



Needs and requirements for successful solar thermal contracting

Market situation for solar thermal contracting in the Czech Republic (South Bohemia)

In the Czech Republic there has been an increasing use of solar thermal systems since several years. They have been mostly used in single family houses. Other places of use are schools, hostels, hospitals, retirement homes, public swimming pools, baths etc.

The Energy Performance Contracting was introduced in the Czech Republic in 1992. In 1993 first 2 projects in hospitals were implemented with this method. Since that time about 200 projects have been carried out, mainly in municipal sector. Besides the municipalities the projects are implemented also in the state sector, mainly in the sectors of education, healthcare, culture. It can be estimated that the total investment for the projects amounted to approx. 3 billion CZK and the total amount of savings reached approx. 800 TJ. The highest number of projects are carried out at schools with investments between 1 – 10 million CZK.

Unfortunately the state support of EPC project development is very weak in the Czech Republic. Nevertheless the situation is from the point of ESCOs' effort and interest of customers very good. The Czech Republic is in Europe on the top position, together with Germany, France, UK, Austria and Sweden concerning the number of the EPC projects and size of the projects.

Potencial of solar thermal contracting market in CZ

Although the EPC method is well developed in CZ, no project of solar thermal contracting has been implemented so far.

There are 8 ESCOs in CZ - all of them are active mainly in the region of Prague, its neighbourhood or in Moravia. We have tried to get in contact with all of them to discuss if it were possible to bring solar thermal contracting into life and if yes, then under which conditions. We contacted them on the occasion of organising a round table on solar contracting in České Budějovice. Two representatives of ESCOs and a specialist on EPC accepted the invitation and that's why an interesting discussion on the topic of solar thermal contracting, energy performance contracting (EPC) and energy contracting (EC) could happen. An important aspect is that a lot of potential clients know neither EPC nor EC and that's why they cannot imagine anything specific under solar thermal contracting.

EPC is a method, where an ESCO offers complex services with the goal to lower energy consumption in the client's premises. The ESCO's services include energy analysis, project

design, installation, regular maintenance, operator training and project financing. An ESCO gets paid for its services only if the project brings energy savings. The contract is normally concluded for 4-8 years. During the period the ESCO and the customer share the amount which represents the cost savings for the purchase of energy. The ESCO must pay the loan repayments and its own expenses from its share. Any remainder is the profit.

Energy contracting is another type of energy services that is often made use of by towns. In this type of cooperation the ESCO guarantees by contract that it will operate the equipment reliably, for an agreed price and for a certain time. A part of provided services to a customer in the framework of energy contracting is ensuring the modernisation of the heating system (or e.g. of the street lightning) and also ensuring financial resources for this modernisation. The client undertakes then contractually that he will pay the agreed payments to the ESCO during the term of the contract. These payments are dependent on actually consumed energy, its price and other services provided.

The conclusion of the discussion in the framework of the round table on 22.6.2010 on solar contracting with representatives of ESCOs and other stakeholders is as follows:

- Solar contracting in CZ would probably be feasible only if it were the energy contracting. It means e.g. that the contractor (an ESCO or a solar thermal company) would rent a boiler room from an industrial company and decide to install solar thermal collectors as well. The contractor would afterwards sell the heat to the industrial company where the modernisation of the equipment/boiler room was made.
- The best solution for integrating the solar thermal system in a company and using the solar contracting would be the forced reconstruction. The industrial company would need the reconstruction of the technological process or of the building anyway. When carrying out other necessary measures (e.g. technological), the costs for solar thermal system would not be so high and the payback period would not be so long in comparison when only the solar thermal system would be installed. This positive aspect is called the synergy effect.
- It is also good when the investor is persuaded about the utility of the planned changes e.g. if he sees the improvement of the company's image in it.
- Although the solar contracting is not feasible in Czech conditions at the moment because there are much more cons (too long payback period, the investment of an ESCO in an industrial company is not as safe as e.g. with projects in public sector – an industrial company can go bankrupt...) than pros (green image of a company), the situation can be different in a few years. Eight to ten years ago there were only EPC projects concerning heat, now there are to be found also projects concerning the efficient lightning even in public sector. The possibility of success for solar contracting is higher in the field of public and commercial services (e.g. in hotels, sport facilities) than in industry. Some projects of solar contracting in industry are more likely in the period of booming economics, not now when the economics still recover from the financial crisis.

Main barriers for solar thermal contracting in CZ (in South Bohemia)

Although EPC and EC are quite well developed in CZ, the solar thermal contracting is a brand new area, where neither ESCOs nor planners are experienced. So far EPC and EC have been mainly used in municipal or state sector e.g. in projects of change of heating systems to a more energy efficient one, in projects of biomass heating or street lighting etc. The unknown area of solar thermal contracting brings some barriers with. Here are the main ones in CZ:

