

SUCCESS STORY:

# Renewable kitchens and coffee systems

## INVESTMENT CASE

### Title:

CO<sub>2</sub> free kitchens and coffee systems

### Year (commissioned):

2015

### Location:

Aarburg, Switzerland

### Stakeholders:

1. Franke Schweiz AG\*
2. Apartment site "Stadtblick"\*
3. SCHMID AG energy solutions\*
4. IS Save Energy, Switzerland\*
5. Local forestry operator\*
6. Aarburg community\*

\* role in detail described on page 4

### Author:

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FRANKE is a leading producer of water systems, coffee systems, kitchens, and foodservice systems for households and gastronomy. The company is active in 40 countries with 9 000 employees around the world. Its philosophy is not only to provide products based on innovative engineering and outstanding design, but also to take responsibility for our nature and climate. The headquarter of FRANKE with a related production site is located in Aarburg, a picturesque small town in the Swiss midlands.

In 2015, the natural gas based heat production in Aarburg was replaced by two modern wood chip boilers. Since the electricity consumption is covered by other renewable sources, in particular hydro power, the energy supply of the site in Aarburg is now CO<sub>2</sub>-neutral. As a measure to increase the efficiency of the energetic use of wood by more than 20 % and to reduce the local air pollution to a minimum, the wood boilers are equipped with a flue gas condensation system and a wet electrostatic precipitator. In 2017, the wood combustion plant is connected to a local district heating network to additionally supply 200 apartments in the neighbourhood.

## The investment and its technology

The existing gas fired heat production site was replaced by two wood chip boilers of 1.6 MW and 0.9 MW, in total 2.5 MW supplied by SCHMID AG energy solutions (Switzerland).



**Fuel type:**

- Wood chips

**Feedstock origin:**

- Domestic forestry by-products/ residuals: bark, wet wood chips, etc

**Conversion system:**

- Boiler combustion, e.g. stand-alone boiler plant including co-firing and combined heat and power

**Co-fire:**

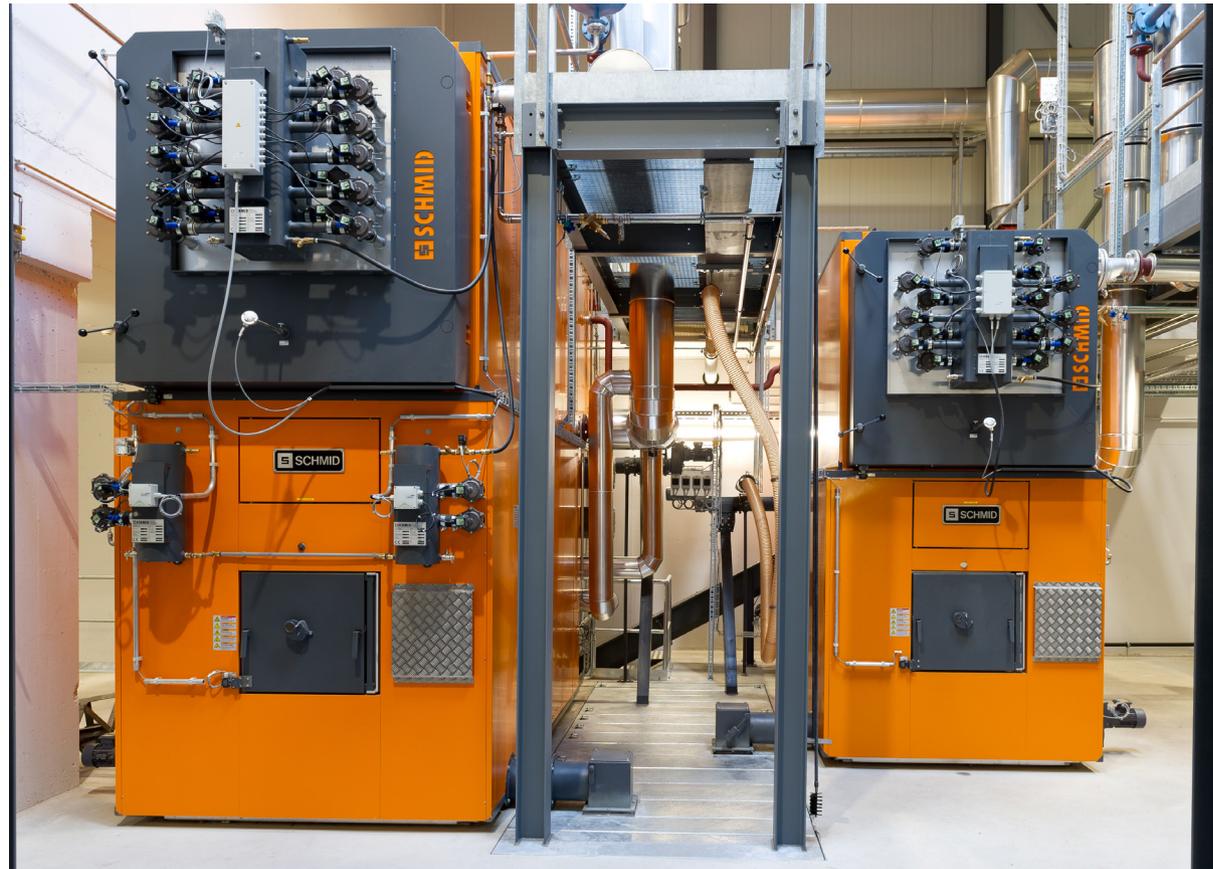
- Heat generator (i.e. boiler) is 100 percent biomass-fired

