

# Energy Performance Contracting: An opportunity for the private service building sector or a tool for public buildings only?

Margot Grim

Österreichische Energieagentur – Austrian Energy Agency

Otto-Bauer-Gasse 6

A-1060 VIENNA

margot.grim@energyagency.at

## Keywords

Energy Performance Contracting (EPC), energy efficiency in private service buildings, Third Party Financing, building renovation

## Abstract

Since 1997, Energy Performance Contracting (EPC) has become a frequently used tool in optimising and modernising federal and municipal buildings in Austria. More than 1 000 buildings have been energy-optimised using this tool. Most of the contracts are still active and successful. One remarkable point, however, is that most of these buildings belong to the public sector.

Private service building owners seem to lack either knowledge of, or confidence in EPC as an useful and convincing tool for the optimisation, modernisation or renovation of their buildings, despite the huge energy saving potential in this building sector. Up to 50%<sup>1</sup> of the operating costs are energy-related, and, on average, 20%<sup>2</sup> of these costs can be saved by using EPC.

This paper describes the current situation in the Austrian EPC market, especially in the tertiary sector, where the implementation of EPC seems to be much more complex than in the public building sector. It discusses the barriers that

prevent building owners from using EPC as a tool, as well as the barriers for Energy Saving Companies (ESCOs) and financial institutions. Finally, the means Austria is developing to overcome these barriers are presented as basis for discussion.

## Introduction

High-quality building refurbishment, with a focus on energy efficiency, is still the exception rather than the rule, despite increasing energy prices and the fact that climate change is making the headlines almost every day. In most cases, tight budgets and/or a lack of foresight on the part of the building owners are responsible for this.

Energy Performance contracting<sup>3</sup> (EPC) can solve this problem in some cases. The underlying concept of EPC is not new. It has been applied successfully since the late 1970s to reduce energy costs of buildings and industrial processes in the USA and Canada, where it has become an important business sector<sup>4</sup>. In the 1990s, EPC gained a firm foothold across the Atlantic. It is now being successfully applied in Germany and Austria to increase energy efficiency in buildings. In Germany, there are well over 200 contracting agreements (with pools of up to 100 individual buildings)<sup>5</sup>.

1. Klemens Leutgöb, Georg Benke (2000): Energie und Umwelt im Lebenszykluspiegel von Gebäuden, [http://www.eva.ac.at/\(de\)/projekte/lyzk.htm](http://www.eva.ac.at/(de)/projekte/lyzk.htm)

2. Within the federal EPC campaign in Austria, more than 400 buildings have been modernised with an average of 20,13% guaranteed energy cost savings.

3. Guaranteed energy cost savings by an external energy service company (ESCO) through planning and designing, realisation and construction, operation and maintenance, optimisation, user motivation and in some cases prefinancing. EPC is not limited to buildings: other typical contracting projects include street lighting, indoor swimming pools, parking garages, etc.

4. \$5 billion of upgrade contracts by the USA Federal Government predicted to deliver over \$1 billion/annum of energy savings. \$750 million in USA private sector contracts covering schools, hospitals, airports, manufacturing and petrochemicals. C\$180 million in Canada through the Federal Buildings Initiative which encouraged energy efficiency upgrades in 5 500 buildings with \$24 million reduction in energy cost per year (source AEPAC).

5. Friedrich Seefeldt, Klemens Leutgöb (2003): eceee: Energy Performance Contracting: Success in Austria and Germany – dead end for Europe?

In Austria, more than 1 000 buildings are already covered by EPC contracts<sup>6</sup>, and guaranteed energy savings of more than 20% are not unusual. It is remarkable, however, that almost all of these properties are owned by the public sector. This applies for all countries, where EPC is developing (Austria, Germany, USA, Canada, etc.).

There are a number of reasons why EPC models are used more frequently by the public sector, while tertiary sector building owners tend to avoid them.

This paper tries to give a structured assessment of the reasons of the comparable low market penetration of EPC in the tertiary sector. The analysis is based on the assumption, that not all counterarguments are appropriate. The following discussion based on theses about problems and possible solutions are based on practical experiences. A comparison between both the public sector and tertiary sector as a target group for EPC will be carried out.

Finally, the methods by which Austria wants to stimulate the EPC market with respect to private service buildings are presented as a base for discussion.

