

INTRODUCING iMOTION

THE SAFETY OF OPERATORS IS AT THE FOREFRONT OF ALL EQUIPMENT AND SYSTEMS DEVELOPERS. ONE ASPECT OF 'THE PLANT OF 2025' IS GOING TO THE AUTONOMOUS MOVEMENT OF PAPER REELS. IN THE THIRD IN THE SERIES OF ARTICLES FROM BHS CORRUGATED, WE LOOK AT iMOTION.



Helmut Kraus, Head of Digital & Logistics Business Unit at BHS Corrugated

In the following article, we are going to offer further insights into how the factory of the future might look. Possibly one of our most exciting developments in recent years, we are proud to introduce iMotion, the product of a joint venture between BHS Corrugated and KS Control, called BHS Intralogistics. It is a system that achieves fully autonomous handling of paper rolls.

So why were we looking at roll logistics? There is a simple answer; we can't resolve some of the problems we face on the corrugator, right at the corrugator. Our vision of a completely automated corrugator in the future will never be achieved if the upstream process of paper roll handling and preparation isn't autonomous as well.

Let's take a look at a few figures from a typical European box plant:

- 270 minutes net time per shift to prepare paper rolls;
- Up to seven scans of the roll until it is used completely;
- Around 60 minutes in disposing of cores;
- Up to six layers of paper wasted on roll preparation;
- A safety risk every 12 minutes, as a clamp truck enters the corrugator bay.

WE FIRST CREATED A SUITABLE DIGITAL TWIN AND THEN SIMULATED THE IDEAL PROCESS.

With these figures in mind, you can summarise that paper roll handling is one of the biggest workloads at the wet-end of the corrugator. Then, there is also an increased risk of accidents and significant waste involved in paper roll handling, from roll delivery to its actual use. We started to look at how to create a single, fully digital and autonomous system for the entire paper roll handling process.

We asked ourselves, 'Why not digitalize what was being done manually and automate every process step, from unloading the truck until the paper roll is completely finished'.

We first created a suitable digital twin and then simulated the ideal process. It starts with a standard truck, which acts as an automated guided vehicle for unloading the paper roll from the truck and bringing it into the paper roll warehouse.

It starts with unloading the paper roll autonomously, using an automated clamp truck, which brings the paper roll into the paper roll warehouse.

From there, it takes the roll to the corrugator and loads it onto a shuttle, which provides the corrugator with the required paper roll.

Where Are We Today?

Our prototypes are working well in our simulation factory in Mintraching, Germany. We have the iLifter working remotely, as well as the iShuttle.

iShuttle

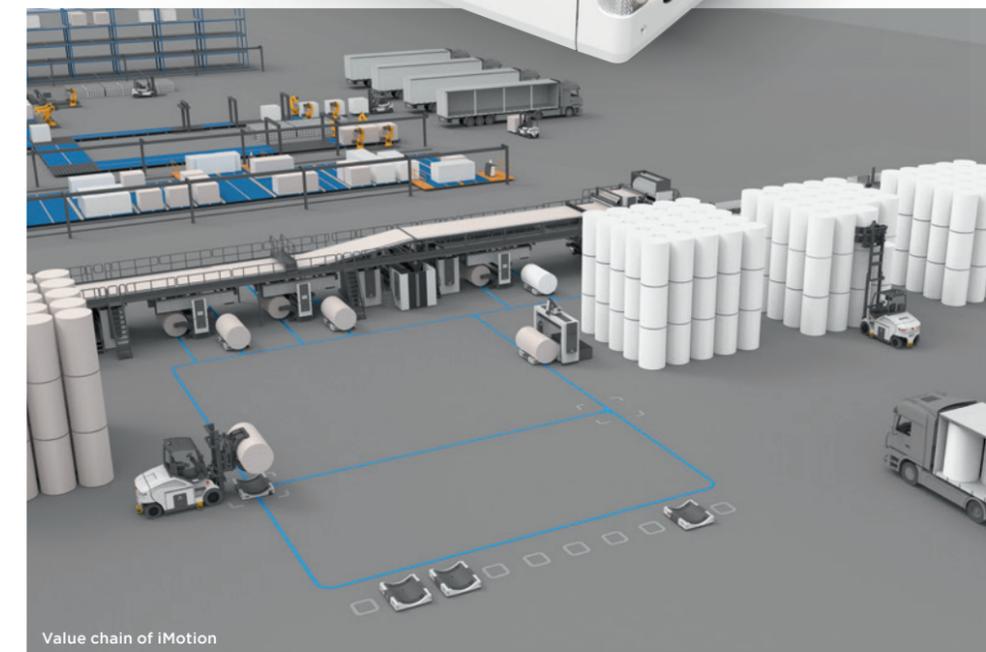
Inspired by nature, where small creatures such as ants can carry big loads, the idea of the iShuttle was born.



iLifter 10.0 (10,000 kg load capacity)



iShuttle



Value chain of iMotion

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WHAT YOU GET IS AUTONOMOUS ROLL HANDLING - FROM TRUCK TO PAPER CORE. YOU DON'T NEED ANY FOUNDATION WORKS AND YOU CAN RELY ON THE HIGHEST SAFETY LEVELS.

It carries up to 4.5 tons and comes with integrated safety systems.

The fully electric drive concept, in conjunction with automatic battery recharging, means the iShuttle doesn't need any breaks at all.

Next Generation

BHS iMotion opens the next generation of intralogistics. In summary, what you

get is autonomous roll handling - from truck to paper core. You don't need any foundation works and you can rely on the highest safety levels. You also benefit from iLifters with automatic and manual operation mode - and last but not least, you need less operators and produce less waste. The future of the corrugated board plant is one step closer to reality. ■

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