

# SUSTAINABILITY PROJECT SETS A NEW STANDARD

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De Neef Chemical Processing  
&  
Janssen

**Site Heist-op-den-Berg**

Industriepark 8 • B-2220 Heist-op-den-Berg • T. +32 (0)15 25 74 61 • F. +32 (0)15 25 74 68

**Site Antwerp**

Molenweg 1, Haven 1948 • B-9130 Kallo-Beveren • T. +32 (0)3 575 82 57 • F. +32 (0)3 575 82 63

[www.dncp.be](http://www.dncp.be)

## JANSSEN AND DNCP CONVERT WASTE STREAMS INTO PURE SOLVENTS

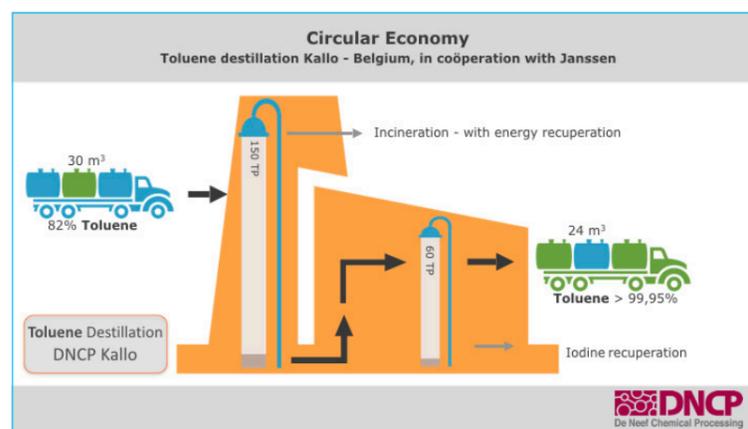
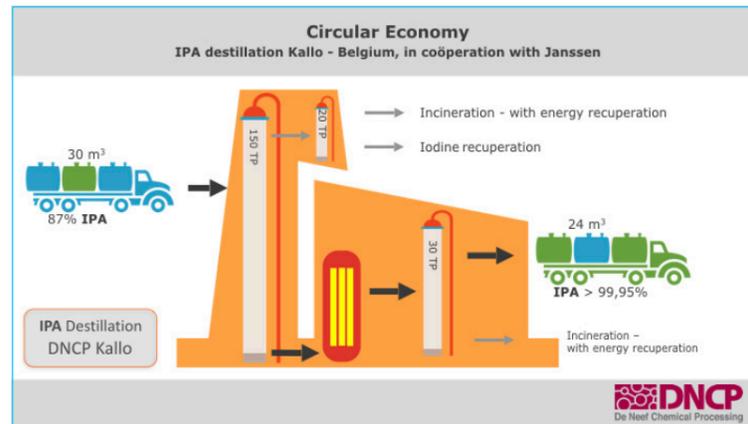
De Neef Chemical Processing is a leader in the purification and recovery of organic solvents and speciality chemicals.

It's in our mission to purify used solvents to the highest grade, responding to the needs of our clients using best available techniques with care for safety and respect for the environment. When Janssen told us about their project to reuse their waste streams after purification our R&D department started immediately their investigation. The challenge was not simple as Janssen would like to reuse the purified solvents in various processes at their chemical production site. We succeeded in distilling the samples into pure products which Janssen could use again.

We developed the industrial installations and started to build them at our production site in Kallo (Antwerp). By August 2017 the purified solvents will be reused at the Janssen production site in Geel-Belgium.

### The dedicated installations at the DNCP site Kallo

- Double continuous distillation units working under different pressure.
- A minimum of distillation residu's whereof a part incineration with energy recuperation and a part for iodine recuperation.
- A minimum of energy due to coupling condensate second column to reboiler first column (IPA)
- Transport with dedicated trucks, same truck for waste as for distillate



## SOLVENT RECUPERATION

### New waste streams on the way

In 2013, we introduced a refined production process for making canagliflozin, the active substance in the drug Invokana®. This would create two main waste streams, namely a layer of IPA and a layer of toluene waste. To meet with the sustainability objectives of 2020, we decided to have those waste streams distilled so that the solvents could be reused.