**Heating system heat sources:**

- Biomass is the only heat source in system

**Comments:**

- Wet wood chips percentage share approximately 90 percent WS-P63 M 50. Shrub cuttings percentage share approximately 10 percent.
- Moving grate boilers with flue gas condensation ascertain maximum efficiency.



The wood combustion plant is connected to a local district heating network to additionally supply 200 apartments in the neighbourhood.

The motivation for the plant was to substitute fossil fuels by locally available and renewable wood chips as part of the sustainability targets of FRANKE as a leading supplier of kitchen and food systems for households and gastronomy. The wood chip plant replaces approximately 530 000 m<sup>3</sup> of natural gas annually.

## Factors behind the decision

Incentives exist, in specific cases, for the transition from fossil fuels to renewables in industry. However, FRANKE AG waived these potential incentives and subsidies to be free in the design of the installation. The targets for the

installation of a biomass boiler was to enable an energy supply, which is on the one hand safe and reliable, and on the other hand CO<sub>2</sub> neutral and based on a local energy source.

In Switzerland, the confederation and the cantons generally support efficiency measures and the substitution of fossil fuels by renewables based on a national vote on an “Energy Article” back in 1990 and a consecutive national vote on the “Energy Strategy 2050” in 2017. Furthermore, Switzerland follows strict air pollution control regulations to avoid local air pollution with particulate matter, which mainly occurs in winter periods due to traffic and residential wood burning. Therefore automated wood

## Relation to Sustainable Development Goals:



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**



**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**



**Make cities and human settlements inclusive, safe, resilient and sustainable**



**Ensure sustainable consumption and production patterns**



**Take urgent action to combat climate change and its impacts**

### Comment:

● Reduction of 530 000 m<sup>3</sup> of natural gas annual corresponding to approximately 1100 t CO<sub>2</sub> per year (with 2.05 kg CO<sub>2</sub>/m<sup>3</sup> natural gas).

combustion systems are favoured and in addition, highly efficient particle removal systems are introduced not only in large utility boilers, but also in small and medium scale combustion devices. Consequently, the present energy plant is in line with the targets of the Swiss energy strategy but nevertheless solely based on the initiative of an innovative company.

## Lessons learned

From the very beginning FRANKE AG was tuned to have a high-quality product and efficient solution. They required the full package to have problem-free operation.

## Success factors

Biomass fuel needs to be available by local suppliers in a suitable form and quantity. For this purpose, regional wood chip supplier from forestry (or in cooperation with forestry) are important.

The heating system must be operational with low maintenance and support costs.

The installation works perfectly since day 1. It satisfies the customer and contributes to the positive image of the company and to biomass energy in general.

## Constraints

Since biomass systems exhibit higher investment cost than fossil systems, biomass systems are only favourable if a strong focus on sustainability is met and a longer depreciation period is accepted by the investor. In the present case, the company's philosophy to provide the most sustainable products on the market assisted the decision towards renewable fuels. Therefore, the costs of the installation were on the high side, since company wanted to make sure they have the best possible solution on the market to comply with its sustainability goals.



**Replicability potential:**

- Medium local replicability
- Medium regional replicability
- High national replicability
- High international replicability

**Scale-up potential:**

- Low local potential
- Low regional potential
- Low national potential
- Medium international potential

**Comment:**

● The presented project resembles a typical and ideal situation of an SME production sites in a small town in Switzerland. There is a limited number of significantly larger applications in Switzerland, while in other countries, larger production sites are also common.

**Stake holder roles:**

1. Franke Schweiz AG – Investor and operator
2. Apartment site “Stadtblick” – Apartment blocks connected by district heating
3. SCHMID AG energy solutions – Supplier of the heat production plant (wood chip boiler and infrastructure)
4. IS Save Energy, Switzerland – Supplier of the flue gas condensation system and the wet electrostatic precipitator
5. Local forestry operator – Supplier of the forestry wood chips
6. Aarburg community





IEA Bioenergy

**Web sites:**

[www.schmid-energy.ch](http://www.schmid-energy.ch)

[www.franke.com](http://www.franke.com)

[www.ri.se](http://www.ri.se)

[www.energimyndigheten.se/en/](http://www.energimyndigheten.se/en/)

[www.iea.org/tcp/](http://www.iea.org/tcp/)

[www.ieabioenergy.com](http://www.ieabioenergy.com)

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