

SAUTER FACTS

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A pleasant atmosphere for the world's largest and most expensive telescope.

Weather on the web: using the internet to prevent energy wastage.

Anticipation provides quick and correct reactions.

Spain is taking climate protection seriously.

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SAUTER Iberica accompanies the 'sustainable hospital' in Fuenlabrada and helps to save almost a quarter of the energy costs.

Whenever the aim is to use energy more efficiently, SAUTER takes the lead.

PUBLICATION DETAILS

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Ideally, one hundred per cent: the highest possible proportion of renewable energy is a primary goal when planning and operating buildings. This entails complex new challenges for building automation and management. With its products, systems and services, SAUTER plays a key part in the efficient and flexible use of energy from every source.

Buildings are decreasingly regarded as constant entities. Once they have been built, they no longer simply stay there without changing, as they did in the past. A building cannot be seen as a static structure nowadays – it has to be considered as a dynamic entity that is capable of change.

Modern building operation is subject to continuous budgeting of all input and output variables. A building must always be able to adapt to changing usage requirements, and its energy supply is automatically controlled to achieve an optimal balance between fossil and renewable sources of energy, depending on external parameters.

An integral approach across all areas of expertise.

More and more often, it is integral thinking that is the critical factor of success in terms of energy in buildings – involving everyone who is responsible, from the architect to the installer. Energy efficiency starts at the planning stage and extends from the building shell through to each individual room.

Together with the tapping of renewable energies, the importance of the building shell in relation to the energy supply has brought about a new approach to architecture. Different facade designs and equipment specifically matched to each location mean that solar heat as well as air flow and temperature can be utilised for heating and cooling. Solar collectors and photovoltaic elements capture energy from the sun. SAUTER's innovative control technology makes it pos-

sible to optimise the use of solar energy, energy from heat pumps and fossil energy.

In the next stage of development, variable windows will themselves be used as photovoltaic elements, so they will perform three functions: lighting, climate control and energy production.

Obtained efficiently and used efficiently.

SAUTER already has a virtually unrivalled ability to control and interlink all the energy-related systems in a building. The new modular SAUTER EY-modulo system is specifically tailored to the new requirements, offering greater possibilities for integration and operating efficiency. The use of meteorological data for proactive system control has also become a key factor in efficiency.

Our products, systems and, especially, our services – such as comprehensive facility management – make the vital link between obtaining energy and using it. Our approach ensures that every opportunity is taken to make use of both conventional and renewable energies, in every conceivable form and combination, so as to optimise both the ecological and the economic aspects of building operation.

Bertram Schmitz



Bertram Schmitz, CEO of Fr. Sauter AG and the SAUTER Group



Reaching for the stars, close to the sun: SAUTER in an astronomer's dream world.

A pleasant atmosphere for the world's largest and most expensive telescope.



H.H. Heyer/ESO

The Chilean Andes provide a terrain that is extraordinarily well-suited to celestial observation – and a telescope system that is equally extraordinary: the Very Large Telescope (VLT). This largest instrument of its kind in the world is situated at an altitude of 2,635 metres on the Cerro Paranal mountain. To develop its almost inconceivably powerful 'vision' – four billion times that of the human eye – the VLT is dependent on a constant climate inside the observatory. And this is why SAUTER has become a small – yet vital – cog in the field of astronomical research.

For many thousands of years, man has been eagerly attempting to unravel the secrets of the stars and planets. Astronomy may justly be termed the oldest science – a science based on observation. Its tools are, therefore, subject to constant improvement, and an observatory location that provides optimum meteorological and climatic conditions is a further vital prerequisite.

An astronomer's delight.

Finding an optimum site was an obvious priority for the European Organisation for Astronomical Research in the Southern Hemisphere (or ESO for short). The ESO finally pinpointed a suitable location for two observatories with state-of-the-art telescopes on the Cerro Paranal and La Silla mountains, where the air is extremely dry and calm. This is quite probably the most desirable travel destination for astronomers throughout the world – a claim supported by the fact that the list of requests for observatory time in the high-altitude Chilean desert is up to four times longer than the capacity available.

A very lengthy planning process.

