

Project Presentation

Explanation and Background of the Project, from its Origin to the Call for Projects Summary of the project in which the thermal energy network is integrated



The "Karno Fleurus" project involves densifying and expanding an existing 3rd generation thermal energy network. These new connections will supply energy to 435 residences across three new residential developments, new and existing municipal buildings, commercial buildings, a church, social housing, a school, and more. This network is powered by heat generated from cogeneration engines fueled by biogas from the local biogas plant managed by the Cinergie cooperative.

This thermal energy network expansion and operation project is led by Karno and is primarily integrated into a real estate development project by the developer DCB, called "Quartier Renaissance". Subsequent extensions aim to connect the city center, municipal buildings, and a new housing development by the real estate developer Matexi.

The unique permit has been granted for the entire DCB site, and construction has already begun, while the thermal energy network is expected to start in 2024, immediately after securing funding.

Address: Chemin de Mons, 6220 Fleurus (existing main branch serving as the starting point for extensions)

Project Origin

Context

Existing Network and Biogas Plant

In 2012, the Cinergie cooperative set up a biogas plant and a thermal energy network 1 km from the center of Fleurus. The biogas produced fuels cogeneration engines that generate both electricity and heat. The heat is transported via a network of over 1 km to the Château de la Paix, housing the municipal administration's core, the Institut Notre-Dame site, and thirteen private residences.

In 2019, the municipality of Fleurus launched a Design&Build competition to build its new integrated administrative center (CAI) on the future "Quartier Renaissance" site in central Fleurus. The winning design team planned an extension of the existing Fleurus thermal energy network to supply the new building. This extension was 410 meters long.

At this time, the real estate developer DCB was in the planning phase for the "Quartier Renaissance" real estate project on the same site. DCB planned to build 127 homes consisting of 115 apartments in 5 buildings and 12 houses. The initial plan

included installing centralized gas boilers in each building to meet heating and hot water needs.

Several issues arose in 2021:

- The performance of the network extension for the CAI was insufficient (losses > 50%);
- Neither the municipality nor the Cinergie producer wanted to take responsibility for operating and maintaining this extension;
- The planned extension did not pass through the center of the new DCB district but bypassed it;
- The technical design team had not taken into account future legislative changes for thermal energy networks (RET);
- No energy supply contract or network connection rights with Cinergie had been negotiated by the CAI design team.

In early 2022, Cinergie contacted Karno to take over this network development. This led to the following actions by Karno:

- Conducting a technical audit at Cinergie to verify the heat production capacities and the additional energy that could be supplied;
- Bringing the thermal energy network into compliance with the 2022 RET regulations (by Resolia);
- Consulting with DCB to propose a thermal energy supply for the entire new district via the RET;
- Modifying the initial route to supply the CAI and 127 homes;
- Contractual negotiations between all parties (Municipality of Fleurus and its design team, Cinergie, DCB) for the design, construction, operation, and maintenance of the network;
- Contractual negotiations for purchasing energy from Cinergie;
- Modifying the DB contract for the CAI to adapt the layout and take responsibility for installing the thermal network. For the specific CAI part, Karno became a subcontractor to the general contractor Dherte for the installation of the thermal network and retained the real rights to this network (see annex A3.4.1 Karno-FL Contract CAI.pdf).

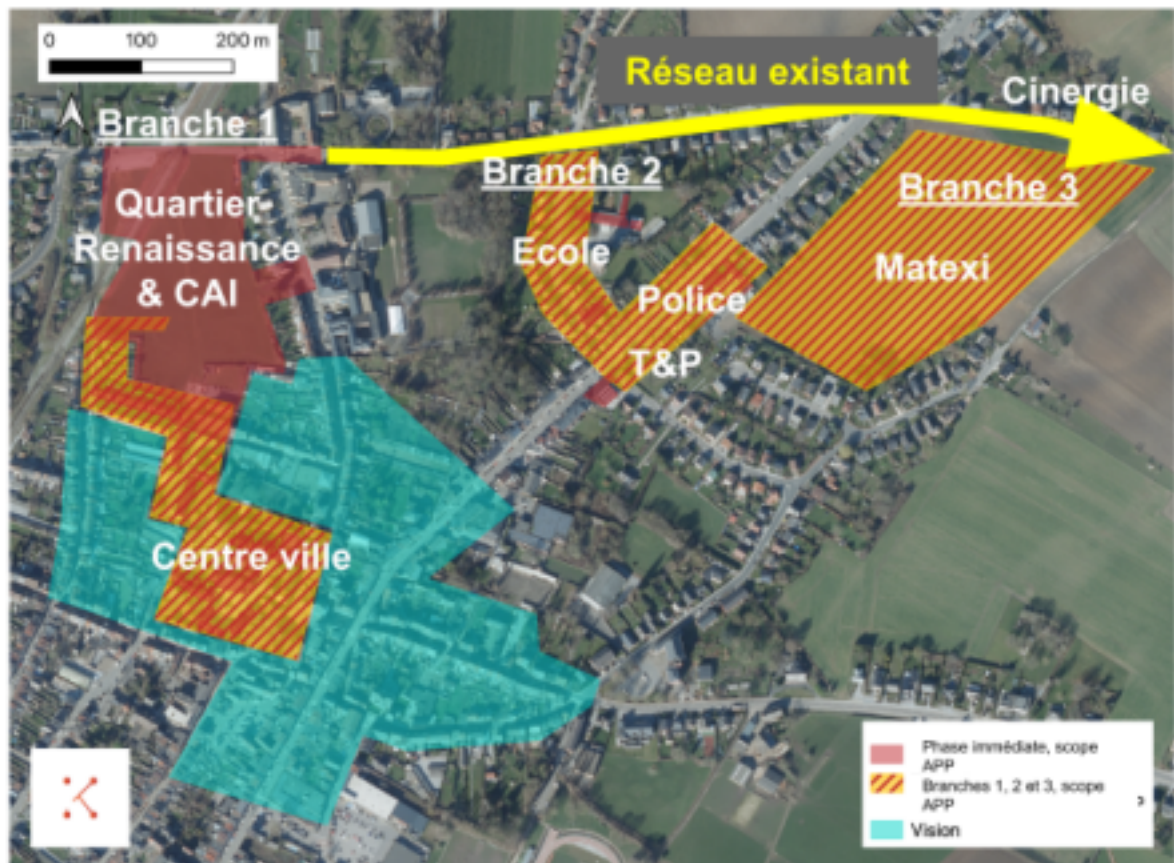
This first major step was concluded at the end of 2023 with the signing of contracts by all parties. The establishment of a new branch supplying the CAI and 127 homes in the Quartier Renaissance can now begin, provided financing is obtained.



With strong collaborations with the city of Fleurus and the Cinergie producer, Karno proposed an ambitious development plan in 2023 to decarbonize the center of Fleurus.

This plan includes, in addition to the extension to Quartier Renaissance & CAI (red), an extension of this branch toward the city center of Fleurus (branch 1), an extension along Rue de l'Observatoire and Chaussée de Charleroi (branch 2), and an extension to the new Matexi housing development adjacent to Rue du Ry d'Amour (branch 3) (orange and black).

All these extensions are part of a broader vision for decarbonizing the center of Fleurus (turquoise). This vision is described in annex 5.4.



Renewable Energy Production

The Fleurus project differs from Karno's typical projects (low-temperature networks (35°C) powered by geothermal energy) as it involves the extension of a high-temperature network, powered by waste heat from cogeneration engines fueled by biogas. Studies have been conducted to technically validate the feasibility of the extensions. The biogas plant and cogeneration engines are part of the Cinergie site.