

Improving energy efficiency in buildings under the framework of facility management and leasing financing

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Keywords

energy efficiency in non-residential buildings, leasing financing, facility management, energy services, energy saving guarantee, energy performance contracting

Abstract

Non-residential buildings see a big variety of building management and financing schemes. Two approaches quickly gain shares in the European real estate market: Leasing Financing (LF) and Facility Management (FM). They change the framework for the implementation of energy efficiency measures:

- LF influences the decision criteria in new construction and refurbishment;
- FM plays a crucial role during the operation phase.

Although LF and FM introduce new parties and thus an additional set of interests, they must not be perceived as obstacles per se: They also offer new ways towards energy efficiency.

Pilot activities in Austria demonstrate the successful integration of advanced energy services into the framework of LF and FM:

- At the end of the contract duration, leasing-financed buildings may be confronted with a need for comprehensive refurbishment. Here, leasing can become an important catalyst in preparing the refurbishment project. Integrating energy efficiency measures to the refurbishment activity and guaranteeing thermal-energetic qualities, provide the lessor with the opportunity to prolong and enlarge a running contract. Furthermore, this service reduces his credit risk, due to reduced running (i.e. energy) cost for the lessee.

- FM means outsourcing of selected building management functions to an external specialist. The list of requested services can be extended by the identification, implementation, operation and potentially also financing of cost-effective energy saving measures, and by a guarantee on energy cost savings – in other words by integrating elements of EPC-contracts into FM.

Introduction

NEW PLAYERS IN THE REAL ESTATE INDUSTRY

During the last two decades, the real estate industry has undergone profound changes. Several “new players” with very specialised responsibilities have emerged and play an important role in today’s real estate business. This specialisation trend is particularly pronounced in the segment of non-residential buildings (service buildings).

Besides the traditional players – the property owner (supported by designers) and the building occupant – two “new players” who have been gaining in importance for the last 20 years are:

- companies offering real estate leasing;
- Facility Management (FM) companies offering integrated services for the operation of a building.

Having new players on the field has also changed the rules concerning investments in energy efficiency of buildings, namely investments during construction, operation as well as during refurbishment activities. The whole process certainly becomes more manifold and complex, but the effect on the subject of

energy efficiency is not necessarily a negative one. This paper sets out to show that real estate leasing companies and facility management companies can be used as a motor for an increase in energy efficiency of buildings. This can be achieved by conveying to these companies the potential profit an integration of “energy efficiency” into their portfolio could have.

TRENDS IN THE REAL ESTATE LEASING AND FACILITY MANAGEMENT MARKET

Europe’s real estate leasing market is continuously growing. Currently, around 10 % of European gross fixed capital formation in real estate are carried out by means of leasing, but regional differences are significant. Furthermore, in most EU member states, new business is steadily increasing so that it is safe to say that the market is not yet saturated. Big customer groups in real estate leasing are mainly hotels, recreational facilities, trade and commerce as well as public authorities (especially on a municipal level)¹.

The concept of Integrated Facilities Management (I-FM) originated in the United States and spread widely during the 1980s in the United Kingdom and subsequently in the rest of Europe. Its popularity has grown together with the increased awareness in the client base and due to a trend towards outsourcing non-core business. The last 10 years have registered a steady growth in services outsourcing and in particular towards integrated service providers, which can guarantee a sole point of contact for the client as well as sharing risk and being fully accountable for delivering. In most EU countries, the facility management market is rapidly growing; in Austria for example, the annual growth in facility management services lies between 10 and 17 % (depending on the definition of the term). Given the current trends in the office and commercial property market, it can be assumed that the market will continue to grow in the future.