## The Austrian building market

### PUBLIC BUILDING SECTOR

The public building sector consists of federal, state and municipal buildings. In Austria, 75% of federal buildings<sup>7</sup> are owned and managed by an outsourced enterprise (Bundesimmobiliengesellschaft BIG) – which is owned wholly by the Republic of Austria, but managed like a private enterprise. The rest of the buildings are still owned by ministries themselves. BIG is responsible for managing the Austrian Republic's real estate, with a portfolio predominated by schools and universities (72%) and other administrative buildings (28%)<sup>8</sup>. BIG's activities involve renting out the buildings to the various government entities; carrying out renovations, maintenance and repair (about 200 Million Euro per year<sup>9</sup>) and new investments. As the biggest of all public building owners in Austria, BIG will be used as an example to express the thoughts and problems of the public building sector.

### PRIVATE SERVICE (TERTIARY) BUILDING SECTOR

The private service sector buildings are very diverse and inhomogeneous. Office and administration buildings; hotels, homes, leisure and shopping centres; private hospitals and schools; parking garages and many more kinds of buildings belong to this sector. What connects them is the fact that they are owned by individuals or institutions – often a fusion of several owners.

About 25% of the energy consumption of all Austrian buildings belongs to this sector<sup>10</sup>. Due to the often higher

density of technical equipment in this sector, the potential for both energy consumption and energy saving are higher than in residential buildings. Energy costs may constitute up to 50%<sup>11</sup> of the operating costs in the building. However, only 2 to 4.5%<sup>12</sup> of the overall business volume is energy related costs, including costs for electricity and heat, as well for other services (operating, maintaining, recondition). The Austrian experience with public buildings shows that energy savings of more than 20% can be achieved in an economical manner (amortisation period of less than 10 years)<sup>13</sup>. Potentially, 55% of all private service buildings are suitable for the EPC classic model. With the exploitation of this potential, a yearly reduction of CO<sub>2</sub> emissions of about 300 000 tons could be achieved<sup>14</sup>.

In the following, three types of private service building owners will be analysed and compared to each other, and to public sector building owners (BIG), with respect to their psychological, economical, technical and organisational characteristics that lead to the differences in implementing EPC. The three types of owners are large estate companies; large companies with many owner-occupied buildings (hotel chains, building centres, etc.) and owners of small to medium, poorly funded hotels.

## Reasons for energy efficient optimisation of buildings

Beyond energy consumption and energy costs, there are many other reasons that make energy efficient modernisation of buildings desirable.

*Need for new technical equipment, refurbishment and modernisation:* The needs of the users may change over time. In addition, the natural service life of materials and equipment is limited, resulting in a strong demand for new construction and building services techniques. Rich building owners are especially keen to invest in state-of-the-art technologies.

*Lack of comfort:* If a building is not kept up-to-date or is badly maintained and operated, its level of comfort will eventually decline and the occupants will be dissatisfied.

*Rising energy prices:* Energy prices are likely to increase over the next few years. Poorly funded owner-occupiers are the most vulnerable to any energy price increases.

*Energy saving potential:* The consumption of energy in buildings is increasing significantly, due to the demand for greater comfort and the associated technologies. The lack of life cycle cost calculations in the planning phase and/or bad adjustments of single housing technologies (heating, ventilation, air-conditioning, etc.) increases the potential for energy saving. More than 40% can be saved by adjusting and regulating the existing energy systems. In old and inefficient housing, up to 95% energy savings can be realised with a comprehensive renovation package<sup>15</sup>.

6. Klemens Leugöb (2004): assessment Austrian Energy Agency

7. Decision of Council of Ministers 51/22 (2001): Energy Performance Contracting or Delivery Contracting in the current structure of federal building management.

8. BIG (2004): Rating Bericht Moodys 2004 (<http://www.big.at/BIG/de/Unternehmen/Investor+Relations/default.htm>)

9. BIG (2003): Consolidated Annual Report 2003

10. Klemens Leutgöb (2001): Assessment of EPC in private service building sector

11. Klemens Leutgöb, Georg Benke (2000): Energie und Umwelt im Lebenszyklus Spiegel von Gebäuden, [http://www.eva.ac.at/\(de\)/projekte/lzyk.htm](http://www.eva.ac.at/(de)/projekte/lzyk.htm)

12. Kurt Hämmerle (1998): Tourismus und Energie; SAVE-Project EE-Net (2002): Assessment in Hospitals <http://www.eva.ac.at/projekte/eenet.htm>

13. Within the federal EPC campaign in Austria, more than 400 buildings have been modernised with an average of 20,13% guaranteed energy cost savings.

