

## 1.1 Novel Solution #8 - Energy Feed-Back Toon from Eneco (Delft pilot)

### 1.1.1 Location in building - Delft

The operation of individual installations can be done to all individual flats. All 108 dwellings in the project have an individual energy meter for both gas and electricity, which is standard in The Netherlands. The operation of the installation is normally in the living room.



Figure 1 The Eneco Toon display installed in a dwelling. Source: Skanska

### 1.1.2 Existing Construction

All the dwellings that have central heating through a condensing or slightly older boiler before the project had a small thermostat on the wall. This is usually at a central place in the house and the settings of the thermostat are manual to a certain degree. The different individual radiators can be fully operated by their own turning switch.



Figure 2: Old type of thermostat. Source: Woonbron

### 1.1.3 Identified Problems

Many tenants do not care about their energy use and have no idea about their own possibility to save energy. One of the reasons is that energy use is never visible. In The Netherlands, tenants



pay the same energy-bill every month and receive an annual bill (with money back or extra payment) once a year. This makes it easy to forget about energy.

The feed-back systems for energy use so far have been manual, comparing the meter with tables in newsletters until the early 2000's for the most interested people, but the internet and digital information-society makes it possible to give direct information to energy users. Thus, a system with a more direct feedback to tenants is wanted for awareness reasons.

### 1.1.4 Solution

From the viewpoint of the correct rationale to deal with energy-savings at dwelling level the Technical University Delft has proposed the Trias Energetica. The Trias Energetica shows a triangulated step by step approach:

1. Reduce the demand for energy by avoiding waste and implementing energy-saving measures;
2. Use sustainable sources of energy like wind, the sun, water and the ground;
3. Use fossil fuel energy as efficiently as possible and only if sustainable sources of energy are unavailable.

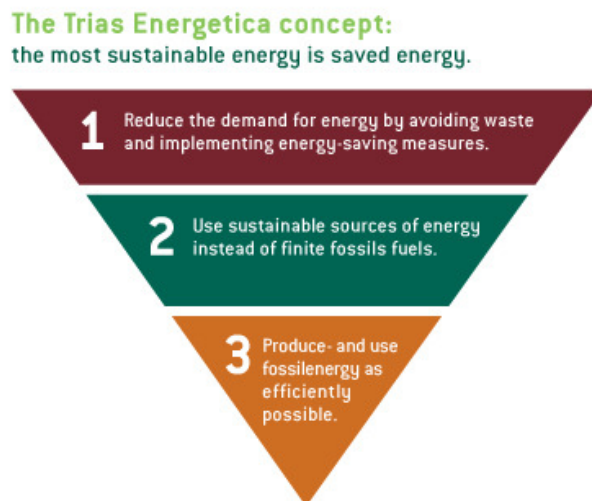


Figure 3: Trias Energetica source: [www.eurima.org](http://www.eurima.org)

The feed-back system currently belongs in group 1 of the Trias Energetica, leading to reduced energy demand through better management of the energy use in the house. However in the longer term, the instrument may not only be used for demand reduction but also for energy-use, at the optimum moment. This would belong firmly in group 3.

Eneco's Toon® was at the Dutch forefront of systems to give the wanted direct feedback, hence why their solution was chosen. The Toon is a new and revolutionary kind of thermostat that provides customers with real time data about their energy consumption and costs. This insight gives consumers, for the first time, a clear picture of their energy use. This makes it possible and easy to save energy.

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Figure 4: the Toon energy-display. Source: Eneco

The display also has two other applications installed: one predicts the local weather in real time, and the other shows traffic updates.

### 1.1.5 Energy Experiences

In the interviews that were held one year after the installation of the Toons by Evert Hasselaar and Zeno Winkels, all tenants expressed their satisfaction with the Toon. They talked about diminishing usage of it once the new knowledge had settled but they still looked at the display daily. More on this topic in the BEEM-UP Tenant Involvement material.

Some people reported using the smartphone app quite a lot. They would turn on the heating before they came home, or perhaps turn it off in case of working extra hours. The Toons were free of charge to the tenants due to the BEEM-UP project but all interviewed users claimed that they would be willing to pay € 3.5 on a monthly basis for its usage after the BEEM-UP project.



Figure 5 Eneco smartphone application. Source: Eneco

### 1.1.6 Lessons Learnt

From the viewpoint of social housing owner Woonbron the combination of the new installations, combined with the Toon has been incredibly successful. Some tenants that only had a simple gas burner in their living room before the BEEM-UP project ended up with a condensing boiler with solar heating and would set this installation using their smartphones.

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