



SDHplus
Solar District Heating in Europe

*WP2 – SDH enabling buildings with high energy performance
Task 2.2 – Development of adapted and/or new models*

**D2.4 – Report on adapted
and/or new possible models
Format for reporting (language: English)**



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INTRODUCTION

*The information must be provided **in English**.*

Country Italy

Responsible partners for the deliverable Ambiente Italia, AIRU

Date of last information update 10.09.2014

TOPICS TO BE INCLUDED

1. *Which models are you planning to replicate? Please choose from D2.3 document*
Situation in Italy is a little different to what was foreseen while conceiving the SDHplus proposal. The first plants have not yet been installed, although at least a couple of utilities are already at an advanced level of decision. There are probably several reasons for this situation, such as the uncertainty in the political framework for what concerns DH and cogeneration (e.g. national translation of Energy Efficiency Directive and support to conventional power plants to guarantee continuous power production), the lack of confidence in large scale solar thermal plants, the difficulty for utilities in obtaining authorisations for network extension.
For this reason, none of the models included in D2.3 is actually replicable.

2. *Which are the main changes needed in order to replicate the chosen models in your country?*

Existing model

AIRU and Ambiente Italia have been searching among Italian utilities for best practices related to renewable energy sources and energy efficiency and have identified the interesting experience of ASTEM Gestioni, the utility providing DH to Lodi, a 40.000 inhabitants town closed to Milano, where heat supplied in the network is partly bought from biomass cogeneration plant.

ASTEM technicians have been interviewed by AIRU and the model has been summarized in Italian language (see [attachment Accesso alle reti - esperienza AG.pdf](#)) in order to disseminate it towards other Italian utilities.

The main idea was to help utilities overcoming the barriers against introduction of third parties access, as third party access to DH networks would be an effective way of enhancing renewables in the DH branch and in particular, solar thermal.

ASTEM's experience has been disseminated towards AIRU members in the framework of the Smart Cities committee, in the meeting on June, 26th, 2013. Meeting invitation and minutes are [attached \(riunione Comitato Smart City.eml; Verbale Comitato Smart Cities 26 giugno 2013.pdf\)](#).

Adapted model

At this stage an exemplary adaptation of ASTEM's model to solar thermal has been made at theoretical level, as it cannot yet be applied. The idea is to develop a model of third party access for solar thermal heat provided by an ESCO.

3. *Which stakeholders (utilities, local authorities, etc.) do you plan to involve?*

Existing model

- ASTEM Gestioni – utility of Lodi, running a 10 km DH network.
- Two private companies producing power and heat from biofuel and wooden biomass.

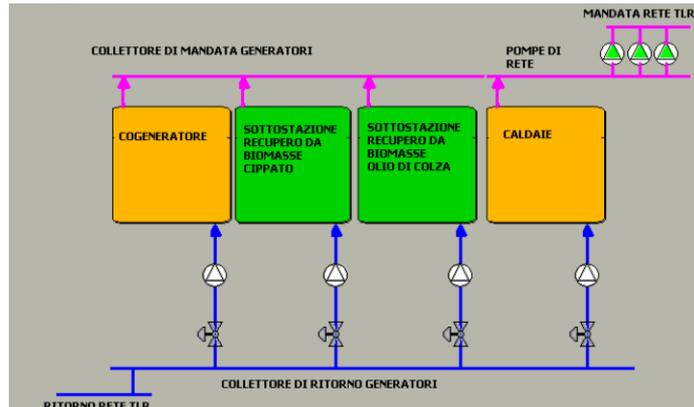
Adapted model

The idea is to create a theoretical model for solar thermal based on the successful ASTEM's model to be presented at utilities with potential interest.

4. *Please describe how the model will work and the role of the different stakeholders*

Existing model

The two private companies are producing heat and power from a biofuel and a wooden biomass plant. Heat is sold to ASTEM through a “take or pay” contract, which ensures the companies a minimum of sold heat, making the investment attractive. ASTEM does not oblige the two companies to produce heat, though. This is likely to change in ASTEM’s future projects. Heat is exchanged in ASTEM production facility, as shown in the following picture.



The two strong points of this model are:

- The third parties (the two society) have no production obligation, so they don't need to install any backup system.
- The DH utility (ASTEM) makes no investments for the RES integration: this pushes third parties to produce and sell heat. At the same time, this situation is balanced by the “take or pay” contract that requires ASTEM to buy a minimum of heat.
- The tariff is built through a “win win” strategy: the price of third party sold heat follows ASTEM production cost's trend, being always lower. In this way, buying heat from the third parties is always profitable for ASTEM.

Adapted model

The characteristics of ASTEM model make it well adaptable to solar thermal heat sold by an ESCO instead of biomass sold by a third party cogeneration plant.

- Solar uncertain source is not an issue with no production obligation contract.
- The ESCO could incur all the initial investment costs for the solar thermal plant and secure a “take or pay” contract with the DH utility.
- The tariff could be decided in a similar “win win strategy” being lower than traditional heat production cost's but higher enough to allow an acceptable payback time of the solar thermal investment for the ESCO.

5. *What is the final aim of the model implementation?*

Aim of this implementation is to gain experience with using heat provided by third parties in an economical way. This means fixing both, the technical boundary conditions to make the produced heat usable in the DH network, and the economic conditions, in order to satisfy the producer and the DH utility.

ASTEM showed an overview on advantages and disadvantages of their experiences:

Advantages for companies:

- The fact that the two companies could show that cogenerated heat would be effectively used strongly simplified authorizations for installing their plants.
- Better profitability of the plants.
- Good image (as ASTEM is considered a sound company) and chance of replicating the same approach in other towns.

Advantages for ASTEM:

- Better environmental impact of ASTEM's activities: the objective for the near future is to reach a renewable fraction of 50 %.
- Lower production costs: this is crucial now, as the changing energy market makes cogeneration less and less viable.
- Reduced dependence on electricity and gas market.
- Fiscal benefits for the end users might occur in the near future due to the fact that biomass heat is not taxed.

6. *Please include the foreseen timetable for the model implementation (hearing with stakeholders, preparation of draft documents, etc.)*

The model has already been implemented in 2013. ASTEM Gestioni is planning to connect other users in the near future: an organic rankine cycle plant with 200-300 kW_{el} and 1.2 – 1.5 MW_{th} might be connected in the next years.