The VLT heralded a new chapter in the field of astronomy. It was both a technological and a financial challenge. The decision to build the VLT took all of ten years to finalise, despite the fact that astronomers everywhere had long been dreaming of a 'super-telescope', a unique visual gateway into space. Technical barriers kept cropping up: for example, the fact that the telescope mirror cannot be too heavy, otherwise it would simply collapse under its own weight. Then came the VLT.

The unique technological feature of the VLT is the fact that its light-gathering capacity is spread over four separate optical telescopes, each with a mirror of 8.20 metres diameter. The system is supplemented by three smaller, movable telescopes of 1.80 metres diameter. The instruments are arranged in a manner that allows the light of all the stations to be combined into an observation tool equivalent to a mirror with a diameter of 200 metres.

So what has all this to do with SAUTER?

'Confidence' is the magic word. Confidence in the quality of the technical equipment and in the reliability of the experienced project managers. SAUTER provides dependable long-term temperature stability in many of the ESO telescopes, including the VLT. This is crucial because material constancy and, therefore, the accuracy of measurements and observations is dependent on the temperature inside the telescope. Automatic systems by SAUTER regulate and control the temperatures of instruments of various types and generations at the La Silla and Cerro Paranal observatories – with an accuracy of up to $\pm 0.1^\circ\text{C}$. A similar constancy of humidity and water pressure is achieved through control and monitoring systems applied to pumps and fans.

An international commitment

The observatories continue to benefit from technical progress. SAUTER already provides the value-preserving climate in four different telescope units, and a fifth is under construction. Whilst SAUTER Italy was entrusted with the engineering and outfitting



*Clemente Chappuzeau,
Managing Director, Climatrol*

work, the Chilean SAUTER agent *Climatrol* – headed by Clemente Chappuzeau – and its successor company *Proyectos de Climatización Ltda.* are responsible for commissioning, maintenance and replacement parts. Unsurprisingly, perfection is their declared goal – after all, SAUTER is by no means averse to reaching for the stars!

For a clear view into outer space – this is where SAUTER regulates and controls:

La Silla

New Technology Telescope (NTT): automation station, stand-alone, approx. 80 data points

Telescope 3.6 with Project HARPS (to discover new planets in other solar systems): automation station, stand-alone, with 25 data points

Cerro Paranal

Four Very Large Telescopes (VLT): each with five automation stations with approx. 150 data points each, connecting to external system (ESO sub-station)

Visible & Infra-red Survey Telescope for Astronomy (VISTA): three modular automation stations with approx. 100 data points

VLT Survey Telescope (under construction): Three modular automation stations, approx. 80 data points, connecting to external system (ESO substation)



Acting instead of waiting, so that the building doesn't turn into an expensive dinosaur.

Continuous energy management is the key to the future.

Time is pressing. Fossil fuels continue to dominate overall energy consumption. Petroleum is the most important source of energy in the building sector, but this situation cannot continue because reserves are finite. Despite a few deviations from the trend, costs are moving in one direction only over the long term: upwards. So the watchword is: take the right steps today to avoid costs and losses of value later on.

SAUTER's dynamic 'energy pass' shows the current status of the building and is constantly updated.



Dr. Felix Gassmann, CEO,
Sauter Building Control Schweiz AG

The costs of a property are increasingly determined by its operation, whereas investments in the actual construction are becoming less important. As energy prices continue to soar, there is no doubt that achieving maximum energy efficiency has become the key factor – in terms of both costs and CO₂ emissions.

Regulations – and tools to implement them.

Back in 2002, in the wake of the Kyoto Protocol, European studies determined that total energy savings of about 28% were possible in the building sector: this figure would account for 11% of the EU's total energy costs. The Energy Performance of Buildings Directive (EPBD) was issued at that time; it has been binding on all EU member states since the start of 2006 and is also reflected in standard EN 15232.

The EPBD distinguishes the categories of 'new buildings' and 'large existing buildings requiring refurbishment'. It provides methods of calculating energy efficiency for this purpose. Interestingly, the EPBD was not limited to the legislative level, but has also prompted the creation of practical tools to assist with its implementation. These include the European Energy Passport as a means of classifying efficiency, and the requirement for inspections of HVAC systems as well as the requirements for the experts who issue the energy passport or carry out the inspections.

