



‘THE ESSENCE OF GENIUS IS SIMPLICITY’

A PROFESSIONAL’S VIEW OF THE HICKEY REMOVAL SYSTEM FROM JB MACHINERY

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The biggest enemy of the flexo printing process in the corrugated industry is dust, the sources of which are usually linked to the paper (due to fibres getting shorter) and the slitter and cut-off knives on the corrugator. Dust removal at the source of creation is probably the best option, but is not always possible and is not really effective enough to avoid defects in print.

JB Machinery® contacted Technology Coaching in 2013 for comparable testing of using and not using their KleenPlate® for cleaning the flexo print plate during the print process. They wanted the tests carried out by an independent observer. My usual comment before accepting such a challenge is that they had to realise that such tests will show what they need to know and that the results often significantly deviate from what the client wants to hear about their product! JB Machinery® accepted the proposed method for objective testing and we started the project.

When doing comparable testing, we measure the difference between certain properties that are important for the print process. What are the key properties that KleenPlate® will have an impact on during printing?

- Dust spots in print;
- ‘Filling’ between dots;
- Colour consistency;
- Machine down time;
- Product waste.

The impact on production?

Let's first look at what happens when a production run has to stop for washing flexo plates due to dust spots on the printed substrate. Some machines are equipped with vision/detection systems that will detect the defect, but it is likely that in most cases, a significant number of sheets have been produced with defects before the defect is actually noticed. Mostly, these are high quality sheets, printed on coated liner. There is therefore a significant risk for product waste before detecting the defect.

After detecting the defect, the machine is stopped. What needs to be done and what are the key considerations?

- Remove sheets with defects from the stack of printed sheets.
- Open the machine (you need to look at the safety regulations for entering the machine).
- Start washing the plates. This is best done with water and detergent using a soft cloth.
- Plates might need drying after washing.
- Close the machine.
- Check that the machine is still in register and that the pressure settings are still correct.
- Check to see if the ink is still in good condition.
- Re-start the machine.
- Remember that it is likely that the first 10 sheets might not have the correct colour and need to be separated from the stack.

Can all this be done in five minutes? It is not very likely. Even when using automatic plate wash systems, you might be a few minutes faster in getting the machine running again, but the disruption and waste is of the same magnitude. This means that you have the same number of waste sheets that need to be separated from the finished goods

you send to the customer and you need to check the colour and colour to colour registration before commencing normal production. The target of using KleenPlate® is to have zero ink or dust build-up disruptions during production, allowing uninterrupted work flow.

What is KleenPlate®?

The KleenPlate® system design is what I refer to in the title of this article – 'The Essence of Genius is Simplicity'. Below is what the system looks like.

How does it work? At regular intervals, the KleenPlate® unit traverses across the print plate, wiping off the ink and dust using a fresh section of cloth. After traversing over the print plate, the 'cloth band' makes one step, so a fresh section of the 'cloth band' is ready for the next cleaning interval. KleenPlate® can be set so it continuously cleans the print plate or it can be set to do it at regular intervals. The KleenPlate® system

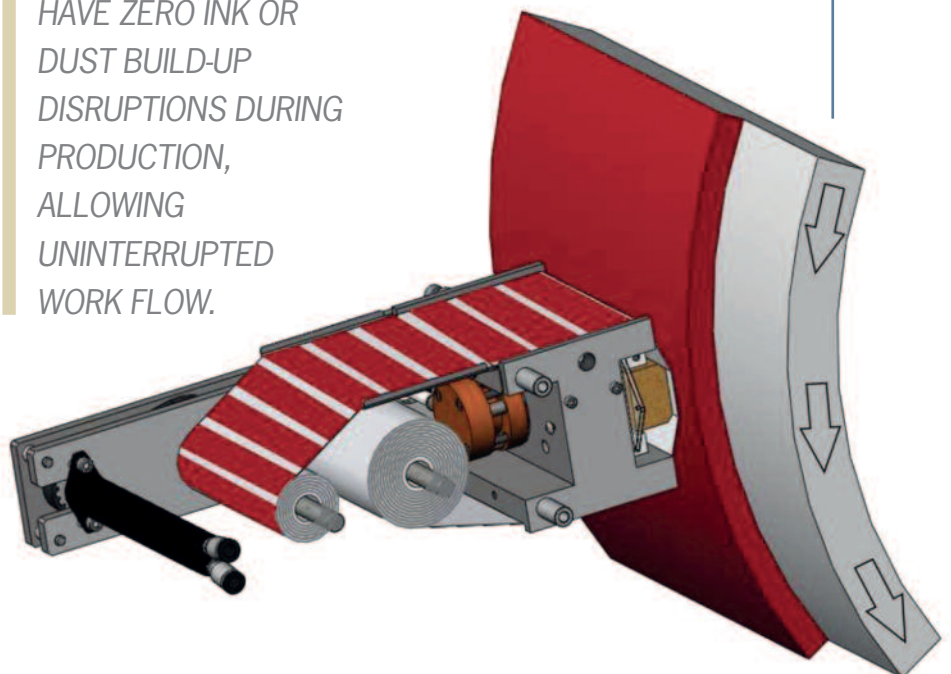
trigger can also be based on defects found in print if the machine has a vision system that can detect errors in print.

It is important to realise that a 100 per cent defect free print is not possible. What KleenPlate® does is avoid defects becoming visibly apparent, because they show on every product in the same position. What do we mean by this? It is very unlikely that an observer will detect a defect in print when he looks at 100 repeats consecutively where the defect only occurs once. But an observer would notice the defect if that defect occurred, for example, 25 times in a row in the same spot.