14. OPET building (2003): Assessment of EPC potential in selected building stocks

*European Building directive* (Directive on the energy performance of buildings): By January 2006, all building owners have to provide an energy performance certificate to their buyers or tenants. For buildings with a total useful floor area of over 1 000 m<sup>2</sup> and occupied by public authorities or by institutions providing public services to a large number of people, the energy certificate has to be placed in a prominent place; clearly visible to the public. This increases the general awareness of the building's energy performance.

*Operating safety:* Building owners have to provide specific building services to their users. It is a priority of the owners to ensure that these services are in good working order.

## Barriers to energy efficient optimisation of buildings

This chapter explains why many buildings are not renovated or optimised, despite the clear benefits that such measures would provide.

*Investor-User-Dilemma:* Building owners who rent out their buildings have little interest in the budgeting of the annual energy costs, and therefore are unaffected by the increasing energy prices. These buildings are often constructed or renovated at minimal expense. The tenant is not in charge of refurbishment investments, but has to pay for any increases in energy prices. Economical energy saving measures are usually not implemented.

*Lack of awareness:* The awareness regarding energy saving measures depends on the individual. The less a building owner has available to spend on running a building, the higher the awareness is towards any increases in running costs.

When the building owner rents out the building (this also includes owners of hotels), top priority is given to the rate of occupancy. In general, the building owners invest in areas that bring the building closer to full occupancy. Owners are often unaware of the fact that they can achieve this goal detouring energy efficiency and comfort by "invisible" measures (e.g. measures on the heating system are not registered by the user the same way than newly painted rooms). This is also due to the improper image of energy saving measures that the occupants would expect reduced comfort (cold rooms).

Further, as energy related costs are just about 2 to 4.5%<sup>16</sup> of the overall cost, building owners do not care much about energy savings. Therefore, there is a lack of awareness that this is up to 50%<sup>17</sup> of the operating costs and perhaps more than 20%<sup>18</sup> energy savings could be gained.

Core competence different from property management: Property management is rarely the core competence of building owners who occupy their own buildings. In such cases, the building is a means to the end of supplying customers with the owner's real core competence. Such owners are only marginally interested in the building itself, and sometimes they do not even know about its optimisation potential.

*Lack of financial resources* – need of investments: Building owners with lack of funds have problems financing energy saving measures. In order to grant loans, banks request certain collateral. Thus, poorly funded building owners have difficulties securing loans for investments.

In a similar way, financial problems can relate to BIG too. In many buildings, which 1992 were outsourced to BIG, no investments or maintenance were done for several years. Old systems still remain in the buildings and need replacement soon. The volume of the necessary investments is so high, that even BIG cannot fund all measures at same time.

*Lack of personnel:* Whether or not there are sufficient and high quality technicians in the building strongly depends on the building owner or building user (whoever is in charge of servicing and maintenance) and the building type. Due to lack of money (high personnel costs) and lack of awareness (underestimation of economical advantages through regular servicing/maintenance), many buildings also lack sufficient quantity and high quality technicians for maintenance and control. Full-time in-house technicians have to fulfil more and more tasks: they are no longer responsible only for the technical facilities of the building, but are also required to perform the tasks of building managers, caretakers, etc. This inevitably leads to an excessive workload, which makes the issue of "energy savings" a low priority.

In large, complex buildings, external service providers (maintenance companies, FM providers, etc.) are often entrusted with these tasks. Sufficient high quality human resources are available, but since these companies have only to guarantee the reliability of the systems and not a full performance including guaranteed energy savings, energy efficiency is not the priority in many buildings. Furthermore, external service providers are usually hired for individual systems (heating, cooling, lighting, etc.) and not for the whole building. As a result, insufficient networking among complex systems often does not allow external service providers to achieve maximum efficiency.

## EPC-models: one solution for building optimisation, modernisation and refurbishment

At the Austrian refurbishment market, different EPC-models are used and under development. The main types are EPC-classic, Operation & Maintenance Contracting and Guarantee Models. The common characteristics of these models are to optimise, modernise the building with guaranteed energy costs. All of them can be a solution to overcome certain barriers to implement energy efficiency measures.

### EPC CLASSIC MODEL

In the classical EPC-model, an external energy service company (ESCO) takes charge – for a certain contract duration – of the planning, financing (generally with a partner bank (loan financing)), and implementation of the required con-

15. Best Practise Projects ecofacility (2004): Fashion Wholesale Centre, Joanneum Research, Nordpool

16. Kurt Hämmerle (1998): Tourismus und Energie; SAVE-Project EE-Net (2002): Assessment in Hospitals <http://www.eva.ac.at/projekte/eenet.htm>

17. Klemens Leutgöb, Georg Benke (2000): Energie und Umwelt im Lebenszyklus Spiegel von Gebäuden, <http://www.eva.ac.at/de/projekte/lyzk.htm>

18. Within the federal EPC campaign in Austria, more than 400 buildings have been modernised with an average of 20,13% guaranteed energy cost savings.