EN 15232 has been in force since 2007 and is the first standard to consider energy efficiency from the standpoint of building automation. It shows how much influence the various control functions, the building automation system and the whole building management have on energy efficiency. This approach forms the basis for the processes to define the minimum requirements which have to be met in the cited areas by buildings of differing complexity with different user profiles.

Continuing need for energy management and consulting.

The standards mentioned above exert a major influence on the planning phase, although they have less effect on active energy management. Building operators still have a great need of strategies for the practical implementation of energy management that can be amortised over the short to medium term. This calls not only for theoretical methods of calculation and proof, but also for building management systems with continuous intelligent energy measurement and consolidated energy reporting.

Specialised energy consulting on the different systems in a building will become increasingly important as time goes on, because each of the systems has its own specific potential for saving energy according to its technology. Sauter can already offer specialised energy consulting, because all the energy-related data for a building are available on SAUTER systems. This is a priceless asset for active energy management.

By providing energy consulting and energy management, SAUTER shoulders its dual responsibility: to the customers and to the environment.

Three cornerstones of energy management

There are three decisive factors as regards increasing energy efficiency on a sustainable basis:

Centralisation of all energy-relevant information

This requires networking of all energy consumers and sources. This is the only way to ensure optimal co-ordination of consumers and sources. By centralising all measured values on one computer, an operator can see his entire energy consumption at a glance, enabling him to derive the actions to be taken.

Planned energy reduction

An energy manager sets goals for reductions over a period of five years, for example – perhaps an ambitious 20% per year, depending on the nature and condition of the property. The necessary measures and the investment requirements are derived from these goals.

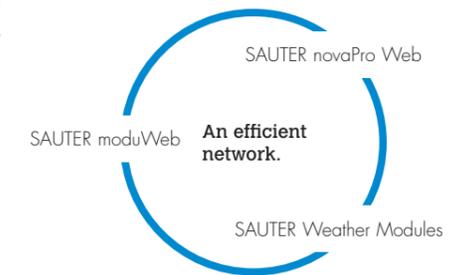
Continuous optimisation of systems, and their utilisation

This is not normally achieved at a stroke, but is divided into stages. It also includes conversion to CO₂-free sources of energy. However, helping users to adopt energy-conscious behaviour is just as important as the technical measures: this prevents the energy-saving effect achieved by cutting-edge technology from being negated by irresponsible behaviour.

Weather on the web: using the internet to prevent energy wastage.

Anticipation provides quick and correct reactions.

It's starting to feel unpleasant; it's too hot or too cold; there's a draught. People no longer feel comfortable, reaction time is high – and consumption with it. Response times when the weather situation alters are among the main factors that cause inefficient use of heating and cooling energy. This problem can be counteracted by an efficient 'network', in the literal sense of the word.



“Foresighted reactions cut consumption costs.”

Josef Tresch, Head of Market Management, Sauter Head Office



Built-in internet.

If we hear the word 'alarm', we think of risks to safety, failures or emergencies and technical problems that require us to react. But if a system, or perhaps even an automation station, has web access, combined with an intelligent weather module, it's possible for the weather forecast to intervene in the building's automation system: for example, the position of the solar protection equipment can be changed, a technician can be summoned to the scene, and energy-related decisions can be made automatically. It's not just a matter of checking systems, calling up historical data or changing settings: web compatibility means that the weather man is actually on hand to sound the alarm for people and technical equipment so that energy consumption is minimised.

Accurate weather data virtually on your doorstep.

With the constant increase in computer performance and capabilities, weather forecasting models have become more and more refined in recent times. The require-

ment for including the weather forecast in control technology for buildings – a precise, location-specific forecasting period of 6-18 hours, for example – is now the standard. Weather data such as temperature or global solar radiation forecasts are made available to the building automation system from the SAUTER internet portal.

Outsmarting the cold and the heat.

Weather data are called up, forecasts are analysed and settings are made automatically according to the expected energy requirement.

