



This Swiss community of NEUCHÂTEL works together with Dundalk (Ireland) and Mödling (Austria) in the HOLISTIC project. The three cities, each of about 30,000 inhabitants, will undertake concentrated demonstration activities within a defined zone in each town. The key is acting on every aspect of the community and selecting the most appropriate technology solution in each case.

PICTURE 1: In Situ Picture of the buildings presented in picture 2 and 3. Retrofitting of these typical buildings of the 1970's is one of the demonstration measures undertaken in Neuchâtel. The objective is to achieve energy saving of 53%.



Selecting appropriate actions

One of the technologies applied to acquire detailed information of the building quality and therefore target measures undertaken for managing demand (picture 1) is the use of thermal infrared imaging. This is a valuable tool for inspecting and performing non-destructive testing of building elements, detecting where and how energy is leaking from a building's envelope, etc.

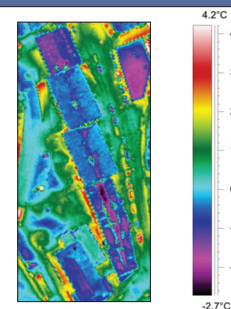
By utilising this technology it is possible to "see" the surface temperature characteristics of any object, that is the end-effect of heat transfer by conduction from within the object to its surface and assess the amount of radiated heat that is associated to an estimate of its surface temperature (picture 2). In Mödling ground thermographs were taken of the foreseen refurbished buildings. In Neuchâtel aerial pictures of not only the whole area, but also the whole city were taken. This makes sense as more than 20% of the heat is lost through the roof.

Realising and interpreting aerial thermographs

A company specialized (french company Trading Corporation Consulting (TCC)) has taken the pictures on February 11 and 12, 2008. The helicopter, equipped with an infrared camera, flew over Neuchâtel at a distance of 500 meters high over the roofs. The meteorological conditions were good with an external temperature of about 2 degree Celsius.

More than 7,000 pictures have been taken. Thanks to the GPS positioning system, it has been possible to establish a thermic map of the HOLISTIC zone. This map shows each building of the zone according to the thermic quality of the roof (picture 3).

PICTURE 2: The digital picture of an object, presents various temperature levels of the building parts with different colours. The higher the temperature is the stronger losses are.



PICTURE 3: The thermic map identifies buildings with very few losses (dark blue) to extreme high losses in term of energy (pink). The green colour characterises area with rather strong losses. Insulating the roof is foreseen during the retrofitting of the buildings.



A tool to sensitise the population

This first phase of data acquisition has been well covered by the local press. Following these articles, the city of Neuchâtel received a lot of requests from buildings owners to access these data. To answer them an exhibition was organised in Neuchâtel to present the results to the building owners and the inhabitants. Owners of the building also have the opportunity to receive the aerial picture. In exchange, they are asked to provide the amount and type of heat energy they use every year as well as the heated surfaces of their buildings.

This gives the opportunity to the city to set up a dialog and to give specific information on how to improve energy performances based on concrete results on particular buildings.