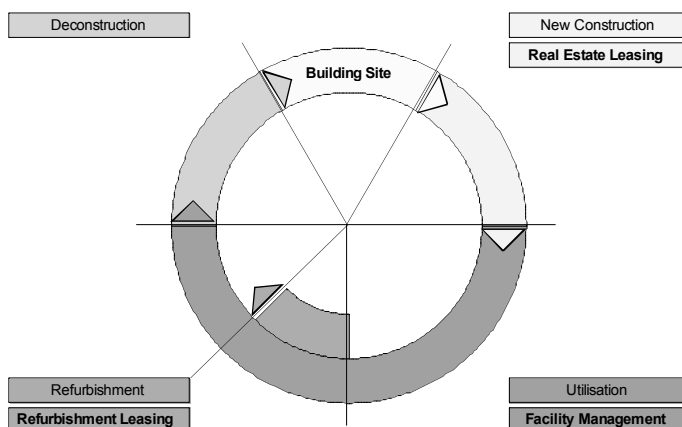


Figure A. Relevance of real estate leasing and facility management in the building life cycle

1. Eurolease, Statistics 2005

Relevance of LF and FM for energy efficiency improvement measures in buildings

POSITION IN THE LIFE CYCLE OF BUILDINGS

In the life cycle of a building, real estate leasing and facility management services mostly play a complementary role:

- Real estate leasing companies are mainly involved during construction or overall refurbishment of a building. During the operation phase, real estate leasing can only facilitate financing of certain specific energy efficiency improvement measures at the most.
- Facility managers play an important role during the operation phase of the building they manage, and are therefore pivotal in the determination of the building’s energy consumption and in the identification and realisation of energy efficiency improvement measures. In addition, facility management companies are more and more often included in the design process because of their management know-how. Their contribution during the design stage ensures that future workflows are taken into account in the design of the building.

See Figure A.

CHARACTERISTICS OF LF INFLUENCING THE IMPLEMENTATION OF EEI MEASURES

Leasing is a contract between the owner of the asset (**lessor**) and the user (**lessee**), wherein the former grants exclusive rights to use the assets for a certain period (basic lease term), in return for payment of a lease. The lease is typically paid in annuities to the leasing finance institute (LFI).

Basically, there are two types of leases, which are relevant with respect to energy efficiency in buildings: operating and finance leasing. In the case of operating leasing the lessor pays for and legally as well as economically owns the asset. The lessee exclusively uses the asset in exchange for a predetermined fee. In the case of finance leasing the lessor is legal owner whereas the lessee is economic owner of the asset and has therefore to capitalize the investment in the balance sheet account.

Sale-and-lease-back contracts are mainly used to finance overall building projects. In many cases the purpose is to realize “hidden reserves” e.g. in public buildings. If sale-and-lease-back financing is used for a building project, it is strongly recommended to write minimum performance standards for thermal and electrical refurbishment and guarantees like maximum energy consumption into the terms of reference.

Usually the lessee is responsible for the operation and maintenance of the asset at his own expense. Typically the lessor will require the lessee to follow predefined operation and maintenance regulations including guarantees. The lessee also bears the economic risk if the asset becomes unusable or sinks. Typically the lessor will obligate the lessee to conclude an insurance package for his equipment. These features distinguish leasing from traditional renting.

An additional characteristic of leasing is that LFIs usually offer a **comprehensive consultancy** comprising taxation, balance sheet matters and legal aspects, which goes in line with a comprehensive look at all financing implications and may result in an overall cost optimisation. Leasing typically includes consul-

tancy on contract design and management, insurances, commissioning of contractors, accounting, controlling and payout of invoices, VAT-clearing, to list the most important services. Several LFI include also technical expertise into their service package, which offers a link to energy efficiency in buildings.

In the contractual relationship between the lessor and the lessee, there are various points at which energy efficiency improvement measures during the construction and operation of a building can be taken. According to the respective “phases of a building”, these are the following:

- **New construction of an asset:** The real estate leasing company primarily serves as investor. However, since the leasing company is the owner of the asset during the lease term, it is also involved in the design process – a role which is increasingly gaining in importance. This is also an aspect which significantly distinguishes the real estate leasing company from a credit bank. Thus, the lessor has the opportunity to introduce the life-cycle costs approach already during the design process and therefore to improve the thermal and energy performance of the future building. This exertion of influence has to be seen not only as a service to the lessee, but also as the possibility to reduce the refinancing risks.
- **Operation phase of an asset:** During the operation phase, the lessor’s role is usually fairly limited. As building owner, his consent to every measure that would result in an optimisation of the building’s energy performance during its operation is required. Several models for current real estate leasing contracts have been developed which allow the lessees to undertake constructional activities (e.g. thermal and energy refurbishments) during the contract period. These models involve the conclusion of new contracts and the renegotiation of the lease rates. Some lessees have already made use of this possibility, but they are still a minority. Furthermore, leasing is also an option for financing the realisation of energy efficiency investments and energy services in the case of non-lease assets.².
- **Comprehensive refurbishment at the end of the contract duration:** Upon expiration of the leasing contract and payment of the residual value (often the last rate or a sum fixed by an expert), the asset becomes property of the lessee. As discussed before, only in the rarest of cases have optimisation measures in the areas of energy and ecology been taken up to this point. With this transfer of ownership, however, the basic conditions for the realisation of such measures, e.g. in combination with a comprehensive refurbishment of the property, become entirely different. The concept of “refurbishment leasing” shall be discussed in greater detail in the next section.