### Processor wanted

For the technical deployment of this distilling process, we reached out to one of our partners, DNCP (De Neef). DNCP transforms the samples into pure products which we can use again: by August 2017 the supplied distillates will be implemented in a flexible manner and for different purposes.

### Impressive reduction in CO2 emissions

This reuse is in many ways in accordance with our J&J sustainability objectives. For example, this practice will have a demonstrable impact on our CO2 emissions: By using 1,000 kg of recycled toluene as part of the new process, we can reduce CO2 emissions by no less than 4,236 kg. Similarly, 1,000 kg of recycled IPA means a 3,174 kg reduction in CO2 emissions.

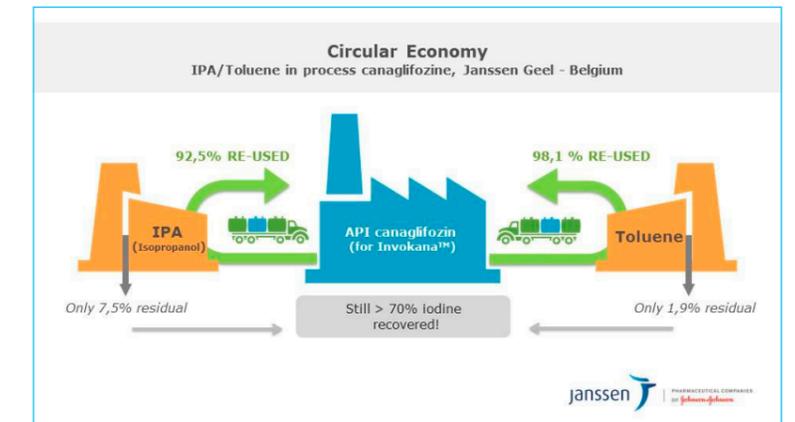
### Even more recycling

The recycling-output for both solvents is about 92.5% for IPA and 98.1% for toluene. The remaining proportions contain a fair amount of iodine, both from the toluene and from the IPA. This iodine is a rare substance which, after further treatment, can also be reused.

### Continuity in production

Patients also benefit from this project: By investing in this circular recycling process, we will always have the solvents toluene and IPA available. This ensures production-continuity.

At Johnson & Johnson, our mission is helping people around the globe live longer, healthier and happier lives. Recently we have taken another step towards a smaller ecological footprint by reusing two solvents: IPA (isopropanol) and toluene, which are necessary for the synthesis of one of our medicines Invokana®. As of 2017, the waste streams will go to an external partner, De Neef Chemical Processing (DNCP), which, after distillation of the waste streams, will supply pure solvents. We will then reuse those solvents flexibly in various processes at the chemical production site in Geel - Belgium. A fine example of circular economy!



## THE PROJECT IN FIGURES

### CO<sub>2</sub> emission reduction\*\*

If we consider the entire cycle of the solvents (from the 'cradle' to the 'grave'), we arrive at impressive figures regarding reductions of CO<sub>2</sub> emissions:

- 1 ton of recycled IPA = 3.1 tons fewer CO<sub>2</sub> emissions in the atmosphere
- 1 ton of recycled toluene = 4.2 tons fewer CO<sub>2</sub> emissions in the atmosphere

These figures also include all processes from the end of lifespan phase, such as waste processing, recovery of material, and waste disposal by burning.

### Other benefits

- 1 ton of purified solvent =
- 1 ton less of waste burnt
- 1 ton less of raw materials consumed

\*The drug Invokana® helps to lower blood sugar. It is used to treat type 2 diabetes.  
\*\* CO<sub>2</sub> calculation carried out by CO2logic. System limits are 'cradle to grave'.