**Table 1. Summary: Problems that prevent building owners from optimising their buildings**

	BIG (owner of federal buildings)	Large estate companies (rented out buildings)	Large companies with owner occupied buildings	Building owners with small budgets such as small and medium hotels
Investor-user-dilemma	Applicable		Not applicable	
Lack of awareness	Low awareness due to the investor-user-conflict.		Low awareness as energy related costs are just 2 – 4.5% of overall costs. Measures have to refinance within 2-3 years.	The lower the budget, the higher the awareness of rising costs. Measures must be visible for the guest.
Core competence	Building management is core competence.		The actual core competence is more important than property management.	
Lack of financial resources	The high volume of necessary repair tasks makes financing a problem.	Sufficient funds for investments or bank loan on good terms.		Often lack of money. Lower loan cap at banks.
Lack of personnel	Quantity of personnel resources varies from building to building. Mainly in-house technicians, not bound on guaranteed operating costs and mostly not up-to-date.	In-house or external service providers (assigned either by owner or user), not bound on guaranteed operating costs.	In-house or external service providers, not bound on guaranteed operating costs.	Quantity of personnel resources varies from building to building. Mainly in-house technicians, not bound on guaranteed operating costs and mostly not up-to-date.

structional and technical measures, as well as the operation and maintenance of the technical equipment. The investment in energy efficiency measures is refinanced by the cost savings that result from these measures. Upon expiration of the contract, the client obtains the full benefit of the savings. The key aspect of this model is that energy savings are guaranteed by the contractor.

#### **OPERATION AND MAINTENANCE CONTRACTING (O&M CONTRACTING)**

Handing over control of an existing power supply installation to an ESCO is called operation and maintenance contracting. This option is advantageous if the building is equipped with a basically intact energy supply system that does not require any large investments in remodelling, but has areas for potential efficiency improvement. The ESCO ensures efficient operation of the installation and performs optimisation measures on the building (usually at low cost). The ESCO guarantees the performance target in terms of proper operation and energy consumption. If the ESCO fails to achieve these performance levels, its compensation can be reduced.

#### **GUARANTEE MODELS**

One extension of purely performance-based thinking is to integrate construction measures into the contracting guarantee and to provide single-source renovation services. Under the guarantee model, the contracting parties agree to a performance target for the complete building renovation under a contracting agreement, and the ESCO guarantees compliance with the agreed-upon performance level for the duration of the agreement. In its capacity as general contractor, the ESCO carries out the construction measures and guarantees a maximum limit of energy consumption (performance level). It also takes care of the service, maintenance and operation of the power supply installations. The contractor's fees are paid annually, and will be reduced if he falls short of the guaranteed performance level.

The investments on measures to improve the technical facilities of a building should usually be recouped from the energy savings within 10 years. Based on the current energy prices, this target cannot be reached through constructional renovations alone, for example through a complete thermal insulation. The building owner therefore contributes to the funding of additional measures by granting a construction cost allowance (also from subsidies) and/or residual value payments to the ESCO.

The difference between a guarantee model to conventional self-managed renovation lies in the long-term guarantee of the quality of the implemented measures, which goes far beyond statutory warranties. If difficulties arise after completion of the renovation project (unexpectedly high energy consumption, problems with mildew formation, etc.), it is the contractor's responsibility to fix them under the guarantee model. In the case of self-managed renovation, the building owner is usually responsible for fixing them himself.

#### **Advantages of EPC-models**

Despite of the above differences, certain advantages are common to every EPC model. These advantages apply equally to all building owners, whether public owners, small or large private property owners.

*Increasing comfort:* In many buildings, users complain about comfort problems (poor lighting, leaking windows, etc.). Through agreed comfort conditions between ESCO and building owner, the desired comfort level can be guaranteed.

*Guaranteed cost savings:* By opting for an EPC, the ESCO guarantees that energy cost savings will be achieved for the duration of the contract. The contractor is liable for the guaranteed target levels out of his own fees. Since the contractor wants to be paid, the building owner can be sure that he will get the desired results for his contracting rates.