CHARACTERISTICS OF FM REGARDING THE IMPLEMENTATION OF EEI MEASURES

The purpose of facility management is to manage and coordinate all tasks and services in and around the clients’ property, allowing the client to focus on their core business operations.

Therefore, FM is often defined as the holistic strategic observation, analysis and optimisation of all processes in and around a building and the provision of all services that are not part of the client’s core business.

Over the last few years, the operating costs of buildings – i.e. the result of more or less effective facility management – have attracted more and more attention. Due to constantly rising prices, operating costs (energy and water as well as fees and duties) have increased, and a reversal of this trend is not to be expected. This also means that the quality of FM will claim higher importance, because the follow-up costs of low-quality FM will constantly increase.

On the other hand, this development can provide the opportunity for a real surge of quality in facility management. FM service providers possess wide knowledge of the assets managed by them and the factors that can cause problems during operation and/or increase the operating costs. They can use this knowledge to suggest energy efficiency improvement measures to their clients and help them to implement them. This way, professional facility management can reduce costs significantly.

With regard to energy efficiency, technical facility management – one of the services provided by FM – has the biggest influence on energy-related costs (energy, operation, maintenance, repairs, etc.). These energy-related costs average at 40 to 60 % of the total operating costs.

If energy management and energy performance optimisation can be successfully integrated into the portfolio of technical facility management,

- an optimisation of the operational equipment and its operation,
- an optimisation of the constructional influence on the energy consumption,
- and an optimisation of the contracts with energy suppliers
- can be achieved.

The FM service provider’s task is to identify, plan and realise energy efficiency improvement measures and to maintain and operate them for the whole contract period. The service provider implements the measures and guarantees their energy-saving effects. There are already a few projects emerging in this context which feature management models or contracting approaches that are integrated into FM services. An in-depth look at these projects follows in the next section.

Using LF and FM as a motor for energy efficiency in buildings

The following section presents in detail two concepts that conceive the presence of a leasing company or a facility management company as an opportunity to improve the energy performance of buildings. These concepts present new market opportunities for service providers on the one hand – which of course have to be tightly entwined with an increase in competence –, and raise the service standards for building occupants on the other by realizing energy efficiency potentials – and thus potential reductions of operating costs.

2. This aspect is worked out in detail in the financial manual in the running IEE-project EUROCONTRACT; Bleyl, et. al.: Financing of energy services, Preliminary Manual, December 2006

Table 1: The three pillars of facility management

Technical facility management	Infrastructural facility management	Commercial facility management
Operation, documentation, energy management, waste disposal, communications management, modernisation, optimisation, refurbishment, remodelling, warranty issues, supply, etc.	Catering, IT services, landscaping and janitorial services, interoffice mail, photocopy and printing, car park attendance, cleaning and maintenance, security services, removal services, goods and logistics, snow removal, central communications services, etc.	procurement, space management, cost planning and control, real estate accounting, project management, property management, contract management and lease administration, etc.

INTEGRATING FM AND ENERGY MANAGEMENT

Technical facility management as a starting point

Traditional FM services basically consist of three core areas of facility management which are presented in Table 1 (list of examples). The focus of energy management issues is, of course, in the field of technical management of the facility.

Starting point of every technical facility management is a comprehensive analysis. Figure 1 shows the cost-effort ratio optimum in maintenance management. The more comprehensive (and thus also more expensive) the measures taken in the areas of maintenance and inspections, the lower the subsequent repair costs. Therefore, the goal is to strive towards the calculated optimum between maintenance/inspection costs on the one hand and acceptable repair costs on the other. Usually, the optimum is calculated with the help of a cost-effectiveness analysis.

