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*HOSPITALS web site:*  
[www.eu-hospitals.net](http://www.eu-hospitals.net)

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European Hospitals and Health Care Buildings**

## Monitoring plans

Torun City Hospital

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## **Design Team**

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## **Objective**

Monitoring process includes inspection of the main power engineering issues concerning heat energy:

- consumption of heat energy for heating,
- outdoor air temperatures,  
indoor air temperatures.

## **Short description of innovative elements**

The objective of the planned thermo-modernization actions was to reduce the consumption of heat energy used to heat the hospital rooms by means of:

- windows exchange resulting in better air-tightness of the existing window openings,
- thermo-insulation of external walls,
- thermo-insulation of roofs.

The above elements contributed to the reduction of heat losses in the outdated hospital complex consisting of three medical buildings:

1. Main building,
2. Admission Room building,
3. Cardiac-Internist Ward building

In 2005 in the last stage of the implementation of the contract the thermal centre was to be modernized in order to enable the control of heat consumption in technical and administration facilities over the weekends.

Above projects will in the end result in savings in heat consumption for heating purposes and in comfortable temperatures in medical rooms during heating period.



Figure 1: Plan sketch of Torun City Hospital. The buildings ( no. 1,2,3) are falling under the thermo-modernization contract with EU.

## Description of measurements

### Indoor air temperature

Thermometer readings of the temperature in hospitalization rooms are taken in the chosen rooms three times a week. In that manner the average temperature in the measurement week is determined.

## Space heating

The results of the heat energy measurements are gathered on a weekly basis every Friday at 8 o'clock. The measurements are done in the heat centre located in the building no.2 covered by the EU contract for thermo-modernization. The results are compiled in a table.

Heat energy is measured by means of electronic counter type "MULTICAL 66CDE" made by "KAMSTRUP"



Figure 2: Logger for measurement of energy use for space heating.

## Outdoor climate data

Thermometer readings of the outdoor temperature from the surroundings of the project buildings are taken everyday. The measurements are carried out on the north side. On the basis of the readings the average weekly temperature are calculated.

The thermometer indications are compared with the indications of the heat probe of the "Danfoss" controller in the heat centre.



Figure 3: Controller with outdoor temperature sensor is installed in the heat centre. Controller adjusts heat factor flow dependent on outdoor temperature.

For the purposes of the Intermediate Technical reports also average ambient temperatures in the area of the Meteorological Centre are gathered. The data is compiled in the table “Data of consumption” on a weekly basis.

Outdoor and indoor temperatures are measured by means of electronic thermometers type 02113 “MERASERW” equipped with a heat probe for outdoor temperature measurements.



Figure 4: Logger for the measurement of indoor and outdoor air temperature