

DESIGN OF DATABASE FORMAT

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1. AIM

Aim of this report is to describe the data format to be used by each partner to gather and manage the innovative nZEB solutions adopted for school buildings in the project area. The gathered best practices will be accessible to the public at <http://www.feedschools.eu/best-practices/> and will be searchable in a user friendly manner.

The aim of the database is to make known, to a broad public, high-performance and advanced techniques and technologies that can lead an existing school building in be transformed in nZEB. Such examples and information can be used as a starting point for implementing energy improvement actions for the deep renovation of school buildings.



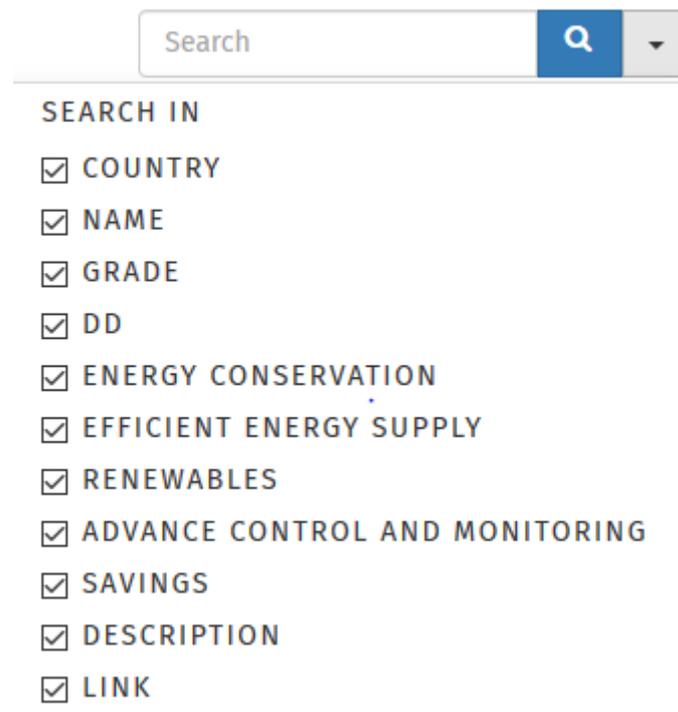
2. DATABASE FORMAT

A database is a structured data archive to rationalize the management and updating of information and to allow complex research to be carried out.

FEEDSCHOOLS database will be organized in a user friendly manner to facilitate the search to interested stakeholders.

It will be composed by a number of modules (1 for each nZEB building), each containing the basic information to understand the example

The web database will be searchable in one or more of the following fields.



The image shows a search interface. At the top is a search box with the word "Search" and a magnifying glass icon. Below the search box is a dropdown menu titled "SEARCH IN". The menu contains a list of search criteria, each with a checked checkbox:

- COUNTRY
- NAME
- GRADE
- DD
- ENERGY CONSERVATION
- EFFICIENT ENERGY SUPPLY
- RENEWABLES
- ADVANCE CONTROL AND MONITORING
- SAVINGS
- DESCRIPTION
- LINK

Database users can choose one or more fields of interest and flag them, so as to find solutions that are consistent with their needs.

To search for specific documents, the “Search” box should be used by typing the keywords separated by white spaces. Keywords can be typed (also partially) in any order, in lower- or upper- or mixed-case and are searched in every field (and inside the documents). To restrict the search on some filed only, please select/deselect them in the pull-down menu (down-arrow) on the right of the search box. To exclude documents with a particular keyword, prepend to it a minus character “-“.



E.g. 1: to retrieve documents related to primary schools in Italy, please type:

primary school italy or ITALY primary school or prim Italy

E.g. 2: to retrieve documents related to heating in primary schools, please type:

heating primary

E.g. 3: to retrieve documents related to heating in all school grades but primary, please type:

heating -primary



3. FORMAT OF THE MODULE: INSTRUCTION FOR POPULATION

The module to be used to gather the nZEB best examples is attached hereafter. Each partner should compile at least 5 nZEB examples in his area

School name	
PICTURE 1	PICTURE 2
BUILDING INFORMATION	
Address:	
Building Owner	
Degree Days	
Other	
BUILDING TYPE AND SIZE	
Total floor area	
Number of storeys	
Number of classrooms	
Urban context	
Number of pupils	
Use profile	
Other	
SHORT DESCRIPTION OF THE RENOVATION AND ITS PURPOSE	



ENERGY CONSERVATION AND RENEWABLE ENERGY MEASURES	
Energy Conservation	
Efficient energy supply	
Renewables	
Advanced control and monitoring	
Other	
SAVINGS: kWh, €	

In the format, each partner will include general information about school building (City, address, degrees day...), information about type and size of the building (floor area, number of storeys, classrooms, rooms, pupils and use profile of the school building). In the third part, each partner will give a short description of the renovation plan explaining the goal to be reached. In the last part information about energy (envelope and systems renovation) and information about Renewable Energy Sources are required. If available, is necessary to include also information about costs and savings after the improvement actions.