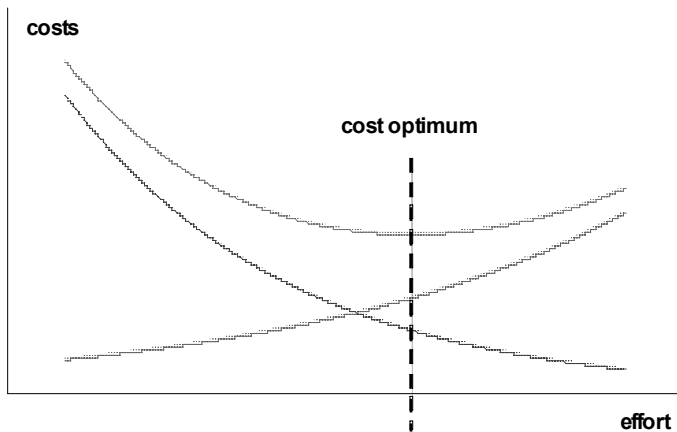


Figure 1: Cost-effort ratio optimum of maintenance versus repair

Figure 1 gains an additional dimension when we consider the fact that decisions concerning maintenance and repair have a direct effect on the energy consumption of an asset and thus on the energy costs. Furthermore, it is possible to go beyond the mere “administration“ of the asset and to identify and realise additional energy-saving potentials.

Therefore, the optimum of energy-related costs is a result of long-term overall optimisation of

- energy costs (consumption and rates);
- operating costs of energy installations;
- maintenance costs of energy installations;
- repair costs of energy installations and costs pertaining to constructional measures and
- total costs (investment, operation, maintenance) of additional energy saving measures.
- This process of optimising the total costs can be seen as energy management in the broadest sense. This form of energy management goes far beyond securing the functionality of assets which in FM practice, however, is still perceived as the main task of technical facility management.

Energy performance contracting as a point of reference

Energy performance contracting (EPC) means that an energy service company (ESCO) designs, finances and realises the necessary constructional and technical measures for the optimisation of your building and also takes care of the operation and maintenance of the technical installations. These EEI measures are financed through the resultant energy savings. After the end of the contract period, all energy savings revert to the facility owner, as can be seen in Figure 2.

What is most important is that the energy service company guarantees the energy-saving effects of the measures. If the stipulated savings are not achieved, the ESCO has to make up the difference. During the annual accounting, changes in climate, utilisation or prices are taken into account. If even higher energy savings are achieved, the energy service company gets a share of the additional savings.

EPC aims at a comprehensive optimisation of the overall energy performance of a building. The energy service company uses its (interdisciplinary) know-how to realise an innovative overall solution for the reduction of energy consumption. This holistic approach calls for an experienced and competent contractor who is able to achieve the best possible results. The fact that the contractor gets a share of the savings serves as a strong motivation to use and maintain state-of-the-art technology.

Major advantages from the client’s point of view are the comprehensive services offered in the areas of maintenance,