*Guaranteed performance:* The same argument that applies to financial risks is also valid for technical risks. In order to

receive payment, the contractor must provide the guaranteed performance levels for the duration of the contract. As a general rule, he can only achieve this goal by providing high-quality products/services. For this reason, long-term contracts offer building owners increased quality assurance. With short-term contracts, the ESCO might install materials that will only last for a short period, e.g. until his contract expires. This is not a risk with long-term contracts, since the ESCOs are responsible for maintenance and obliged to hand over an intact facility at the end of the contract.

*Raising the building's value:* The investments made in the building increase its value due to new equipment, renovation of building parts and/or energy systems.

*The same company responsible for many services:* For many building owners, the main reason for choosing an EPC model is that it makes possible to outsource all the tasks concerning technical facilities to a single company. Whether for heating, ventilation, lighting, or other services, the same company is always responsible for guaranteeing quality.

*Good for image:* In many industries, renovation measures for environmental purposes are seen as highly positive. Innovative renovation projects are always a good opportunity to redesign buildings and equip them with new technologies, thus giving them a modern, up-to-date image.

*Concentration on core competence:* With outsourcing all tasks related to the technical facilities to a company offering a quality guarantee, the building owner will be free to focus on his real core competence.

## Reasons for the weak utilisation of EPC-models in tertiary buildings

The above mentioned advantages of EPC-models hold for types of buildings. Nevertheless, in Austria only BIG is using EPC as a common tool for optimising its buildings, while private building owners do not. In order to understand this difference, several additional barriers especially to EPC need to be viewed:

### EXTERNAL BARRIERS FOR EPC

*Lack of independent know-how concerning the implementation of successful EPC projects:* The successful implementation of an EPC project requires a clear definition of the demands and requirements of both the building owner and the occupants before the project starts. This also includes a stock-taking of the basic financial, legal, technical, and economic conditions. In order to define precisely the interfaces between all parties concerned (the owner of the buildings, the occupants, and the ESCO), independent consultants are advisable. One obstacle that keeps building owners from hiring a consultant is the cost of professional consulting services. Another obstacle is that, despite the overabundance of consultants in almost every market segment, there is a lack of high-quality independent EPC consultants that can convince building owners of the advantages that can be gained from such projects.

*Too few ESCOs with too many contracts:* The Austrian ESCO market includes 15 to 20 ESCOs offering the above-de-

scribed EPC models (there exist more just for delivery contracting). However, about 5 ESCOs cover 70 to 80% of all EPC-contracts. Since this market is still only in the development stage, these companies are still building up their capacity. The Federal EPC Campaign has already tied up all the existing resources of many of these ESCOs. For the energy service companies, government projects offer long-term security. ESCOs consider private businesses to be comparatively unreliable partners, since they are far more likely to go bankrupt than the public authorities are. For these reasons, ESCOs seldom engage in sales canvassing, which naturally has an impact on the number of projects to be found in this sector.

*Lack of confidence in the building owner:* Banks generally do not consider small/medium-sized building owners to have the same long-term sustainability as public administrations or large companies with a huge amount of collateral. In many cases loans are not granted Companies without a bank guarantee bear risks for the ESCO, who will try to avoid them.

*Limited potential for savings:* The smaller the company, the smaller the potential energy savings. In order for EPC projects to pay for themselves, annual energy costs usually have to be at least 30 000 Euro. If the energy costs are lower than that, the project has very little advantage for a contractor because of the high transaction costs.

### INTERNAL BARRIERS FOR EPC<sup>19</sup>

*Low awareness about and bad reputation of EPC:* Private building owners often know EPC just from bad experiences or rumours. Contractors try push their interests so strongly, that the building owner hardly get what he wanted. Such experiences, however, result from badly prepared offer invitations, which make it impossible to compare the offers. When gathering offers, building owners should submit the same contract to all the service providers in order to make their offers comparable.

*Running service contracts:* In many buildings, occupants are bound by service contracts that extend over several years. Sometimes, outsourcing to a ESCO is simply not possible. In general, however, it should be possible to terminate those contracts earlier or integrate the respective companies into a new model.

*Enough money or bank loans on good terms:* Big estate companies often can afford to invest in reconstruction measures, or they can at least take out a bank loan on good terms. As EPC is known as a tool for financing energy saving measures, large well-funded building owners do not want to outsource financing. As above mentioned, EPC is rarely well known. Building owners do not know, that the main criterion is the (energy saving and quality) guarantee.

*Long-term contracts are not wanted:* In general, owners with large building portfolios tend to shy away from long-term contracts, so they are only rarely persuaded by EPC-models through high profit thinking.

