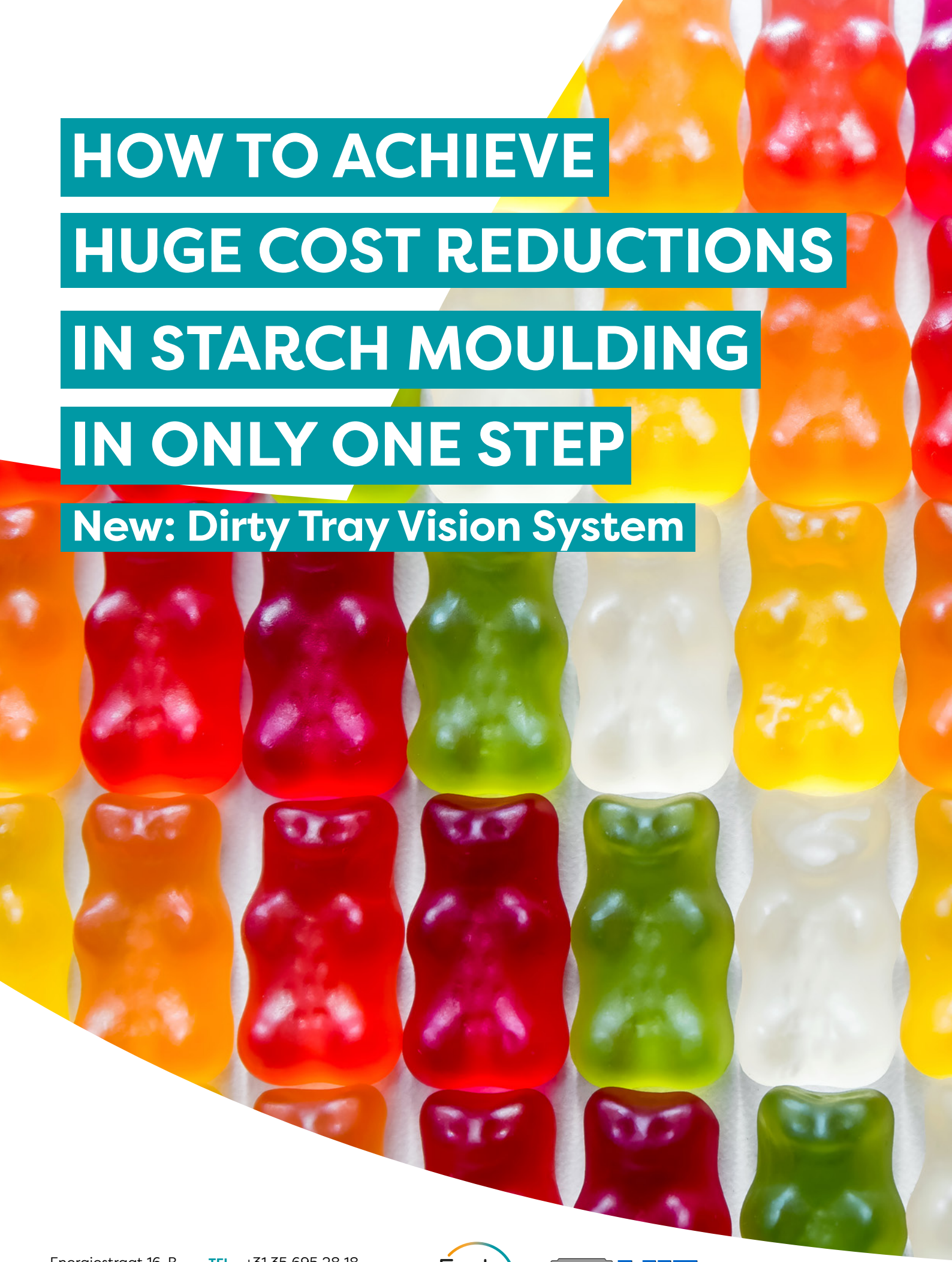
HOW TO ACHIEVE HUGE COST REDUCTIONS IN STARCH MOULDING IN ONLY ONE STEP

New: Dirty Tray Vision System



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Why do we accept 5% waste?