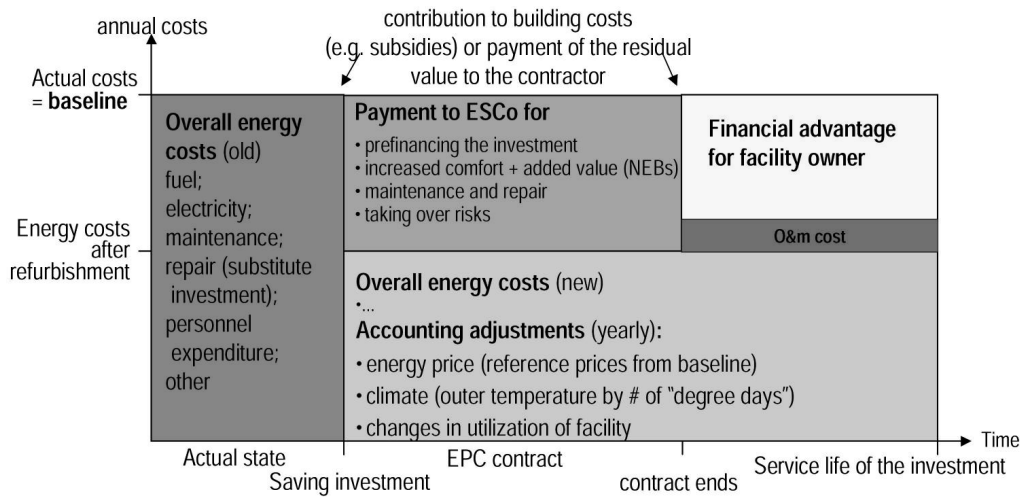


Figure 2: EPC: cost breakdown

repair and modernisation of the installations and the building as well as the transfer of construction and operation risks to the contractor. Through third party financing by the ESCO, the financial burden on the part of the property owner is lowered. The energy efficiency programme is individually designed to meet the client's needs.

At a closer look, the EPC approach and the comprehensive energy management concept in technical facility management explained above have very much in common. Energy performance contracting, however, chooses a different starting point: the reduction of energy costs. Subsequently however, this starting point also requires the integration of technical services such as operation and maintenance of the installations and partly also repair services. Operational contracting, a special form of EPC, resembles a typical FM contract even more. Operational contracting means that the energy service company takes over a basically intact - sometimes even almost new - energy supply installation that is not in need of any major modernisation measures. The contractor is then responsible for the installation's efficient operation and further optimisation of the installation (mostly through no- and low-cost measures). He guarantees a certain amount of energy savings; if these energy savings and the guaranteed functionality are not achieved, his payment is reduced.

Since these two concepts - energy performance contracting and technical facility management in the framework of FM - have so much in common, the idea of combining them in one single service is obvious. The key element in this combination is the energy saving guarantee, as will be discussed in detail below.

FM services with energy saving guarantees

A FM contract consists of various subsections representing the different aspects of facility management (see Figure 3).

Energy management is - as previously shown - a part of technical facility management. Nevertheless, common FM contracts do not yet include guarantees for energy savings by default, even though the services provided by FM companies in the area of energy management are very similar to those of energy service companies. Compared to a purely "administrative" approach in energy management focused on continued

functionality - as stipulated in many FM contracts -, there are a few additional aspects to be observed:

- Proactive identification of potential energy savings and - after consultation with the building owner / occupant - realisation of these potentials.
- Guaranteed savings after successful implementation of the necessary measures (a guaranteed upper limit of energy costs).
- Remuneration of the FM provider is directly tied to performance. If the energy costs exceed the agreed upon limit, the remuneration will be reduced respectively.

Clients who want these types of guarantees and thus avoid technical and financial risks need to insist on these aspects already at the contractual or bidding stages. The integration of such elements of guarantee into FM contracts nevertheless creates a win-win situation in many aspects:

- **Advantages for the client:** Integration of energy saving and cost guarantees ensures an optimal energy use and makes operating costs predictable.
- **Advantages for the FM provider:** The FM provider can work within a transparent framework with clearly defined objectives and responsibilities. In case of achievement of the stipulated energy savings, this allows for increased profit and convinces the client of the provider's competence. Follow-up orders may result as a further consequence. With increasingly fierce competition on the FM market, this service could provide a valuable advantage over competitors (added quality aspect to cope with the prevalent price erosion on the market).

However, this expansion of the FM contract needs clearly defined connections to several other parts of the contract. It is recommended to employ an independent and experienced consultant for the definition of these. Aspects of substantial importance are:

- **Agreements concerning maintenance and repair:** Technical facility management costs are heavily dependant on maintenance and repair costs, which in many cases leads