19. Experiences through talks, interviews during the ecofacility-Program

## Suitability of EPC for public building owners<sup>20</sup>

As Table 1 shows, large estate companies have to face nearly in every point the similar problems as BIG. The main difference lies in the public ownership of BIG, which results in a series of conditions favouring EPC. After several realised projects, BIG is convinced that EPC is the ideal tool for modernising and optimising its buildings.

*Resolution of the Council of Ministers:* After a first successful pilot project the Council of Ministers decided, that all suitable federal buildings shall be optimised by EPC. This because EPC was capable to increase the standard of the existing buildings quickly and to reach the goals of Kyoto in its own buildings without investing money, thus enabling the federal administration to reach. Therefore, BIG got a certain drive of its 100% owner – the Republic of Austria. Nowadays, BIG is continuing with EPC-tenders as all projects have been successful so far.

*Possible long-term contracts:* As BIG can be sure, that the ministries will rather rent their buildings, than others, long term contracts between BIG and ESCO can be granted. This makes it easier for ESCOs to calculate measures.

For ESCOs, contracts with public authorities are general as good as with BIG. Public authorities are very welcomed as a very confidential clientele.

*Maastricht convergence criteria:* The public sector is bound to the Maastricht convergence criteria<sup>21</sup>. As BIG is managed as a private enterprise, it is not bound to these criteria. Loans of BIG do not count for public indebtedness. However, the users of BIGs buildings, who are in charge of the technical maintenance, mainly belong to the public hand, and therefore bound to the Maastricht criteria. Money cuts from ministries for the users are normally the case. EPC is a good instrument to cut maintenance costs for the users and therefore to reduce costs for the public hand in general.

Table 2 shows the general barriers to implement energy saving measures assembled Table 1 enriched with reasons for and against EPC in the specific target groups. In this table, italicised phrases show the positive framework conditions for EPC, while bold written phrases show main barriers.

## Summarising main barriers for private building owners

As a result of the above-mentioned barriers for implementing EPC-models in private service buildings, very few EPC-projects are carried out in this sector. However, each specific target group has its own key barriers, which should be overcome at first.

### LARGE ESTATE COMPANIES

The investor-user-dilemma seems to be the main reason, why owners of large estate companies do not implement EPC. They do not see any advantage in energy efficiency in

their buildings as long as tenants pay the energy costs. This is, of course, also relevant for EPC-models. As big estate companies are not aware, that EPC can increase comfort for users and therefore the occupancy in their buildings, they do not view EPC as a good solution. Contract periods longer than 2 to 3 years are hardly signed.

### LARGE, WELL-FUNDED COMPANIES

Large, well-funded companies that use their buildings themselves have low awareness of energy saving measures in general, due the few percentage of overall costs. Further, they do not know the advantages of EPC and might have heard or experienced bad reputation. Their main interest lies in their core competence and not in the optimisation of their buildings. Contract periods longer than 2 to 3 years are hardly signed.

### BADLY-FUNDED OWNERS OF HOTELS

Owners of hotels might be interested in EPC models, however more external barriers occur to this sector to implement EPC. For ESCOs hotels – except well established and really successful ones – seem to be a rather insecure target group. Badly founded owners have problems to get bank loans and ESCOs do not want to invest in these buildings on their own risk. As long as ESCOs have a good order situation with federal buildings, they will not canvass actively in this sector.

## Promising solutions to promote EPC among owners of private service buildings

Due to its good framework conditions within the public administration, BIG has implemented many EPC-projects in its buildings. These framework conditions mainly base on awareness of the advantages of EPC-models after one successful pilot project.

In order to overcome the barriers in the private sector, each target group needs specific preparation similar to the pilot project in federal buildings. In Austria, several projects are already underway to start up the EPC market in private service buildings. In the course of the Austrian climate initiative klima:aktiv, the ecofacility<sup>22</sup> programme was implemented. On the EU level, the EUROCONTRACT<sup>23</sup> and greenbuilding<sup>24</sup> programmes were launched in early 2005. All projects or programs are specially devoted to of private service buildings and to improve the quantity and quality of building renovation and modernisation measures. In the course of these projects, the following activities are foreseen:

### RAISING THE AWARENESS OF BUILDING OWNERS

The main challenge is to raise awareness for the topic energy efficiency in general. To show its benefits, which are for interest of the specific target group. In the first place, building owners will be addressed through leaflets, direct mailing

20. Experiences within federal EPC campaign in Austria.

21. Public authorities are subject to strict regulations about indebtedness. They are not allowed to incur debt in excess of three percent of the gross domestic product.