The increasingly frequent use of thermo-active concrete core systems as heat and cold accumulators calls for new control strategies. Their large storage capacity is offset by high inertia, so foresighted decisions are required on whether or not to use them, or whether to charge or discharge them before the requirement actually arises.

'Unexpected' changes in the outside temperature are virtually a thing of the past, and costly energy wastage due to changing weather conditions is prevented. Air-conditioning with low-cost energy can be guaranteed. When these benefits are combined with tracking for solar protection equipment according to the sun's position, the energy efficiency in any building will rise just as quickly as energy costs decrease.

Never keep the facade up for too long.

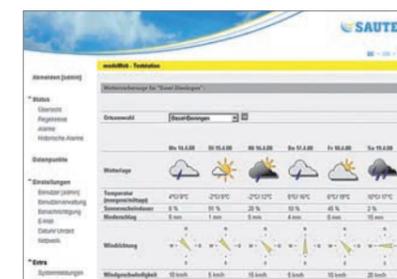
The building shell is another increasingly important factor in high-sensitivity air-con-

ditioning, and hence in energy efficiency. In intelligently designed new buildings, the shell is one single large component that records light and temperature, and it plays a key part in optimising the indoor climate and the energy consumption. Depending on environmental influences, all or parts of the facade change their storage capacity and permeability to heat, cold and light. The result: even greater energy efficiency.

No refurbishments without predictive control based on weather forecasts.

According to the latest findings, connecting weather data up to the building automation system, combined with control of solar protection equipment, can achieve energy savings of up to 35%*. For this reason, a control system of this kind is an obvious requirement for new buildings and refurbishment projects alike. Where an outdoor sensor is used in tandem with weather forecast data, 10-15% of heating energy can be saved*.

*Source: Haustech, September 2008



Calling up weather data with total geographic accuracy.

The sun saves energy in three volcanoes.

Solar collectors on the Balcons de Velchée.

World travellers and geography buffs will be shaking their heads: Etna, Stromboli and St. Helena can't possibly have moved to France – and they certainly can't be at one and the same location? Yes they can. What is more, they co-exist peacefully next to one another. Instead of erupting, they are helping to house families in 146 residential units. And instead of pointlessly converting energy into eruptions, energy is being saved here – with the help of 150 m² solar collectors ... and SAUTER.

You've probably guessed by now: the volcanoes, or the volcanic islands in Italy and the South Atlantic, have given their names to three buildings which are parts of a residential complex at Malzeville, near Nancy in France. The builders followed what was an innovative and avant-garde concept when the complex was constructed back in 1970.

Teething troubles – but now everything is running smoothly.

One of the first very solar systems was located on one of these buildings but, unfortunately, this technology was still in its infancy in those days. The system broke down after only a short time and the desired effect was not obtained.

Years later, it was decided to refurbish the entire heating installations. "That was the time when SAUTER was on hand to offer expert assistance. And that's remained so until today," according to David Frequelin, installer, operator and employee of the *Elyo Nord Est* company. Countless SAUTER components were built into the solar production plant for domestic hot water, and the heating and water circuits were thoroughly overhauled. *Elyo* installed hot water storage systems and heat exchangers that are controlled by SAUTER valves and actuators so as to ensure highly efficient inflow and outflow.