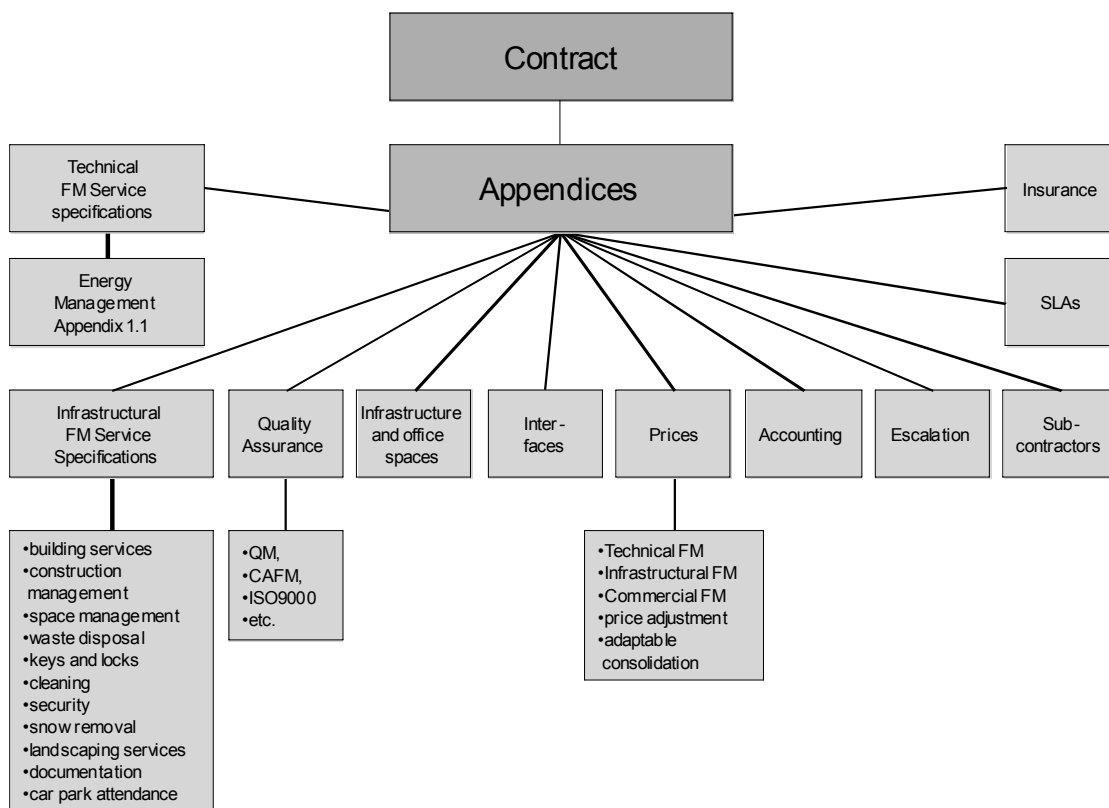


Figure 3: structure of a FM contract

to a reduction of these costs, in turn leading to decreasing quality and increasing energy costs. However, this downward spiral can be stopped by including energy costs in the evaluation through energy savings guarantees.

- Comfort requirements / Service Level Agreements:** Since energy savings should of course be realised without a reduction of energy service levels, comfort requirements need to be clearly defined in the contract. This involves a definition of the required seasonal (winter/summer) comfort: acceptable range of indoor temperatures, various other indoor climate and lighting requirements defined by the national legal framework.
- Investment costs:** If the successful fulfilment of the intended energy savings target necessitates investments instead of solely depending on the optimisation of operation and maintenance, the question arises – similarly to the case of EPC – which of the contractual partners should bear these costs. This decision should only be influenced by the respective financing options.
- Contract duration:** A particularly sensitive aspect in the integration of guarantee elements into FM contracts is the choice of the contract period. A trend towards shorter contracts can be observed on the FM market, which should be observed and examined critically from an energy management perspective, since this could lead to “cherry picking“ among FM managers. It is for example quite possible to continuously reduce maintenance costs over a period of 2-3 years, since the effects – higher repair costs and increased energy costs – only occur at a later point. Furthermore, if

the FM provider pre-finances energy savings investments, which in turn are refinanced by the achieved energy savings, short contractual periods limit the scope of energy efficiency improvement measures, since only those with short amortisation periods are applicable. One possible option to solve the dilemma of contract periods is for the client to require bids by the FM providers to be presented in several versions, with varying contract periods. This should provide a helpful degree of transparency in the question of the effect of contract period on the entire offer. Subsequently the client is able to choose the optimum solution.

Thus the successful bidder in the area of energy management (including technical facility management of the energy installations) is the one whose total costs (sum of operating, maintenance, repair and additional investment costs as well as guaranteed energy costs) prove to be lowest over a given contract period. In this economic evaluation, which can also be applied in correlation to the costs of other parts of the bid, a series of qualitative criteria in the energy management area can also play a role and be incorporated into the cost-effectiveness analysis (e.g. information on energy saving behaviour at user level, quality of used products etc.).

