

PRACTICAL EXPERIENCE WITH SBTOOLCZ CERTIFICATION

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Summary

The SBToolCZ certification method comes out from the international research of sustainable building assessment systems. There are available SBToolCZ schemes for residential and office buildings in present.

Certification of sustainable buildings gradually develops in the Czech Republic. It is most visible in the commercial sector (office buildings) where almost all newly built office buildings have independent complex quality certification. The certification for residential buildings is still at the beginning however, even in here, there is an evident development. Twenty residential buildings and family houses have been certified since 2010. This article focuses on the experience based on research of four case studies. Authors of this article also prepared all materials for issuing the certifications of, in this article described, three residential buildings and one family house.

Keywords: sustainable buildings, SBToolCZ, certification

1 Why the certification is requested?

Real estate market has transformed significantly due to economic crisis during last years. Before the financial and subsequently economic crisis, it was easy to sell anything due to excess of demand driven by easy accessible mortgages. Such an environment created a bubble and a loop where the prices arose but not the quality. The crisis swapped the situation and the demand fell. Real estate projects are usually long term and therefore many of them started in “good” times but finished during the crisis. Further, the number of executed projects was lowered, prices pushed down but still the offer has exceeded the demand significantly.

Having, the above said in mind, real estate developers started to push for uniqueness, lowering the running cost, investment cost and along the ecologic trends focused on sustainability to which has been given broad publicity. On the other hand, foreign investors and after other real estate developers have started to require the proof of quality in the form of independent complex quality certification. The independence of the evaluators, i.e. certification has become an important marketing tool. Corporate clients already found the advantages and certification added into their “green” profile. Private clients are gradually educated and getting interest at least in energy issues.

2 Analysis, optimization, evaluation, cost and benefits

2.1 Analysis

Every project starts with client's questions about the estimation of the result. The SBToolCZ methodology has a great advantage in existence of the precertification tool preSBToolCZ which can roughly show trends in scoring. Requested data for pre-scoring are maximally simplified and based on energy efficiency and further on selecting pre-defined options. The experience showed that the inaccuracy between pre-certification and certification scoring is around one point. Pre-certification for X-LOFT was produced after certification was issued and therefore very small difference appeared.

Tab. 1 Comparison between pre-certification and certification results [1]

Project	Pre-certification results	Certification results	Difference
Family house in Úvaly	4,3	5,6	1,3
Residential house Šumavský dvůr II	5,6	6,6	1,0
Residential house Bubeneč Gardens	7,2	8,3	1,1
Residential house X-LOFT	6,1	6,3	0,2

2.2 Optimization

Either pre-certification or analysis of particular criteria shows the weak areas of a project. The SBToolCZ auditor, depending on the stage of a project, can optimize and influence the quality of particular parts involved in certification scoring.

Úvaly project consisted of certification of eleven family houses and four residential houses. Major optimization was in the change of material for the walls, change of heating system to heat pump, adding the rain water retention and the waste separation system. The auditor was involved from the stage of the urban permission. Optimization went along regular meetings with whole design team consisted of investor, architect and contractor. Feasibility and economy was considered for various optimizations. Usually two variations (optimal and ideal) were prepared for discussion and comparison with so far designed solution. Investor, based on pre-certification results, set the goal in certification, respectively set the aim to reach the Bronze certification. The optimization to the optimal solution granted accomplishing the goal. The ideal showed necessary arrangements to gain the Silver certification.

X-LOFT project was improved mostly in the environmental criteria, i.e. there were designed wider and better thermal insulation of the walls, triple glazed windows, roof solar panels and in several flats mechanical ventilation heat recovery. This project was the first SBToolCZ testing residential building and authors of this article worked closely together on the evaluation. The existing solutions were evaluated as the first step because the pre-certification did not exist at that time. Results were close to the Silver certification and therefore above mentioned measures were taken to reach it. The project drawings and technology were adjusted after finishing the optimization.

Only minor improvements were proposed for Šumavský dvůr II and Bubeneč Gardens, for example: better thermal insulation in roof, adding rain water retention and higher safety of the entrance doors to flats.

Šumavský dvůr II has very low numbers of embodied energy due to timber construction. The operational energy reaches medium scoring mainly due to severe climatic

conditions. The auditor processed the scoring arriving to Silver certification. The arrangements allowing reaching the Gold certification were economically and technically not feasible.

