

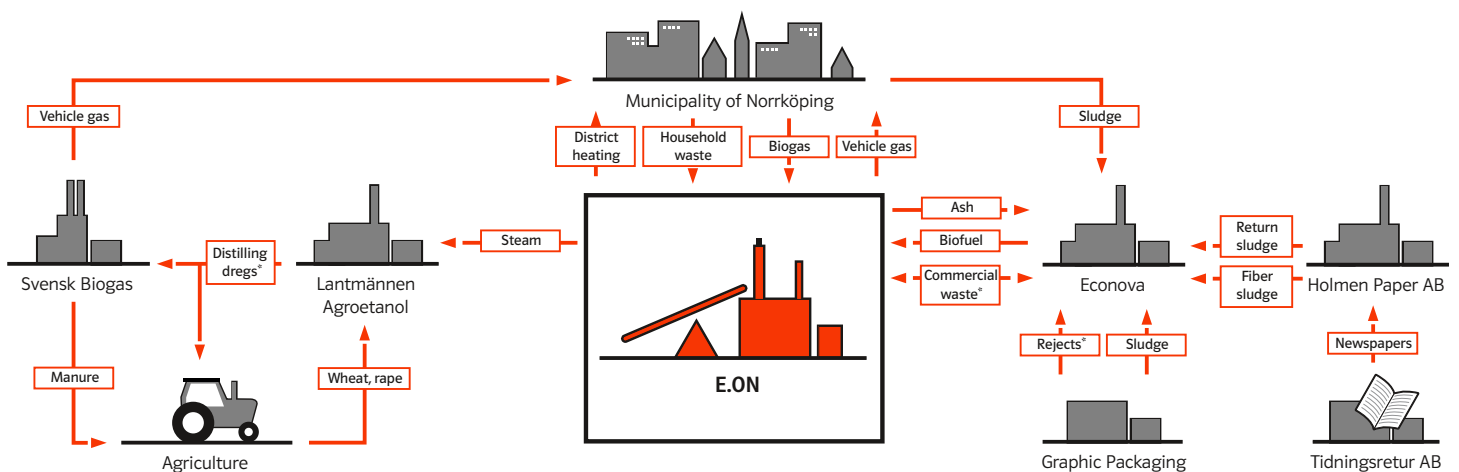
E.ON in unique complex of energy plants



E.ON Värme Sverige operates at a unique complex of energy plants at Händelö in Norrköping, Sweden. Together with Lantmännen Agroetanol and Svensk Biogas, E.ON has designed a complex that uses technology efficiently to take advantage of the high-energy by-products of cereal-based fuel ethanol. By working in cooperation and making use of local resources, this energy complex generates a higher exchange of energy and greater benefits for the climate than each individual company could on its own.

In the Händelö industrial area just outside the city of Norrköping, a cluster of eco-industries has developed, all of which use each others' by-products. The very hub of the system, which is known as a complex of energy plants, is E.ON's cogeneration plant that uses renewable fuel and waste to produce electricity, district heating and - what is most important to the complex of plants - process steam.

The complex of energy plants is based on the concept of taking advantage of synergy effects between energy companies and the process industry. The aim is to produce efficient energy systems and economize on resources.



* Distilling dregs = Waste product from the production of ethanol in the form of high-protein mash.

Commercial waste = Waste from operations.

Rejects = Plastic film and similar material from the recycling of cardboard, for example, milk packaging.



Efficient energy systems, economizing on resources and improved environment

Norrköping's industrial ecosystem is highly developed and an excellent example of the "sustainable city." At Händelöverket cogeneration plant in Norrköping, E.ON supplies green electricity and process steam, based on biofuel via pipeline, to its neighbor Lantmännen Agroetanol. At the ethanol plant, Lantmännen produces fuel ethanol from cereal that is rich in starch. The ethanol is sold for use in low admixtures of gasoline, which also takes place locally in the Händelö port area. Waste heat in the form of hot water from the ethanol plant is returned to Händelöverket and is used by Norrköping residents as district heating. At the same time, the waste products of cereal residue and thin stillage, start a new life as raw materials.

The cereal residue is very rich in protein since starch is used in the production of ethanol. In terms of economizing on resources, the residue is more suitable as a raw material for feed than as biofuel within the framework of the plant complex. The other waste product, thin stillage, goes to Svensk Biogas, which is situated close by. The energy in the thin stillage is used to produce vehicle-quality biogas, which in turn supplies the local biogas market. Svensk Biogas's plant also produces KRAV environmentally certified biomethane that returns nutrients to local agriculture. These nutrients subsequently become new cereal.

Companies in a trusting cooperation

The Händelö complex of energy plants is one of the most efficient in the world and one of a kind. The complex has been developed on a commercial basis. This has been possible because the companies work together in a trusting cooperation and allow their business models to link together in industrial processes. The agreement to move

away from the idea of complete self-sufficiency for the complex is also unique. E.ON Värme Sverige's fuel supply is primarily based on waste products from the forest. The cereal residue generated by the complex is put to a better use as animal feed - optimizing its use makes the combined energy exchange of the energy complex even higher.



E.ON Värme Sverige
T +46 40-25 50 00
info@eon.se eon.se