- no interest from the side of industrial companies
Solar thermal in industry as well as contracting are relatively unknown for potential customers that's why there is no demand from their side at the moment. Even if the EPC or EC is introduced to them, there are some other barriers from the side of companies such as lack of financial resources, abundance of waste heat, too long payback period of the investment.
- low interest from the side of ESCOs
If there was the interest from the side of industrial companies (or other clients e.g. from public sector), there would be most probably also the offer from the side of ESCOs. It is necessary to say that the risks are higher for ESCOs with an industrial company than e.g. with a project from the public sector. There is a higher probability with an industrial company that it can go bankrupt.
- no system of state/European subsidies for solar thermal installations in industry
At the moment there is no state subsidy available, from which a solar thermal utilization project in industry could be financed.
- very low energy prices (electricity, gas) in some industrial companies
Very advantageous energy prices in some industrial companies make the payback period of a potential solar system much more longer.
- no experience with solar thermal utilization projects in industry, no best practice example in CZ
- back-up systems needed A solar thermal system always need a back-up system under the climate conditions in the Czech Republic.
- no ESCO in South Bohemia As mentioned above there is no ESCO in our region, that's why the awareness of potential clients is relatively low as well as the number of implemented EPC and EC projects.
- complication with integration of solar system into the existing energy system

Elements of a solar contracting agreement

In a solar contracting agreement roles, responsibilities and guarantees of an ESCO and a client are defined. ESCO guarantees its customer annual costs connected with energy consumption (e.g. heat, electricity, etc.) in a concrete amount (CZK / year) and under clearly defined conditions. These conditions are e.g. type and extent of customer's operation, weather or other "external" conditions and the estimated value of all cost inputs, expected inflation, etc.

Guarantees on both sides are an important condition of success:

- ESCO guarantees that it will supply energy (heat) in quantities and at a price to be determined by agreement with the known principle of long-term pricing of delivered energy (heat).
- Customer warrants that during the duration of the contract there will be the same range of operation (i.e. the minimum consumption amount energy (heat) as before the project)

The content of a solar contracting agreement can be summarized as follows:

- range of services and guarantee of the contractor
- guarantee of the client
- contract duration
- delivery guarantee (xy MWh/year)
- price, price structure, price index
- invoicing and payment schedule
- minimum consumption by the client
- compensation if heat is not delivered
- main technical features of the solar installation
- right to install solar system and access to the site
- ownership during and after the contract
- measurement method and point
- maintenance measures (extent, frequency, costs), technical auditing
- liability, insurance and warranties in case of damages
- provisions in case of bankruptcy and/or change of ownership of the ESCO or the client
- subcontracting
- confidentiality issues, conflicts of interest
- reasons to terminate the contract, settlement of disputes
- appendix: technical part, scope of supply and services

Strategies to overcome the barriers

One of the main barriers in South Bohemia is the lack of interest both of industrial and of solar companies. We think that it would be good to inform also other regions about the project. We have already started doing it by distributing information on So-Pro project and the checklists through various associations of industrial companies to all the regions of CZ. We would like to orientate at least one of the round tables on solar contracting again. We ascertained at the round table on solar contracting that was held on 22.6.2010 in České Budějovice that a lot of participants had not heard about this method of financing before. Nevertheless the topic of (solar) contracting was interesting for the participants. We would try to address industrial and solar companies from other regions and introduce the project, the so far implemented activities and the possible method of financing to the interested participants. We hope we could find an interested industrial company for a pilot project by this way.

It would be very helpful if there was a state or European subsidy programme for industrial companies for solar process heat installations established. In case an industrial company were interested in solar process heat utilization and faced the fact of long payback period of an investment a possible utilization of a grant would make the decision making easier for the investor in case the money/too long payback period were the main obstacle.

It would be also useful if there was a best practice example somewhere in the neighbourhood. The industrial companies that are considering the solar process heat utilization could see that such a system can work well somewhere else in similar conditions. It would also favourably influence the demand from the side of industrial companies if there were a good example where an interested company could ask if they are satisfied with the solar process heat system, how they financed the system, what technology proved well or eventually what they would have done differently...The best practice example would be also good because of contacts that other interested industrial companies could make use of (e.g. contact to a planner of the solar system, supply company, ESCO).

In case there is no best practice example in the country/region (as e.g. in South Bohemia/Czech Republic), best practice examples of neighbouring countries should be demonstrated so that an industrial company can gain the necessary information. Nevertheless the conditions in CZ and neighbouring countries are often different (e.g. subsidies).

The promotion of the So-Pro project should be done in a comprehensive way – i.e. the industrial companies should be informed both about the project itself and about the possible ways of financing (solar contracting/a subsidy programme). If a company planned an extensive change of the technological system, it would be good if it were informed about the method of energy contracting that could be used in this case (the payback period would be shortened if more measures were carried out).

Road map

The following road map implies what could be done by ECCB to make solar contracting more visible as an option of financing to a potential client.

what	when	who	how
We will create a new section on our website on contracting	before the end of 2010	ECCB	We will introduce the basic principles of EPC and EC methods and some good examples of realized projects
We will inform about best practice examples of solar process heat utilization from abroad	before the end of January 2010	ECCB	We will put a few best practice examples from abroad on our website
Include the solar contracting option in business advice activities	ongoing	ECCB	If a representative of a company is interested in contracting, we would advise him/her on ST contracting as an option
Include a lecture on EPC, EC and ST contracting into the programme of the 3rd training course for energy advisors	March-April 2011	ECCB	We organise the training course for energy advisors, so we can influence the content of the programmes. Representatives of industrial companies and other public bodies also participate at the training course.
Including contracting (also solar thermal contracting) into the last So-Pro round table	By the end of September 2011	ECCB	A lecture on EPC, EC and solar contracting will be held at the last round table meeting in SB.