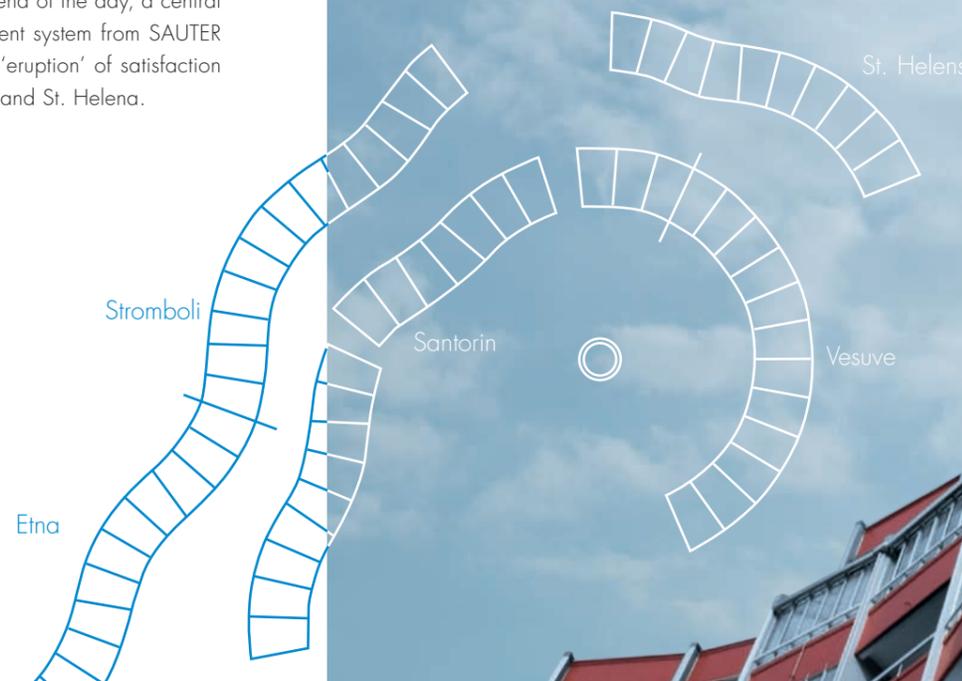
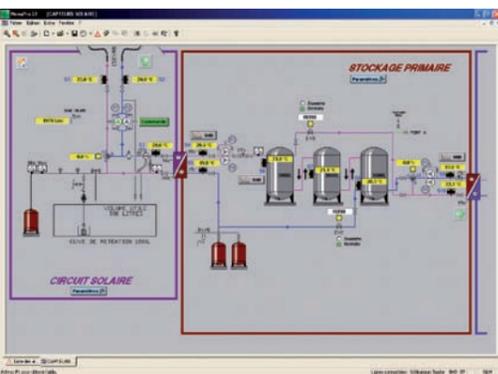
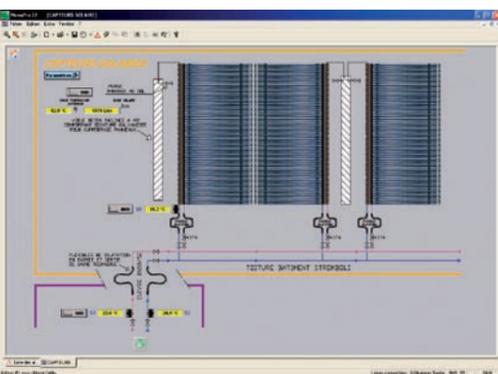
The operator watches as money is saved.

The entire control technology is monitored by the SAUTER management system, which registers the temperature values in particular, and forwards any errors to the operator who can see exactly how much he is saving in Euros and cents: all the measured values, consumption figures and temperature divergences are stored, converted and reported

in a clear format. Not least, the energy saved is due to the work done by two heating pumps. They take in heat extracted from the ventilation systems and feed it back to the underfloor heating.

What about the future of the volcanoes?

Of course, these 'live-in' volcanoes haven't quite achieved their objectives yet. Consideration is currently being given to the idea of centralising the domestic hot water production of the three systems that operate autonomously. The benefits are obvious: energy efficiency would be increased many times over, and ancillary costs for the tenants would fall substantially. The owners of the residential complex would also benefit economically thanks to a major cut in operating costs. At the end of the day, a central building management system from SAUTER would result in an 'eruption' of satisfaction on Etna, Stromboli and St. Helena.



How entrepreneurial thinking and acting can combine a wide range of interests under one roof.

Facility Management: a service with a future.

SAUTER Facility Management is a unique service that accommodates the numerous different interests involved in a building. Specially-trained facility managers demonstrate their entrepreneurial expertise as they work to attain the goals of energy efficiency, cost-effectiveness, building comfort and environmental protection, safeguarding the interests of investors, operators, users and nature.

Increasing requirements for building operation and a growing trend towards IT solutions have also changed the requirements for facility management – with the emphasis on management. Today's facility managers are highly qualified experts who focus on all aspects of efficient building operation and property management.

Energy-conscious facility management.