Bubeneč Gardens is designed as a passive house with very low operation energy consumption however the construction is mainly from reinforced concrete and therefore embodied energy reaches medium scoring. The goal was to preserve the Gold certification at minimal cost increase. The provisions were discussed and agreed with the investor only.

Operational energy has a higher influence on scoring than the embodied energy what can be demonstrated on Šumavský dvůr II reaching the Silver certification and Bubeneč Gardens reaching the Gold certification.

2.3 Evaluation

The whole certification process is based on CEN standards. This is an important feature as all the project documents must follow them anyway and therefore there is request to produce only limited number of extra documents what has a significant time and price influence. Regarding time consumption, the most demanding are criteria S.01 Visual comfort, assessing the embodied energy which influences several criteria and L.03 Service accessibility with L.02 Accessibility of public spaces for relaxation.

2.4 Cost

Regarding the additional costs the experience shows the following:

- Impact on Úvaly was larger due to insufficient energy efficiency not meeting the legal requirements. Therefore, the heat pump was needed to be installed. Other arrangements were insignificant in expenses and mostly have developed further the idea already encompassed in the project.
- X-LOFT was optimized in general to fit the difficult sales situation due to economic crisis. Therefore, the additional cost is difficult to determine. Tangible results of the project were in success in various competitions and smooth and fast sales. However, the certification is only a piece of mosaic among other project qualities which worked synergistically.
- In the case of Šumavský dvůr II and Bubeneč Gardens, the additional cost was possible to assess as lower than 5% of the construction cost due to minimal changes.

2.5 Benefits

Benefits of the optimization can be divided into three interacting groups. The first is in the drop of emissions and lowering primary energy consumption hence brings the good for the mankind. The second pushes the running cost low and keeps healthy environment for users. The third opens new marketing strategies for real estate developers as they are described on the example of the case studies below.

At Úvaly the whole philosophy of the project was based on several criteria taken from SBTToolCZ methodology. The seven key goals are:

- Design,
- Ecology,
- Running Cost, User Comfort and Inner Environment,
- Security and Social Relations,
- Support of the Úvaly Community and
- Crime Prevention.

The X-LOFT project in Prague 8 was based on four pillars.

- Ecology (Silver SBToolCZ certificate),
- Design,
- Price and Running Cost,
- Locality.

Šumavský dvůr II is located in Šumava mountains. The whole timber structure makes the project unique in Czech Republic. The project philosophy also reflects:

- Locality (clean environment, sport activities nearby, nature)
- Architecture respecting the locality,
- Ecology (Silver SBToolCZ certificate),
- Services,
- Investment suitability.

Bubeneč Gardens is a very unique project in the Czech Republic. It is a passive house with façades covered with vertical greenery. The whole concept is focused on top quality and service. This influenced almost all the criteria very positively and project received in evaluation as the first in the Czech Republic the Gold SBToolCZ Certificate. However, due to changes on investor's side the issuing the certificate is on hold.

3 Conclusions

Complex quality certification is an important part in the mosaic of the whole concept of the development of particular building or project. It is complementary to other qualities, for example locality, running cost and price. The investors are aware of raising competitiveness and therefore build the philosophy of the projects on more foundations, respectively they are spreading risks in marketing. Certifications also support the idea that the direct money discount from sale's price is more expensive than the raise of quality. In the case of X-LOFT, the certification and other project qualities brought it to success despite of the economic crisis.

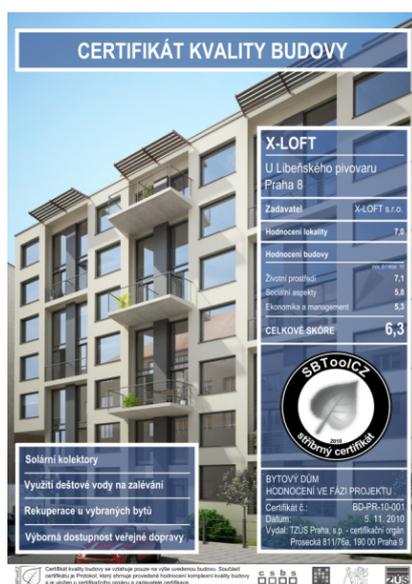


Fig. 1 SBToolCZ Certificates of X-LOFT [2]



Fig. 2 SBToolCZ Certificates of a family house in Úvaly [2]



Fig. 3 SBToolCZ Certificates of Šumavský dvůr II [2]

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