3.5 Miljöbyggnad

The following information is based on the content posted on the Sweden Green Building Council website, www.sgbc.se

Miljöbyggnad – Environmental Building – is an environmental certification system that is used in Sweden and is based on the Swedish building regulations and regulatory requirements. As of April 2012, there are 34 buildings that have been certified using the Miljöbyggnad system, all of them in Sweden.

3.5.1 MILJÖBYGGNAD – THE BASICS

Miljöbyggnad can be used to certify new constructions, refurbished buildings and existing buildings. It is possible to certify detached and semi-detached houses, blocks of flats and most types of commercial and non-commercial buildings such as offices, schools, day nurseries, hotels, health care buildings, nursing homes, restaurants, sports centres and theatres.

Manuals

The manual for Miljöbyggnad is divided into three parts. The first part is for existing and newly constructed buildings, and provides a background and introduction to certification work. The second and third parts contain information about current assessment criteria for existing and newly constructed buildings. The part on newly constructed buildings also covers refurbished buildings.

3.5.2 WHAT DOES MILJÖBYGGNAD ASSESS?

Areas (categories)

Miljöbyggnad comprises four assessment areas:

- Energy
- Indoor environment
- Building materials
- Special environmental requirements

The last mentioned area only applies to buildings with their own water supplies and waste water systems.

Indicators (issues)

Each area is divided into different aspects which in turn are divided into a number of indicators. Indicators correspond to the previously mentioned issues or credits.

Table 3.12 shows a compilation of the indicators treated in each area. The aspects are important where the rating of a building is concerned and these are described in more detail in Sub-section 3.5.3.

Table 3.12 Areas with corresponding aspects and the indicators assessed in Miljöbyggnad systems.

No.	Indicator	Aspect	Area
1	Energy use	Energy use	Energy
2	Heat power demand	Power demand	
3	Solar heating load		
4	Type of energy	Type of energy	
5	Noise environment	Noise environment	Indoor environment
6	Radon gas	Air quality	
7	Ventilation standard		
8	Nitrogen dioxide		
9	Moisture resistance	Moisture	
10	Thermal climate in winter	Thermal climate	
11	Thermal climate in summer		
12	Daylight	Daylight	
13	Legionella	Legionella	
14	Documentation of building materials	Documentation of building materials	Materials
15	Phasing out dangerous substances	Phasing out dangerous substances	
16	Removal of dangerous substances	Removal of dangerous substances	

3.5.3 RATINGS AND REQUIREMENTS IN MILJÖBYGGNAD

Miljöbyggnad has four rating levels: Rated, Bronze, Silver and Gold. To be certified at Gold level all indicators must be at least at Silver level.

The rating level Rated means that the requirements have not been fulfilled. Despite this, the Rated level is used to indicate that there is room for improvement or when verifying a new building. For new constructions a preliminary assessment is carried out and this must be later verified.

Certification also entails a questionnaire being given to the users/tenants and at least 80% of the answers regarding the indoor environment must be deemed to be 'Very good', 'Good' or 'Acceptable' for the building to be awarded a Gold rating.

Rating
Ratings in Miljöbyggnad are divided into five steps:

Step 1. Rating at room level
Step 2. Rating at indicator level
Step 3. Rating at aspect level
Step 4. Rating at area level
Step 5. Rating at building level

Some of the indicators are measured or assessed at room level, for example, the solar heat load, others at building level. The areas of the assessed rooms are added together for each rating so that it can be seen how many square metres of the floor area attain Rated, Bronze, Silver or Gold levels respectively. An indicator rating is then awarded according to the lowest room level rating. This rating can be raised one level if at least half of the total assessed area has a higher rating. The rating given for each indicator is then used as a basis for the rating at aspect level. The aspect level is given the same rating as the indicator with the lowest rating. To obtain a rating at the area level, the lowest rating at the aspect level is used. The area rating can be raised by one level if at least half of the other aspect ratings are higher. And, finally, to obtain the rating at the building level the lowest rating from the area level is used. This is illustrated in Table 3.13.

Basic requirements
There are a number of basic requirements that must be fulfilled in order to be able to certify a building using a Miljöbyggnad system. A number of these basic requirements depend on the rating level being aimed at. For example, the rating Gold for the indicator 'Moisture resistance' requires the involvement of two certified moisture experts, one representing the client and one representing the contractor. An inventory for this indicator must also be carried out by a person who has completed relevant specialist training. This is also required for the indicator 'Removal of dangerous substances'. For the indicator 'Noise environment' an acoustics expert must be engaged no matter what rating is being aimed for. When assessing 'Ventilation standards' a certified inspector must have carried out a mandatory ventilation inspection, if one is required in the building in question.