Traditional FM is usually based on the three pillars of technical, commercial and infrastructural facility management, but SAUTER adds a fourth: energy-conscious facility management. This is a SAUTER speciality featuring consistency and expertise that is unavailable elsewhere, because the objective for today and for the future is to minimise energy consumption while ensuring a high level of comfort in the building.

Setting and attaining goals.

Nowadays, a facility manager does far more than simply carry out the tasks set by others. To a large degree, he is a manager acting on his own responsibility who thinks entrepreneurially, sets his own goals and makes sure that they are attained. For example, his expertise enables him to assess

the condition of the system technology and the building as a whole. This puts him in a position to suggest necessary investments in the interests of lower operating costs and long-term cost-effectiveness. In these ways, he helps to increase the property's value and keep ancillary costs down.

Drawing on his own expertise, or working in co-operation with specialists, a facility manager ensures successful property management in commercial terms – in other words, he looks after the owner's economic interests. This also includes aspects such as the successful rental of the property throughout its entire life-cycle.

The long-term perspective.

The objectives of comprehensive facility management are to cut operating, management and fixed costs on a permanent basis by co-ordinating the handling of all processes, to achieve a good return and to preserve the value of the building and all its plant in the long term.

“Facility managers are experts in the strategy, analysis and optimisation of building operation.”

Bertram Schmitz, CEO of Fr. Sauter AG and the SAUTER Group

Over 239 metres of light and lightness.

*SAUTER Facility Management and a genuine highlight:
the HighLight Munich Business Towers.*

Light at every level. At sunrise or sunset, and thanks to breathtaking lighting effects by night, this impressive complex of buildings in Munich certainly lives up to its name. It is truly a 'highlight in glass and steel'. The job of maintaining its attractive outer appearance and ensuring that day-to-day operation of the building is safe, functional and energy-efficient has been in the hands of SAUTER Facility Management since May 2008.



“Personal commitment to the owners’ interests is the decisive factor.”

Werner Ottilinger, Manager, SAUTER Facility Management



As project manager Tom Heger drives up Munich’s Mies-van-der-Rohe-Strasse at sunrise, he sometimes recalls the outcry unleashed by the towers even before they were built. It seemed that citizens’ decisions and public debates between proponents and opponents of high-rise buildings would obstruct the intentions of the KanAm Group, the investors in the property. But now the complex is an eye-catching attraction for visitors coming from the north. Munich has created a visible link with the modern era. And Tom Heger also thinks that his workplace is ‘a highlight’, so what could be better?

An 18-strong SAUTER team working above the towers of the Frauenkirche.

The towers of the business centre, with their modern architecture, are the first buildings in Munich that are higher than the Frauenkirche (Church of Our Lady), one of Munich’s emblematic landmarks. Eighteen SAUTER employees are at work throughout the site. Operating two shifts, they make sure that the building keeps the promises made by the owners to their tenants and guests. Mr Heger, who is also the fire protection officer, and his specialists in CAFM (Computer-Aided Facility Management), maintenance, servicing and safety, head the team of building technicians, watchmen, receptionists and caretakers as they

carry out their varied tasks covering the areas of technical, infrastructural and energy-conscious Facility Management. This last area is a typical feature of FM at SAUTER, and one that cannot be found to this degree with other providers.

Energy-conscious facility management.

This particular expertise of SAUTER’s ensures that the Munich Highlight building also scores top marks when it comes to operating costs and protecting the environment. Activities include providing energy management to the standards laid down by the German FM Association, and effectively reducing emissions that result from the

Facts and figures

Architect: Helmut Jahn (Murphy/Jahn Chicago)