22. [www.ecofacility.klimaaktiv.at](http://www.ecofacility.klimaaktiv.at)

23. [www.eurocontract.net](http://www.eurocontract.net)

24. <http://energyefficiency.jrc.cec.eu.int/greenbuilding/>

**Table 2. Summary: Reasons for and against EPC-models**

	BIG (owner of federal buildings)	Large estate companies (rented out buildings)	Large companies with owner occupied buildings	Building owners with small budgets such as small hotels
Investor-user-dilemma	Applicable for BIG. <i>Republic of Austria (owner of BIG) cares about overall costs of its buildings.</i>	Applicable	Not applicable	
Lack of awareness	Low awareness due to the investor-user-conflict. <i>Decision of Council of Ministers to implement EPC.</i> <i>Awareness raised through successful projects.</i>	Low awareness due to the investor-user-conflict.	Low awareness as energy related costs are just 2 – 4.5% of overall costs. Measures have to refinance within 2-3 years.	The lower the budget, the higher the awareness of rising costs. Measures must be visible for the guest.
Core competence	Building management is core competence.		The actual core competence is more important than property management.	
Lack of financial resources	The high volume of necessary repair tasks makes financing a problem.	Sufficient funds for investments or bank loan on good terms.		Lower loan cap at banks.
Lack of personnel	Quantity of personnel resources varies from building to building. Mainly in-house technicians, not bound on guaranteed operating costs and mostly not up-to-date.	In-house or external service providers (assigned either by owner or user), not bound on guaranteed operating costs.	In-house or external service providers, not bound on guaranteed operating costs.	Quantity of personnel resources varies from building to building. Mainly in-house technicians, not bound on guaranteed operating costs and mostly not up-to-date.
Long term contracts	<i>Long-term contracts up to 10 years no problem.</i>	No long term contracts wanted.		Rather no long term contracts due to insecure clients for ESCOs
Maastricht convergence criteria	Federal state and therefore building users bound on criteria. Energy & maintenance costs relevant.	Not relevant		
Too few ESCOs	<i>For ESCOs clientele with long term security.</i>	Enough orders for ESCOs through project with federal buildings. Federal buildings still securer clients than big companies.		Not secure clients for ESCOs, no direct canvassing.
Independent EPC consultants	<i>In-house know-how available.</i>	Too few EPC consultants available.		
Low EPC know-how	Not applicable	Applicable Depending on personal attitude.		

and calls, articles etc. Successful and replicable pilot projects for each target group will be necessary to convince further building owners to follow.

#### ADAPTATION OR NEW CREATION OF EPC-MODELS TO SPECIFIC NEEDS

Since EPC models that were successful in the past do not always satisfy 100% of the requirements of private building owners, it is necessary to update these models in order to guarantee complete satisfaction. In the course of the EUROCONTRACT project, models with leasing financing agreements and EPC models integrating Facility Management (FM) services will be developed and tested.

#### Combined EPC-FM Models

Big building owners often outsource technical operation and maintenance to external service providers such as Facility Managers. However, as FM-providers are not bound to en-

ergy saving guarantees, they will not necessarily perform energy saving measures. Therefore, combining FM with EPC contracts seems to be a good idea, especially since FM-providers already have good contracts to the building owners. In this new scheme, FM providers would also take responsibility for certain elements of EPC, such as performance and quality guarantees. On the other hand, it is also possible that an ESCO takes over the full range of FM services.

#### Combined EPC-Leasing models<sup>25</sup>

Leasing becomes a more and more common form of investment to building owners. As the lessee can add the leasing payment to his expenditures, he can reduce his proceedings and tax volume. Further, the lessor (bank) is the registered proprietor of the investments. This in turn raises the balance of the lessee so that he gets a better rating for further investments and loans.

25. Raiffeisen Leasing (2004): Financing Models with Leasing

Existing EPC-contracts do not take leasing into account. Either, the building owner or the ESCO is the registered proprietor of the investments, so that one of the parties has to take out a loan.

EPC-models will be adapted to leasing criteria and tested in pilot projects. These models will be especially interesting for small and poorly funded building owners, who are not capable to make high investments at one point nor to get high bank loans. With a combined EPC-leasing-model, they can finance the monthly rates out of their daily business.