Practical experience

So far there exists only limited experience with integrating EPC elements such as energy saving guarantees into FM services. On the Austrian FM market, for example there exist several contracts, where the FM company has to show a certain percentage of savings in the second contractual year as compared to the first one. As refers to energy cost, this approach leads in

practice to absurd reaction of facility managers, since there is the incentive to operate the building in the first year as inefficient as possible in order to prove the required savings in the second year.

In Austria so far there have been realised only very few FM tenders, where the service required includes also an active identification of energy saving potential and a transfer of risk towards the FM provider through an energy saving guarantee as described above. These pilot cases have shown that most FM companies have only limited experience and know-how in energy management. This is simply because the spectrum of tasks of a FM company is very broad and companies cannot be specialists in every field. Therefore there seems to be a need to involve the “usual ESCO business” into these kinds of tenders in order to get satisfying offers. In concrete terms this means that FM companies need to compose bidding consortiums with ESCO companies in order to integrate specialised energy management know-how into their service package.

“REFURBISHMENT LEASING”

Background and concept

At the end of a leasing agreement before the building is transferred to the lessee an analysis of the status of the building might bring about a need for singular renovation measures as well as for a more comprehensive refurbishment. This could refer to a necessary adaptation of the building because the user needs have changed during the duration of the leasing agreement, but this point in time could also offer a change for a thermal-energetic renovation due to high operation costs or changes in the comfort level.

If the lessee and the lessor do this analysis together they might find out that a further co-operation in the approaching refurbishment phase could be advantageous for both partners.

The lessor can offer as follows:

- A continuation resp. an adaptation of the leasing contract for a further period of time reflects the the necessary refurbishment of the building, i.e. a new leasing fee is agreed for the use of a then refurbishes building;
- Once again a financing package form one hand including potentially advantages of leasing referring to tax matters;
- In case that the building was not running under a leasing contract before, a sale-and-lease-back option can be worked out, where the building is a first sold t the leasing company, which in turn is renovating the building an refinancing the whole investment through a leasing fee over a certain period of time.

The lessee could be in the position of finding this offer interesting due to the following reasons:

- He could be confronted with a lack of funds of an unwillingness to invest in non-core business, which was the reason for concluding a leasing contract in the first place;
- The lessor can contribute its know-how in building matters, which usually is not belonging to the core competences of most lessees;

- The lessee could also have an interest in not being forced to capitalize the asset of the building he is using;
- The leasing company offers the advantage of a long-term contract partner and thus enjoys a confidence bonus, which again allows it to stand out from the bulk of consulting service offers.

Altogether leasing business related to refurbishment is marked by certain characteristics of a win-win situation. In addition to the issues outlined above compared to the business with new construction “modernisation leasing” could also lead to a decrease in transaction cost on both sides, because there is already a costumer-relationship to build upon.

There is also a possibility to include guarantee elements on energy savings into the service of the lessor, which makes the link between leasing and the EPC approach as described above. Of course, since the leasing company is no building company it will transfer the technical risk to an ESCO, which in turn would be cleaned from the burden of pre-financing modernisation measures.

Practical experience

It seems that the real estate business is still focussing very much on new construction. A short round of expert interviews with several Austrian leasing companies showed that there exist a few selected examples where leasing contracts have been adapted and enlarged after including selected modernisation measures. In addition, several refurbishment projects have been realised using leasing as a financing instrument, but a well structured approach of leasing companies towards the topic of building modernisation is not observable yet.

One simple reason could be that real estate leasing has conquered the market only 20 to 30 years ago, which means that it is only now, that the first refurbishment cycle is going to start. On the other hand this means, that the issue of building modernisation has a good chance to become an interesting future market for real estate leasing.

References

- Eurolease, Statistics 2005, Information published on the Website of Eurolease
- Bleyl, et al.: Financing of energy services, Preliminary Manual prepared in the frame of the running IEE-project EURO-CONTRACT, December 2006
- Österreichische Energieagentur, Energiedienstleistungen in der Praxis, Manual prepared in the context of the Austrian climate change programme klima:aktiv, March 2004