depending on the board type you need different kind of brushes. Some boards need a fully steel brush while others can work well with only Nylon or a Nylon/steel mix.

What can happen if the brush is not working or not existing? Some of the product pieces might remain on the board surface. Unfortunately when the mould comes down goes straight on top of a piece of residual concrete, and this is pressed into the board's surface due to the high force of the mould clamp and vibration. This happens no matter what board type you are using. Over time, this could cause the board to have build up concrete right under the mould frame. After some time the mould might not sit straight on the board anymore and causes a high amount of wear of the mould and makes the boards surface even worse.

Release Agent

In many cases a release agent is also necessary in order to apply a proper cleaning. This very much depends on your concrete mixture and its moisture content and the size of your products. Usually for smaller and dry products you might not need a release agent but in most cases you do. The cost for an agent in Europe for example is between 80 cents up to € 2,20 per Litre. There are many suppliers, even local ones which will surely help you with this. If you would like to get a release agent tested before you use it you can no doubt send it to the board supplier for further evaluation. The board supplier can tell you after a couple of days if the agent affects their products surface in a negative way. Keep in mind that the supplier can only test if the agent affects the boards surface and not if this specific product itself works fine at your site. This would be tested on your site. Also please make sure while using a release agent that the spray nozzles are maintained to work correctly and that these are not blocked.

Pushers

It is very important to monitor and maintain the board pushers. If pushers are worn they become in many cases sharp like a razorblade! During production this pusher can damage the boards very easily. You can see if this is the case when you look at your stack of

boards (more on this in the next step). Wasa strongly recommend Polyurethane pushers since these do a great job and cause less wear on the boards – no matter which board type you are using. The investment for these pushers is just a little higher but will reduce your costs in the end, as you might be able to increase the lifetime of the boards. Keep in mind the boards are a big investment which you should take care of. Also important is to always check if the pushers are synchronized which avoids dead-locks in the system. Deadlocks will destroy boards and also here it does not matter which type of board you are using.

Transport chains

If you are working with transport chains in your system this is also an important factor to take care of if you want to extend the lifetime of your production boards. The chains should not be worn out. The original chains supplied by the machine supplier are most likely to be changed by the customer after some time. In many cases these chains are replaced by ones from local suppliers. This is not an issue but these "standard" chains usually have uneven chain links while the ones supplied by the machine suppliers are all straight. It is recommended to continue using the straight ones since they cause less harm to the production boards. If you haven't got this possibility anymore and must buy local chains, please check carefully if you might damage the board surface with these.

Another important issue for the chains is where you have a transport handover from one chain to the other, both chains must be synchronized. This easily can cause scratches to your board surface if chains are moving at different speeds, or running under a stationary board.

Board stack

Check the board stack! Look carefully at the stack of boards because it tells you stories about your system. While looking at a board stack you already see the marks on the boards. You can locate the point where the board gets in touch with the system the most. Check this point and try to solve or minimize this issue. It may help the production boards to last even longer than you expected.

Look at the surface of the boards and if you see that there are pieces of concrete material pressed into the surface, you will need to check the mould clamping pressure.

Transport chains

Board stack

Mould hold down pressure

Quite often when a plant changes from wooden boards to higher quality boards it happens that due to a higher density of the boards the user needs a higher mould clamping pressure which avoids the mould jumping and moving away from the board during vibration. If it is set-up correctly than concrete pieces will have less chance to get under the mould frame during the vibration. If this is working correctly you'll will have less wear on the surface.

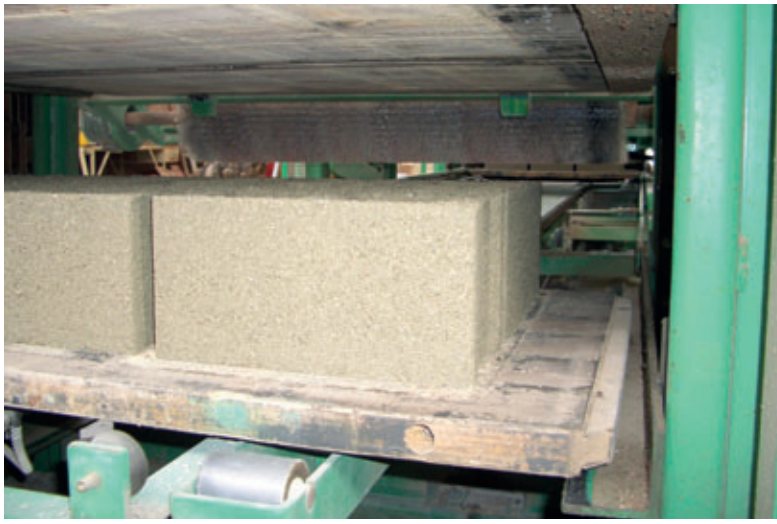
Curing Chamber Air ventilation

Depending on the board-type you are using it is important to check that where you are using a steam or vapour curing system, the burners or the steam outlets do not blow directly onto the the boards. This can cause damage to some board types. Further to this Wasa does not recommend using any type of wooden board in steam cured chambers. It might work initially but usually the cell structure of the wood is not made to withstand these fast changes from very wet to dry and wet again. For this type of curing chamber a higher quality board is always recommended.