#### **TRAINING OF QUALIFIED AND INDEPENDENT REFURBISHMENT CONSULTANTS WITH EPC KNOW-HOW**

In order to move from thinking about projects to actually implementing them, building owners generally need professional support. In the ecofacility programme, thoroughly trained independent consultants will assist building owners in carrying out their plans. They will work with a project scheme that was developed within a large number of successful implemented projects. Further, these consultants work that market actively too.

#### **STANDARDISE THE PROJECT SCHEME**

To prepare renovation and remodelling projects with the greatest possible degree of cost-efficiency, standardising the project management systems seems to be a good idea. Processes are fine-tuned and standardised on the basis of practical experience. This long-standing expertise forms the basis for guaranteed quality. Nevertheless, the standardisation also allows individual adjustments in order to accommodate the project scheme to the special features of each project.

#### **FINANCIAL SUPPORT FOR CONSULTING SERVICES**

One obstacle to the appointment of consultants is the high cost of their services. Although consulting usually accounts for well below 10% of the investment costs and pays off after four to twelve months (through the guaranteed savings in energy costs), building owners are often not able or do not want to afford professional assistance. In Austria, state-funded programmes grant subsidies for a part of the consulting costs. These subsidies are intended to serve as an incentive for building owners to call upon the services of consultants when embarking on a renovation project.

#### **INSPIRE COMPANIES TO BECOME AN ESCO**

In order to cope with the envisioned rise in demand, it is necessary to prepare an adequate pool of ESCOs. The existing ESCOs are currently fully occupied with governmental contracts. The EUROCONTRACT project aims to make companies with the potential to become ESCOs (engineering offices) aware of the growing market and provides them, if necessary, with the required know-how and information.

### **Conclusion**

The present paper summarised the situation of EPC in some sectors of the Austrian building market. In general, EPC seems to be a useful instrument in overcoming the barriers that prevent the energy efficient optimisation of buildings. However, its broad market implementation in the private building sector faces several difficulties.

Three target groups of private service building owners – owners of large estate companies, companies with owner-occupied buildings and poorly funded hotels – were analysed in detail. Other building owners – owners of private schools, hospitals and homes; shopping centres, event centres, parking garages, churches, etc. have to be analysed and treated differently as well. The measures presented to overcome these difficulties stem from three ongoing national and international projects. They show a first approach that will be complemented by the growing experience with EPC in the private building sector. In Austria, the first step to this direction has been completed. However, there is still a long way to go to achieve the full ambitions of EPC.

### **References**

- AEPCA (2001): Energy Performance Contracting Opportunities For Implementing Energy Efficiency
- BIG (2004): Rating Bericht Moodys 2004 ([www.big.at/BIG/de/Unternehmen/Investor+Relations/default.htm](http://www.big.at/BIG/de/Unternehmen/Investor+Relations/default.htm))
- BIG (2003): Consolidated Annual Report 2003
- Decision of Council of Ministers 51/22 (2001): Energy Performance Contracting or Delivery Contracting in the current structure of federal building management.
- ecofacility (2003-2005): Best Practise Projects Fashion Wholesale Centre, Joanneum Research, Nordpool
- ecofacility (2003-2005): [www.ecofacility.klimaaktiv.at](http://www.ecofacility.klimaaktiv.at)
- EE-Net (2002): Assessment in Hospitals  
[www.eva.ac.at/projekte/eenet.htm](http://www.eva.ac.at/projekte/eenet.htm)
- Energy Saving Coalition ESC: [www.esperform.org](http://www.esperform.org)
- EUOCONTRACT (2005): [www.eurocontract.net](http://www.eurocontract.net)
- European GreenBuilding Programme (2004):  
<http://energyefficiency.jrc.cec.eu.int/greenbuilding/>
- Federal EPC campaign (2002-2005): [www.bundescontracting.at](http://www.bundescontracting.at)
- Kurt Hämmerle (1998): Tourismus und Energie
- Leutgöb Klemens, Georg Benke (2000): Energie und Umwelt im Lebenszyklusspiegel von Gebäuden,  
[www.eva.ac.at/\(de\)/projekte/lzyk.htm](http://www.eva.ac.at/(de)/projekte/lzyk.htm)
- Leutgöb Klemens (2004): assessment Austrian Energy Agency
- OPET building (2003): Assessment of EPC potential in selected building stocks
- Raiffeisen Leasing (2004): Financing Models with Leasing
- Seefeldt Friedrich, Klemens Leutgöb (2003): eceee: Energy Performance Contracting: Success in Austria and Germany – dead end for Europe?
- Waldmann Alexandra, Leutgöb Klemens, Bleyl Jan (2004): EU-Program eurocontract