



BIOVALLEY
Finland

Business. Together.
With Nature.



Photo: Anne Liulli

Jouni Kaipainen describes Biovalley as a catalyst that brings together the know-how of different sectors in order to create something completely new.

Welcome to Biovalley Finland

Biovalley Finland is an expertise network in sustainable development with international impact, and its aim is to promote bioeconomy and mineral economy through digitalization and the circular economy.

Biovalley operates in Kokkola, on the West Coast of Finland. The region has a strong history in trade, which serves as a foundation for multinational companies, internationally recognized business, training, and RDI expertise.

Biovalley's strengths include the chemical industry, primary production and renewable energy. The region has extensive experience in, for example, wind power, and it is actively seeking new solutions for sustainable energy production.

The Biovalley network has 23 partners. High activity level of the network stems from the partners' willingness to share their expertise. The

network members want to learn from each other and create and innovate together.

One of the key missions of Biovalley is to unite experts from different fields both in the Kokkola region and globally. Biovalley brings together people and expertise. This creates collective intelligence and new kinds of expertise that can fill out gaps.

The network is coordinated by Kokkola University Consortium Chydenius. Biovalley is a member in several international bioeconomy and circular economy networks.

Jouni Kaipainen
Project Manager



The Biovalley network holds regular meetings. It has a total of 23 partners: Kokkola University Consortium Chydenius (coordinator), University of Jyväskylä, University of Oulu, University of Vaasa, Centria University of Applied Sciences, Geological Survey of Finland, Natural Resources Institute Finland, Federation of Education in Central Ostrobothnia, Kokkola Industrial Park's Association, KOSEK, Kokkola regional Development Company, Regional Council of Central Ostrobothnia, the Centre for Economic Devel-

opment, Transport and the Environment (ELY Centre) for Ostrobothnia, the Central Union of Agricultural Producers and Forest Owners (MTK) for Central Ostrobothnia, Finnish Fur Breeders' Association, Finnish Forest Centre, ProAgria Central Ostrobothnia, Purityiset ry, City of Kokkola, City of Kannus, Kaustinen sub-region, Perho municipality, Ostrobothnia Chamber of Commerce and the Federation of Finnish Enterprises, Central Ostrobothnia.



THE INTERNATIONAL CONFERENCE
IN KOKKOLA, FINLAND

TOWARDS
SUSTAINABLE FUTURE



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Kokkola. We have a broader horizon.

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Kokkola Karleby 



Biogas for transport use from local feedstock

Ilpo Wennström's farm in Toholampi has produced all the energy it uses in its own bioenergy plant since spring 2019. The plant produces electricity and heat from livestock manure and field biomass.

The farm has positive experiences of producing its own energy. In-house energy production has provided security against the fluctuating electricity and oil prices.

Because of the good experiences and interest among other local companies, Wennström decided to invest in a heat and biogas plant and start selling the energy to outside the farm.

The plant will start operating in 2023. It uses sludge from nearby farms, household waste from the Kaustinen region and industrial food biomass as feedstock.

For example, Finn Spring Oy provides the biogas plant with sugar solution, which is a side stream of soft drink production. This will notably reduce Finn Spring's carbon footprint, as the company intends to use the biogas produced by the plant as transport fuel.

In Ilpo Wennström's view, this is an excellent example of the benefits of the activities.

"We receive biomass from local companies and turn it into fertilizers and biogas for local needs. This is cost-effective and sensible from a regional and economic point of view", Wennström says.

The plant produces enough energy to fuel 140 passenger cars driving about 20,000 kilometers per year. Wekas Oy, a company established by Wennström, is responsible for the production and sales.





Laura Rahikka.



Carbon and hydrogen from a single process

Hycamite is a Finnish startup firm. Founded in 2020, it develops clean hydrogen and pure carbon technology.

The technology is built around Hycamite's innovative catalyst that separates hydrogen and carbon from methane in a single process.

"This technology allows us to produce clean hydrogen and solid, high-grade carbon. We can also modify the carbon grade based on the customer's need", says **Laura Rahikka**, Hycamite CEO.

The need for both hydrogen and carbon is expected to increase in the future. Hydrogen is particularly useful for industrial operators who are striving to reduce their carbon footprint.

Applications of the carbon nanotubes generated in the Hycamite process include battery technology, composite materials and concrete additives.

Hycamite can use biogas, industrial side streams and natural gas as raw materials. It has been granted a two-year permit for an industrial-scale demo plant. The company is planning to go international when the time is right.

"The green transition requires methods for producing hydrogen and carbon cost-efficiently."

Laura Rahikka emphasizes the role of networks in Hycamite's success. One of the pillars for this innovative technology is the research on catalysts and carbon by the applied chemistry research group at the University of Oulu.

Kokkola Industrial Park with its networks is also an important asset for Hycamite.



Sciences
meet in
Kokkola

Three universities in one

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BIOVALLEY Finland

More information:

biovalley.fi



European Union
European Regional
Development Fund

Leverage from
the EU
2014–2020



KOKKOLA INDUSTRIAL PARK

Since the 1940s, **KOKKOLA INDUSTRIAL PARK (KIP)** has developed from an industrial area formed by two Finnish state-owned companies into the largest inorganic chemical industry ecosystem in Northern Europe. Today, several international companies in the chemical and metal processing industry operate in KIP, which are world leaders in several product market areas and measured by many different metrics. Service companies operating in the area support the core operations of production companies. **KIP** is a strong export player: intermediate products and materials produced by production facilities, as well as final products, are exported to several different industries, such as agriculture and food industry, battery, electronics and automotive industry and construction industry.

A unique industrial circular economy ecosystem

KIP is a pioneer in the industrial circular economy in Finland and Europe. Companies in the **KIP** form an industrial symbiosis, a circular economy ecosystem. The

BUILDING RESPONSIBLE INDUSTRY FOR FUTURE GENERATIONS

production actors in the area interact with each other in some way through products, industrial by-products / products or at least consumables and services. The by-product of one operator is used as a raw material at another production facility.

The circular economy has been a natural part of industrial activity in Kokkola for a long time. The circular economy ecosystem is constantly being strengthened by mapping and utilizing many side streams and making operations more efficient in the spirit of the circular economy. The development potential of the ecosystem is still significant, as the synergistic benefits of the circular economy and functioning infrastructure create interesting conditions for new technologies and products resulting from, for example, combining chemistry and the bioeconomy. **KIP** is involved in numerous projects and coop-



eration networks that promote the circular economy, such as Biovalley Finland and the national Eco-industrial parks' network.

A center of expertise for the versatile chemical industry

KIP is growing and developing all the time. Therefore, the need for skilled employees is also constant. New workforce to increase knowledge capacity is recruited from, among other things, nearby educational organizations, where you can also find the latest research information in the industry and fresh ideas for use by the entire **KIP** ecosystem. Not only the process know-how, but also the training and research know-how of the region is in a class of its own when compared internationally.

KIP's ambitious vision is to be a responsible and evolving trendsetter in its field - all over the world.