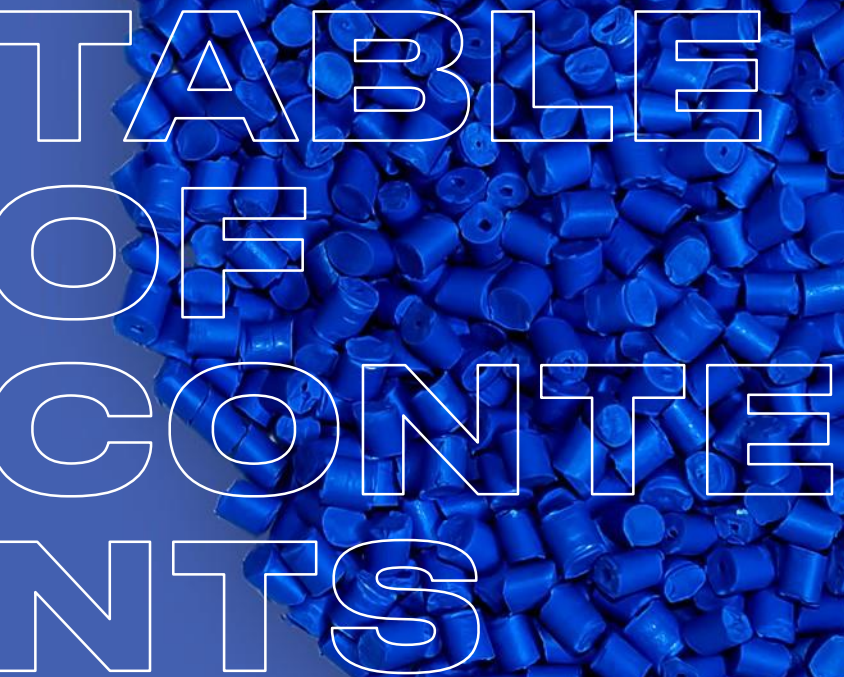




# PET trays project Wellman & Valorplast

PETCORE Annual Conference – June 15th 2022



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## Conclusion

**The PET bottle recycling is a success story, but it did not happen in a finger snap. It needed some time, as it will still need some time for the thermoforms.**

**If the entire value chain works together, as it started to do within PETCore, on EcoDesign, Effective Recyclability, Circular Economy, we will have another success story around the PET.**

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# PROJECT DESCRIPTION

- **Actors**
  - **Valorplast** : project management + supply of input material + technical analyses and deliverables
  - **Wellman France Recyclage** : industrial recycling (Verdun facility) + technical analyses
  - **Citeo** : financial support
- **Timing** : June 2019 → June 2022
- **Objective** : **Study the technical and economical feasibility for clear PET trays recycling**
  - Validate clear PET trays sorting
  - Validate the industrial regeneration feasibility
  - Study applications for monolayer PET trays flakes
  - Study applications for multilayer PET trays flakes
  - Study the design of a PET trays regeneration line

## Production of clear PET trays bales at industrial scale (before current sorting schemes) : end of 2019

- Two types of bales produced :
  - Monolayer clear PET trays
  - Mix of monolayer and multilayer clear PET trays
- Optimization of sorting settings
- Bales characterization to control quality
  - Average of 90% of clear PET (including 2% of bottles)



## Two PET trays regeneration campaigns at Wellman Verdun (February & July 2020)

- Total of 250 tons of clear PET trays bales (France, Belgium, Sweden, Holland)
- During the campaigns, several parameters were adjusted on the line (sorting machines, washing, grinding...)
  - Yield and process analyses
- Output produced:
  - Monolayer clear PET trays flakes
  - Multilayer clear PET trays flakes
  - Analyses performed on the produced flakes for quality assessment (contaminants, granulometry...)



## Trials with several partners for monolayer PET tray-to-tray applications

- Granulation and decontamination trials → Validation of the materials
- Sheet transformation trials
  - Results depending on our 4 sheet extrusion partners and on the rPET ratio (from 10% to 100%)
    - Ability to produce sheets
    - Possible impacts on productivity and quality compared to 100% virgin
- Main concern is on the **ability for food contact**
  - Input bales guarantee of 95% of food contact trays
  - Decontamination process

## Trials with several partners for multilayer PET trays chemical recycling

- Several types of chemical / enzymatic depolymerization tested : hydrolysis, methanolysis, glycolysis
  - Objective is to return to virgin-like monomers, that can be repolymerized to PET
  - Test made by 4 partners
- Very positive and promising results
  - Good input flakes quality
  - Good process yields
  - Good final products qualities



# PET TRAYS PROJECT CONCLUSIONS / CHALLENGES

- **Final analyses and deliverables of the project are ongoing**
  - Validation of sorting and regeneration for clear PET trays
  - Tested applications analyses
  - Design analysis of a PET trays regeneration line
  - Overall **technico-economic analysis** of clear PET trays recycling
- **Project completed with many still ongoing characterizations on clear PET trays bales** (representativity of current stream in France)
  - **Food grade input quantity**
    - Big variability of non-food depending on the lots:
      - 3 to 15% in French bales.
      - **Is there an action to take at MRF level?**
    - Example of non-food grade PET trays :



**This project led to an already implemented monolayer PET trays recycling loop:**

- Monthly campaigns at Wellman Verdun since April 2021 (around 500 tons/month input)
- Flakes are going back into tray production to close the loop

***Now, we are waiting for more volumes so we can duplicate this success and create a more dedicated tray recycling line.***

THANK YOU !