Elevator/ Lowerator

When investing in new good quality production boards you should check your elevator/lowerator as well. Continuous steel shelves which cover the full length of the boards are the most gentle. With this solution the weight of the board will be distributed on the whole

Curing Chamber Air ventilation:
not good – steam blows directly onto the boards)



Elevator/Lowerator

surface of the steel strip! This is a much better solution than some of the older machines with smaller fingers. Further to this it is recommended that you always check also the proximity switches on the Elevator/ Lowerator. It could cause damage to the boards if the switches are not working perfectly.

Steel bars on the vibrating table

With one of the most important factors is to check if the vibrating table is even and the steel bars on the table are too worn out. There is nothing worse than this, since an uneven vibrating table can cause so much heavy harm to your boards and your products. In many plants the measuring is done during every mould change which is very much recommended. Usually the edges of the vibrating table where the boards go in and out are affected the most. If these are worn then the board is not able to sit straight while the mould comes down. During vibration the board will then flap under the mould which most likely leads to greater damage.

Storage of boards

The storage of the boards is also important. Depending on the type of board the storage might be different. You would want to check this with your board supplier. Wooden as well as fully plastic boards for example should not be exposed to the direct sun. This means you should cover the top of each stack. Also wooden boards should not be stored in a stack for too long since the wood could begin to rot. Most of the plants just leave the boards empty in their curing chamber over the winter time. This is ok for most of the boards but also very dangerous for wooden boards. These boards then dry out fast and get create gaps in the surface. After starting again when the temperature allows, you will face problems because of these gaps. Therefore every board supplier has specific recommendations on how to store boards when ceasing production for a longer period.

Stopper on the vibrating table

In some block machines during the vibrating process there are steel clamps,the so called stoppers, which prevent the board from moving too much under the mould. This in most cases cannot be avoided but depending on the machine setting may not be good for the boards. It helps a lot if you add some kind of hard plastic on top of this stopper which then should cause less harm to the board. If you only have steel stoppers

Stopper on the vibrating table

you might want to consider this option during your next maintenance cycle. This helps any board out on the market to extend their lifetime.

Board stack before the machine

In some cases when the board is supplied to the machine the bottom board is pushed without lifting the boards above. In some cases this works without any negative issues but if the boards in the stack are not clean enough The weight of the stack and the pushing of the board can cause scratches to your board surface which should be avoided. In case you are working with a similar system you might want to talk to your machine supplier of your trust on how you can change this. The optimum performance would be to lift the stack above the bottom board before the pushers or chains take it out and feed it to the machine.

Board turner

In around 80% of the plants worldwide there is a board turner installed which turns the production boards after each cycle. This is very good for the boards and if you are not using one yet you should consider to do so. The board turner allows you to use both sides of the boards. It also, for example, gives wooden boards the chance to get moisture from the spraying unit from both sides which ensures an even moisture content can be accurately controlled. It is important to check that the board does not hit the conveyor system to hard when depositing the turned board. Some of the older units are quite rough while turning the boards. In many cases it also helps a lot to add some kind of hard rubber in front of the steel arms which is a good and gentle way for the boards to be handled. This part of the system is in many cases also a bit noisy. New board turner devices which go down slowly for example also reduce the noise level in the production hall.

Conclusion

As was mentioned at the beginning, the importance of careful maintenance with production boards should not be underestimated. This principle applies no matter what type of board is employed. Regular checks, maintenance and a watchful eye on the circulation system and production boards all make their contribution both to user satisfaction for the longest time possible and to the best possible manufacturing results.

FURTHER INFORMATION

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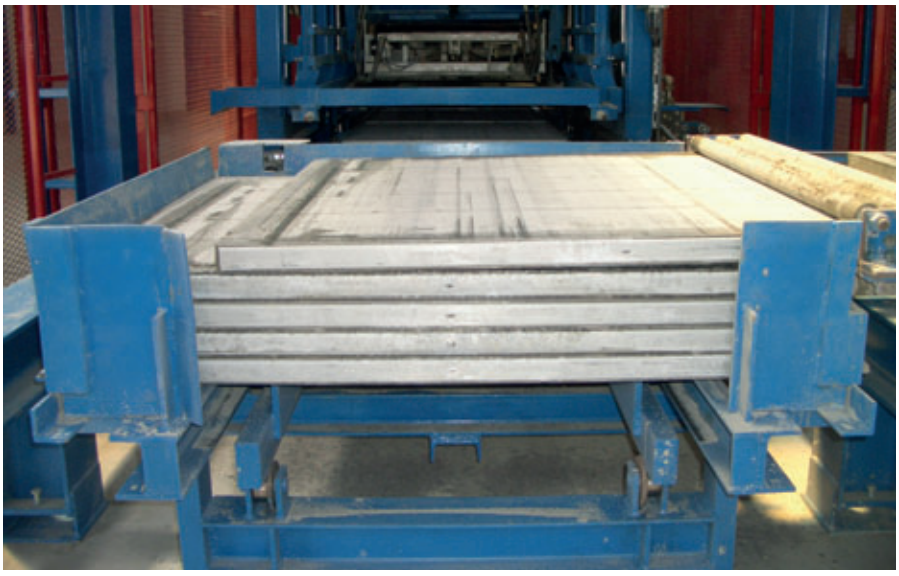

Board stack before the machine