Industrial Symbiosis: A win-win solution

When different organisations get together in a network to foster eco-innovation and long-term culture change, it’s called industrial symbiosis. Creating and sharing knowledge through these networks means different parts of the supply chain can share their expertise and together create new solutions for the future which they might not have thought up on their own.

The companies involved may be close together physically or metaphorically, or they may not, producing the same things or completely different ones, and the resources they share may consist of materials, energy or water.

It used to be thought that for industrial symbiosis to work effectively, the companies involved had to be close. Thinking has changed. Although it may not be the best environmental option to transport low value/grade materials over large distances, sharing knowledge and expertise has no such restrictions.

What all synergies have in common is that they reduce costs and generate new sales for the companies involved, as well as creating significant environmental benefits such as reduced landfill and greenhouse gases. In addition, the synergies generated through economic activity have further social benefits with the creation of new businesses and jobs.

A great example is the increased cooperation between a paper producer and the textile and/or cement industries it may supply with direct or by-products, as well as an on-site energy supplier, or a food processor supplying agricultural waste for recycled papers.

Synergies that work

More than 10 years ago a community began to form around Biocel Paskov made up of wood-processing companies which have different owners but are interconnected. Biocel Paskov, a member of the Lenzing group since 2010, makes dissolving pulp for viscose fibre. In 2004 Mayr-Melnhof completed a large sawmill adjacent to Biocel, which supplies wood chips to the Biocel pulp mill. Near the sawmill is a wooden pallet plant, as well as a pellet plant. (Pellets are made from sawdust and shavings, by-products from the sawmill.) Close by, another mill produces substrates. A community of wood-processing companies is a good example of how wood raw material can be used in one locality with minimal transport costs and mutual synergies.
Papeteries du Rhin: Best of both worlds

A great example of partnership between the public and private sector in the form of a paper-maker and the local community can be found in Mulhouse, France. Mulhouse has a municipal waste incineration plant operated by SITA which produces electricity.

Papeteries du Rhin owned by the Kunert Group makes core board and generates steam from a natural gas boiler. The mill sends its effluent to the municipal water treatment plant and its sludge is burnt in the municipal incineration plant. But from 2015, the municipal waste incineration plant will also provide steam energy to the paper mill. A giant pipe from the incinerator to the paper mill will pump more than 80% of the mill’s annual steam needs. The mill’s gas boiler will remain only to provide the necessary additional steam during peak consumption periods and during incinerator maintenance periods.

This district heating network will double the energy efficiency at the waste incineration and slash CO₂ emissions at the paper mill by 70%.

Co-financed by Papeteries du Rhin and ADEME (French Environment and Energy Management Agency), the project will cost about three million euros. It’s a prime example of what can be achieved for the environment when public and paper sectors work together.

Closing the loop with consumers

In cooperation with one of its customers, Smurfit Kappa Roermond Papier has started a project to recycle phosphorus. Its partner makes baby nutrition products and has no use for phosphorus which is harmful for infants. So instead of disposing of any phosphorus removed during its processing operations, the company’s waste stream is directed to the paper mill’s water treatment plant to use as feed for bacteria, producing biogas. It saves Smurfit Kappa Roermond Papier money (because it no longer needs to buy in phosphorus) and it avoids disposal and its impacts for the baby nutrition producer.

It all adds up to a great example of a partnership that contributes to both the environment and the economy.