In the picture below an example of fulfilled format can be found:



CYPRUS (NICOSIA, KLIROU): Kirou Primary School



Listed Part of the school - Protected



The building where the interventions were made: (Before & After).

BUILDING INFORMATION	
Address:	66 Leoforos Archiepiskopou Makariou III, 2600 Kirou, Nicosia, Cyprus
Building Owner	Public School - Kirou Community
Degree Days	HDD: 990 (Base Temperature: 16.0 °C) CDD: 487 (Base Temperature: 24.0 °C)
Other	Year of operation: 1878 [First Part]
BUILDING TYPE AND SIZE	
Total floor area	Around 720 m ²
Number of storeys	1 (Ground Floor)
Number of classrooms	7 (+2 Prefabricated for limited use)
Urban context	Semi mountainous area - Village (of 1900 residents)
Number of pupils	124 (21/class on average)
Use profile	Morning till mid-day - From 07:45 - 13:00. 1 room is also used for student supervision until 16:00. Three classrooms, are used for events of the Community Council and of various Unions during some days of the year. On Tuesdays and Fridays rooms are used for training lessons in the afternoon.
Other	Part of the building is listed, so interventions on that part are avoided. Additional Spaces: Administration and staff offices, Teachers' room, Cooking room, Storage rooms, Canteen, toiletries, cleaning staff room, boiler room.
SHORT DESCRIPTION OF THE RENOVATION AND ITS PURPOSE	
Change of the doors, the glazing and the window frames in order to improve indoor environment quality (mainly for thermal & acoustic comfort). The previous openings were equipped with iron-eroded- frames and single glazing and they were causing a lot of problems, such as high infiltration (temperature loss) and noise pollution. New windows with double glazing and aluminium frames were installed on the beginning of the current school year. The specifications of the new windows are determined by the technical services of the Ministry of Education and Culture, which does not require something better than a double glazing (clear laminated glass filled with air G 16-G) and aluminium frames. Therefore, a frame with higher energy performance (i.e. thermal break), was not an option. According to the occupants of the school, the difference is already obvious -both in terms of acoustic and thermal comfort- and no complains are made anymore. The heating system is operating almost half of the hours (almost 3 hours instead of 5) and the thermal comfort criteria are met.	
ENERGY CONSERVATION AND RENEWABLE ENERGY MEASURES	
Energy Conservation	Besides the replacement of the windows, nothing else was considered that should be changed. This is because the need for cooling was already low due to the building's location and its energy consumption was mainly affect by the heating needs. Moreover, as the listed building has high thermal mass, it's capable of maintaining a stable temperature all year around without significant changes. Nevertheless, they apply some other practises in order to achieve energy conservation. For example, for the afternoon lessons, they use a specific room in the listed building, which has a different heating system in order not to operate the central system just for one room.
Efficient energy supply	Their boiler has not been replaced recently, however they maintain a proper maintenance schedule and it seems to operate sufficiently. A/C are not usually used.
Renewables	N/A
Advanced control and monitoring	N/A
Other	The school is highly involved in activities related to recycling and they participate to the "Tiganokini" which is an educational, environmental programme, which focuses on the collection and recycling of used cooking oil, and has been successfully applied in more than 200 schools all over the island.
SAVINGS: kWh, €	
A full image of the energy savings is not yet clear as the windows' replacement finished 4 months ago and the colder winter in Cyprus is usually observed during February - March, therefore we don't have specific indicators. However, according to the school board, during the previous years they have been paying around 1700 € (for about 2050 L of heating oil or 24090 kWh) per school year, whereas this year they paid 800 € by now and is estimated to pay around 400-500 € more between February and March. Based on this, a saving of about 400 € or about 480 L of heating oil is expected. Savings on cooling because of the windows' replacement are not estimated to be high as no active cooling was used except in some rooms.	