

# AMR in high rise flats

## Application Note



### Project Background

DUWO is a large housing association for students in the Netherlands. DUWO have their headquarters in the town of Delft and two sub-establishments, one in the town Den Haag and one in the capital city of Amsterdam.

DUWO owns a number of blocks of flats used to accommodate students in the vicinity of universities in the western part of the country.

The project described in this Application Note, comprises of a housing property for students of the Hogeschool in Den Haag.

The building, designed and constructed by Atelier Pro Architekten the Den Haag, consists of two parts; 100 flats in a low, four story building and a tower with 209 flats.

The Consulting Engineer Deerns took care of the technical design, which was implemented by Giesbers & van der Graaf, an installation company.

The location, with the name Laakhaven, is situated next to the Hogeschool.

In an earlier project, DUWO used Kamstrup products for metering heat and electricity, including AMR by

means of M-Bus connected to the building management system. As this system operates to the full satisfaction of the user, this inspired DUWO to choose Kamstrup products again in this Laakhaven project.

In this project electricity, heat and both cold and hot tap water meters are read automatically.



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## Solution

Because of the fact that student flats show a high turnover, and consequently the billing of energy consumption has to be done frequently, it is not economically feasible to read the energy meters manually.

As DUWO intended to read all the energy meters by AMR, the energy meters could be installed in centralized vertical ducts, which are not easy to access, without this becoming a problem.

### Technical description

With respect to the Building Management System, DUWO chose Priva, a Dutch company specialised in building management systems. The system chosen consists of one digital main station to control the central installations and 26 digital substations for the technical equipment in the flats.

The local energy distribution company, Eneco, provides electricity and heat (in the form of district heating water). Cold tap water is provided by DZH, a local water distribution company. These energy streams are measured by main meters connected to the Building Management System. Hot tap water is made in two large heat exchangers, and the heat quantities are measured and communicated to the Building Management System.

A Kamstrup heat meter type MULTICAL® 66 CDE was installed in each of the 309 flats. Each heat meter was equipped with an M-Bus module and two pulse inputs for cold and hot tap water. Power supply from the mains (24 V DC).

Furthermore, each flat has a Kamstrup electricity meter, type 182, equipped with an M-Bus module, a cold tap water meter and a hot tap water meter, both manufactured by the Swiss company GWF.

The GWF tap water meters were connected to the MULTICAL® inputs.

The heat meters and electricity meters are connected through the M-Bus network to 26 M-Bus masters. The M-Bus masters are coupled to the Priva digital substations communicating through RS232.

In other words, there are 26 small M-Bus systems in the building all connected to the Building Management System supplied by Priva.

On average 24 M-Bus modules (12 electricity meters and 12 heat meters) are connected to an M-Bus master.



*All meters are located in central, vertical ducts*

### Customer Benefits

A DUWO service desk, situated in the building, can answer questions from students living in the flats.

It is possible to read energy and water meters instantaneously, making it possible to invoice leaving students right away. Instead of paying for an estimated amount, the students pay for energy and water actually used.

In co-operation with DUWO and the installer, Kamstrup designed an inventive 8-digit numbering system including identification of the floor, the flat number and the meter number. The last 3 digits indicate the meter number; even numbers indicate electricity meters and odd numbers heat meters.

By making use of AMR it is now possible to read the energy meters in this building of student flats in an efficient and fast way.

In all respects this system operates extremely effectively for all parties concerned, and has proven to be reliable.