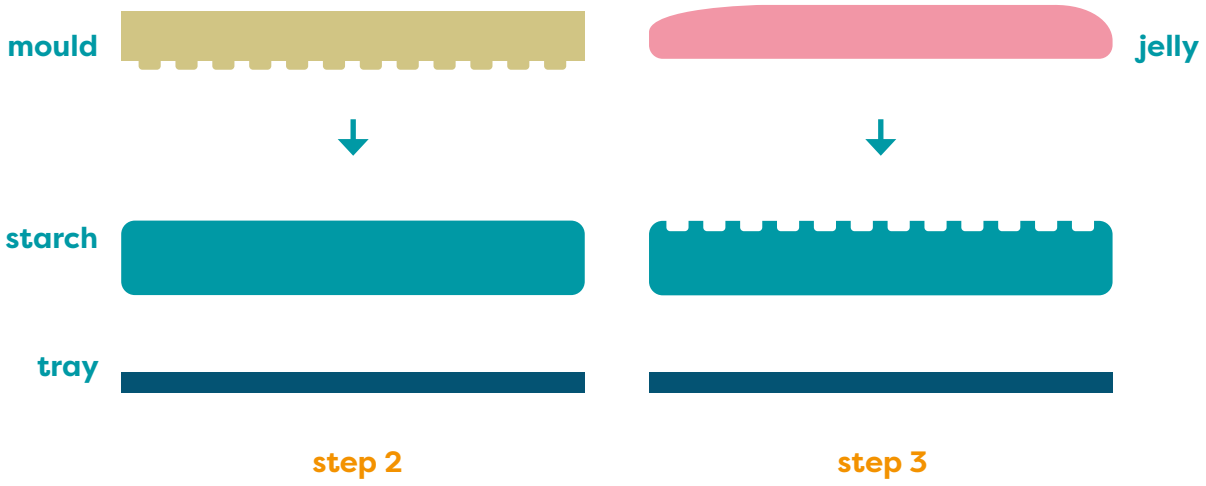
In the Starch Moulding Industry products are produced by filling single-use starch moulds with liquid jelly, to produce candy and jellies.

1. A *tray* is filled with (corn)*starch*.
2. A stamp, a *mouldboard*, presses a 'negative' imprint of the products into the starch filled trays.
3. *Liquid jelly* is deposited into the moulds of the negative imprint.
4. The trays are stacked and transported to a curingroom to dry.
5. After curing, the products are demoulded and leave the moulding line for final handling, the trays go back to Step 1.

In the Starch Moulding Industry up to 5% of all final products are rejected and considered waste. For decades this high percentage was "accepted" by manufacturers, and the enormous amount of wastage and additional manual labour seen as "normal".

We are proud to announce we can get that number **down to < 1%** with our proven solution "Dirty Tray Vision System". Getting the waste-percentage down by that much, will result in dramatic cost reductions, improvements in quality and machine performance, and an overall greater customer satisfaction.

In this white paper we will explain how our Dirty Tray Vision System does that, and how it will benefit you.



Figuur 1: Schematic representation of starch mould production

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The Problem: Dirty trays

Let us investigate the problem in more detail first. Why do so many products get rejected? A number of things can go wrong during the production of filling the trays:

- There is insufficient amount of starch in the filling station to produce the starch trays.
- The mouldboard is dirty, with a lump of jelly stuck to it, creating a bad imprint.
- There is a mould missing on the mouldboard.
- The walls of the starch collapse, due to abrupt line movement.
- Biggest issue: A tray is dirty, with some residue jelly left from the previous production run.

This is the reality all starch mould machine users are facing. If not detected promptly, **tray after tray after tray** will be used that produces waste instead of products. The sooner the problem is detected and solved, the lower the wastage will be.