Final rating
Table 3.13 illustrates how the final rating in the Miljöbyggnad system is reached, based on the ratings awarded at the different levels.

Table 3.13 A rating example using the Miljöbyggnad system.

Indicator		Aspect		Area		Building
Energy use	GOLD	Energy use	GOLD	Energy	GOLD	SILVER
Heat power demand	GOLD	Power demand	SILVER			
Solar heating load	SILVER					
Type of energy	GOLD	Type of energy	GOLD			
Noise environment	SILVER	Noise environment	SILVER	Indoor environment	SILVER	
Radon gas	SILVER	Air quality	SILVER			
Ventilation standard	SILVER					
Nitrogen dioxide	GOLD					
Moisture resistance	BRONZE	Moisture	BRONZE			
Thermal climate in winter	GOLD	Thermal climate	GOLD			
Thermal climate in summer	GOLD					
Daylight	SILVER	Daylight	SILVER			
Legionella	GOLD	Legionella	GOLD			
Documentation of building materials	SILVER	Documentation of building materials	SILVER	Materials	SILVER	
Phasing out dangerous substances	GOLD	Phasing out dangerous substances	GOLD			
Removal of dangerous substances	SILVER	Removal of dangerous substances	SILVER			

In order to obtain final certification, a verification of the building must be carried out. Verification means that the assessment data for the awarded rating, which, among other things, was reached via Table 3.13, is compared to the results achieved in the completed or refurbished building. This is to be done at the earliest one year and at the latest two years after the building has been put to use.

3.5.4 MILJÖBYGGNAD IN PRACTICE

Miljöbyggnad recommends that a certified Miljöbyggnad Coordinator is employed on a project no matter whether it is a new construction, a refurbishment, an extension or an existing building that is being classified. For new constructions, an application based on the building's design documents and site plans can be made. These will be later verified, as described above, before a final rating can be awarded.

Calculations and other verifications of the project can be carried out by the respective members of the planning group. On the Sweden Green Building Council's (SGBC's) website certain aids are available in the form of calculation tools and questionnaires for the assessment of the indoor environment. These can be downloaded free of charge.

Applications are sent to the SGBC who inspect the documents and award the rating certificate. Independent inspectors are involved in this work, which means that Miljöbyggnad offers third-party certification.

3.5.5 MILJÖBYGGNAD AND ENERGY

Miljöbyggnad defines a building's energy performance as: normal year adjusted energy for heating, domestic hot water, non-domestic power use (but not including power for any business equipment or machines) and comfort cooling. The Swedish Building regulations are used as a reference for new constructions. If the building fulfils the building regulations requirements, it will be awarded a Bronze rating for energy. If energy use is at least 25% lower than this, it will get a Silver rating and at least 35% lower, a Gold rating. Note that this only applies to buildings that are not heated using electricity. For new construction of electrically heated buildings a Bronze rating will apply if the regulations for electrically heated buildings are met, Silver if they use at least 5% less energy and Gold if they use at least 10% less. If the building regulations are updated, the rating levels will be required to meet any new stipulations, which means that a building is always rated according to the latest version of the building regulations.

In order to calculate the energy performance of a building, a calculation program that has been approved by the SGBC and stipulated in the manual must be used. The use of energy is then measured in the completed building for at least 12 months.

Where existing buildings are concerned there is no direct reliance on the building regulations. In this case, Miljöbyggnad will define an energy performance limit level itself. These limit levels vary depending on the type of building in question. Energy for heating is also adjusted to a normal year.

Miljöbyggnad also assesses a building according to the type of energy used. Depending on how large the proportion of renewable energy is, different ratings for the indicator 'Energy' can be obtained.

3.5.6 MILJÖBYGGNAD – ORIGIN AND ORGANISATION

Previously, Miljöbyggnad was managed by ByggaBoDialogen, which was a collaboration between a large number of companies and researchers, municipalities and the government. Subsequently, Miljöbyggnad was developed by the Swedish building and property industry together with public authorities, banks, insurance companies and universities.

The Miljöbyggnad system, previously known as the Miljöklassad byggnad system, has been managed by the Sweden Green Building Council since 1 January 2011.