Comparable testing

The comparable testing undertaken was based on running an order where the KleenPlate® system was set to only clean half the print plate. This way, we had equal printing conditions across the machine and could compare the area using the system and not using the system. Let's look at the colour deviation over the first 200 sheets produced.

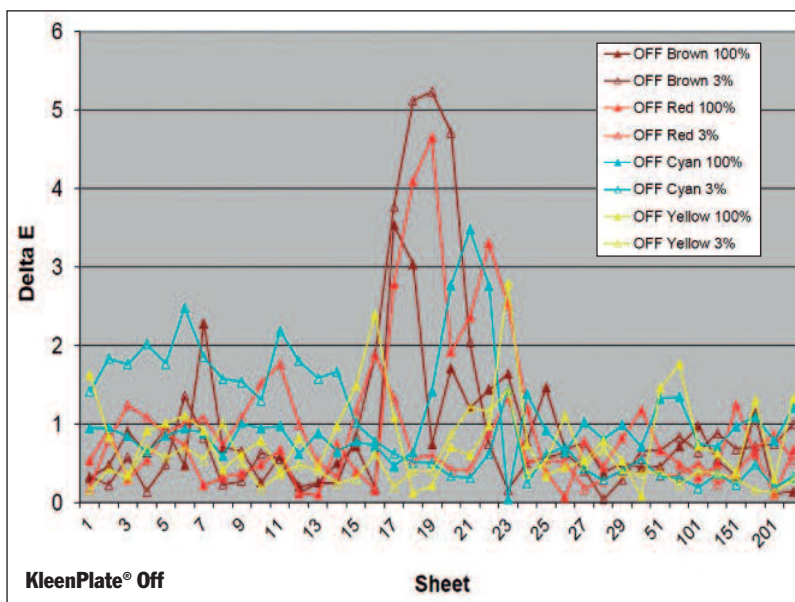
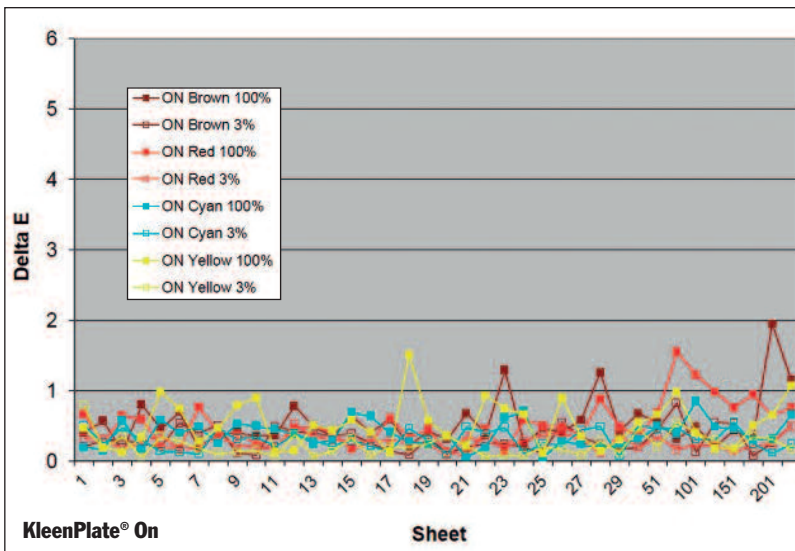
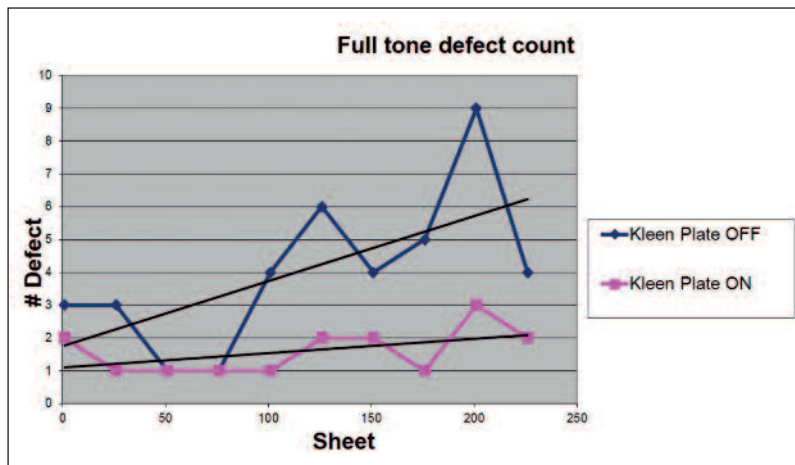
THE TARGET OF USING KLEENPLATE® IS TO HAVE ZERO INK OR DUST BUILD-UP DISRUPTIONS DURING PRODUCTION, ALLOWING UNINTERRUPTED WORK FLOW.



When not using KleenPlate® the graph shows a clear, larger variation after 20 sheets produced. The area where KleenPlate® was applied is stable in terms of colour.

Next, let's look at the number of defects found in the same 'full tone' area when using and not using KleenPlate®.

The count is done visually. The number of defects increases when not using KleenPlate® — noticeable within 200 sheets from starting the test.



Conclusions

The KleenPlate® comparable tests show:

- Colour is more consistent when using KleenPlate®;
- There are less defects recorded in a full tone area and this number stays low when using KleenPlate®;
- Cleaning stops during production are avoided;
- Product waste is minimal due to print defects.

KleenPlate® effectively stabilises colour variation and the number of defects in print, resulting in no print defects related to production stops. The knock on effect is that with fewer production stops, production can be increased and waste can be reduced significantly. ■



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