Figuur 2: Jelly stuck to tray

Because of the high number of trays used in starchmoulding lines, this will add up quickly. A calculation: 12.000 trays in one starchmoulding line is no exception. Experience taught us that around 5% of all trays have issues like shown above. This means it adds up to 600 “bad trays” a day. Especially the dirty trays are causing most of the issues. After a while, there are so many dirty trays in the system, production needs to stop. The amount of labour it takes to take out, empty, clean, refill and place back one dirty tray is 6 minutes, which multiplies to a staggering **60 hours of manual work**.

Our Solution: Tray inspection

We are proud to introduce the solution to the high waste problems in the starch moulding industry: “**The Dirty Tray Vision System**”. This one-of-a-kind, innovative solution prevents bad imprints and dirty trays.

The system is the result of a successful collaboration between **Eagle Vision Systems**, a leading manufacturer of inline inspection systems, and Luuk Hilhorst of **LHT Consultancy**, who has extensive experience in the industry of starch moulding lines.

The Dirty Tray Vision System, DTV in short, inspects each and every tray immediately after printing in the starch, before it will be filled with the liquid jelly. Is the tray flawed? Is it not perfectly filled with starch? The tray will stay in the system, but will not be filled with liquid jelly, and will therefore not get contaminated with hardened pieces of jelly.

By preventing trays from becoming dirty, and thus producing with clean trays only, we found out that the rejection rate drops from 5% to < 1%. Calculating again with the 12.000 trays in one starchmoulding line, the number of dirty trays reduces to only 120 trays. These trays need to be removed from the production line to keep the required quality and quantity levels. An optional “ejector system” can be mounted on the Mogul, to automatically remove these rejected trays from the production line.

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Benefits of using Dirty Tray Vision

After a long and intensive testing period of a year on a jumbo production line it is now available. Several “A”-brand companies in Germany, Belgium, Holland, USA and Mexico are already using the DTV system:

1. DTV drastically **reduces waste** from as much as 7,5% down to **< 1 %**.
2. DTV **increases the quality** of the final product: The DTV works 24/7 without loosing focus, as a machine operator could. They can now fully concentrate on optimizing the machine’s performance and maintenance of the machine and stacks.
3. DTV **decreases the amount of production stops**: There are much less production stops, reworks or even re-reworks.
4. DTV reduces customer complains: No more pieces of mould in the final product.
5. DTV **reduces manual labor**: No more need to have somebody at the back of the machine to cut hardened pieces of jelly from dirty trays.
6. DTV assists management: Normally it is difficult for management to find out what happened with a production run. The DTV supplies management with all the info regarding the not deposited trays, it shows: the exact time production stopped, the number of trays inspected, the number of not-deposited trays and the reasons why. It has a VPN connection, so it can be monitored remotely when required.
7. DTV saves money: The **payback period is only 3-9 months**, exact payback times differ between customers: If the DTV prevents even one production stop, you already have most of your investment returned.

How the DTV System works:

The Dirty Tray Vision System is placed in the production line, between the printer table and first depositing pump. The DTV System automatically stores images of “good trays” under a recipe name given by the operator. Many recipe images can be stored in the system. During production, the system takes **a photo of each tray** and compares it to the photo of the “good tray”. If the DTV System concludes that the difference it too great, it takes appropriate action. Research showed us that between only **0,2% - 3%** of all trays will be rejected, depending on the customer:

- Situation: The tray is not properly filled.
  Action > No deposit of liquid jelly, the tray can stay in the system
- Situation: The imprint is not acceptable.
  Action > No deposit of liquid jelly to prevent bad quality. The tray can stay in the system.
- Situation: A (piece of) mould is missing.
  Action > Stops the machine, before the missing model ends up in the stacker and in the final packaging.
- Situation: There is a visible jelly part on the tray
  Action > No deposit of liquid jelly, and ejector system is activated to eject the tray from the production line to be cleaned.
- Situation: The wrong mouldboard is in the machine, or the correct one is not properly placed.
  Action > No deposit of liquid jelly. Operator needs to make sure the right mouldboard is placed in the right direction.

Figuur 3: DTV as installed on Mogul

The DTV is compatible with ALL starch moulding lines. Interested in a demonstration? We are happy to arrange this. Please contact: DTV-LHT@eaglevision.nl

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