

Continuous Improvement and Capacity Expansion for Fungicide production: improvement of an existing process in terms of wastes, energy, and tons.

Dr. Julien Perron & Laure Deslarzes

Syngenta Crop Protection Monthey SA

Syngenta is a world-leading agri-business with approx. 28'000 employees in some 90 countries. Monthey is the largest production site of the company. This site produces herbicides, fungicides and insecticides, dedicated to the protection of seeds, plants and crops.

DF-Aldehyde (DFA) is a key intermediate for the synthesis of one of Syngenta's most important fungicides and seed treatment active ingredient. The production processes implicate at low temperature the reaction of DFBD (substituted aromatic) with an organometallic component in the presence of an activating agent.

Over the last six years, the production capacity of the DFA process has been increased by more than 50% without any major investment and extra resources. A lot of laboratory and production optimization work (continuous improvement) has been done to improve this process and the eco-balance.

Some of the presented improvements consist of:

Regeneration of solvent

One of the key raw material (the metallic component) is diluted in a solvent. The process has been designed in order to regenerate this solvent, which is after reused in other processes in the same building.

Regeneration of activating agent

In order to perform the chemical reaction, an activating agent must be charged to improve the metallic compound reactivity. This agent is regenerated and reused in the process to minimize its consumption.

Steam production

The chemical path for the synthesis of DFA produces butane. This component is then burned in appropriate and dedicated burner in order to produce steam. This steam is then injected into the steam network.

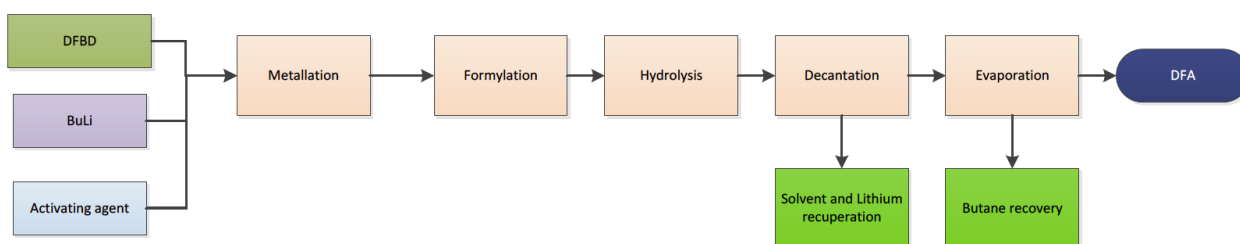


Figure 1 : Overall view of the process

Capacity expansion

Expansion capacity has been performed with minimum investment. The existing process has been reviewed and optimized in order to perform a +50% increase.

Recovery of raw material

The metallic raw material (Lithium) is after the reaction collected in the waste waters. For various reasons (environmental, costs), laboratory investigations are under way in order to potentially recycle it.