Owner: Parkstadt München-Schwabing KG

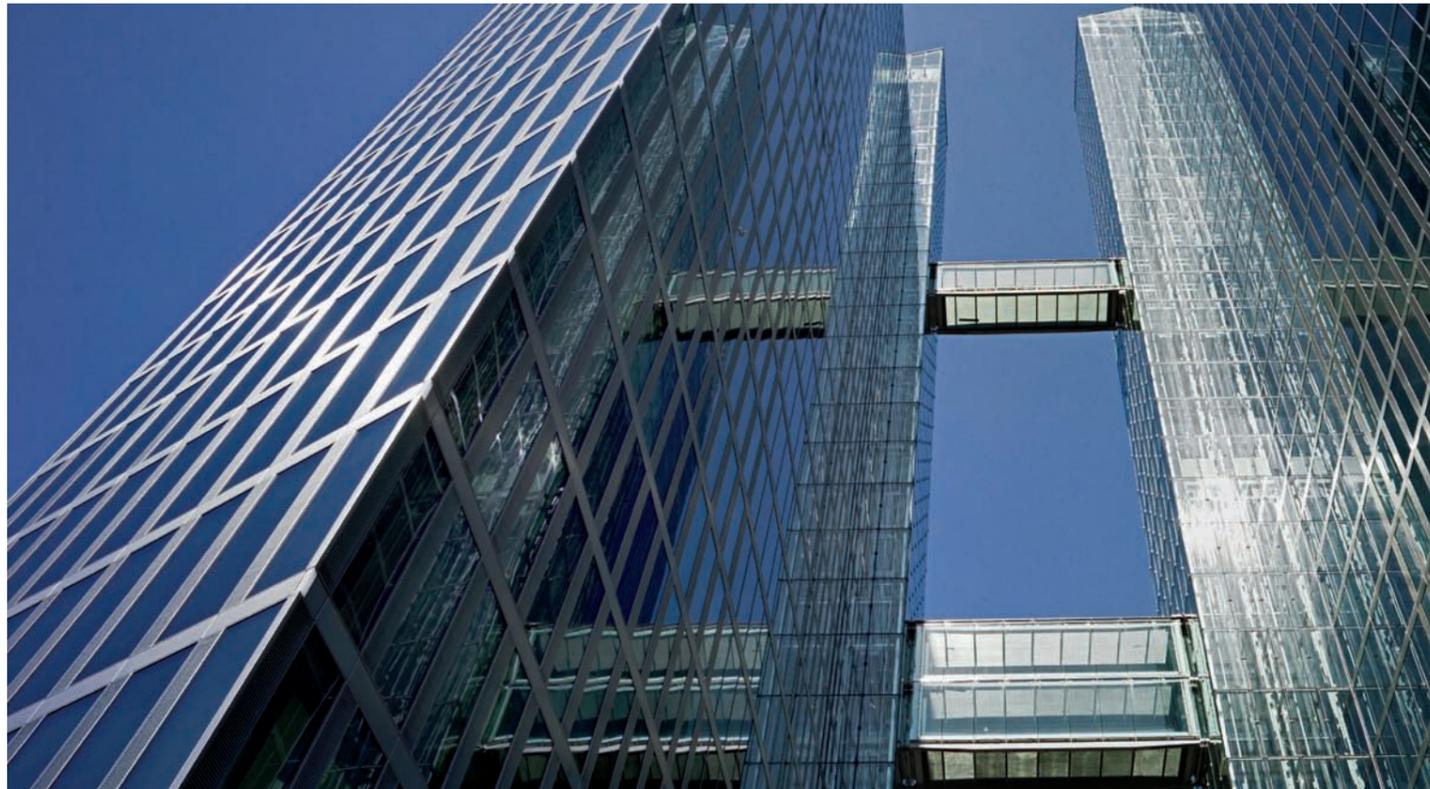
Investor: KanAm Group

Building: High-quality ensemble of buildings in glass and steel comprising: two high-rise towers (one 126 and the other 113 metres in height, with 33 and 28 storeys respectively); a five-storey office and business centre; a seven-storey hotel; three underground parking levels; fourteen fully-glassed passenger lifts; and ultra-modern building automation by SAUTER Germany

Rental area: approx. 89,490 m²

Area of land plot: approx. 14,570 m²

Tenants: Renowned companies such as Roland Berger Strategy Consultants, Fujitsu Siemens Computer and Jones Lang LaSalle, plus service providers such as the hotel, restaurant, lounge/bar, patisserie and many more.



the coming generations and their natural living environments.

“People felt that we were close to them.”

Mr Ottlinger and Mr Heger are sure of one thing: this building – which is unique in the city – requires unique care and support, starting with the cleaning service and

including every possible caretaking and maintenance service, as well as all the technical support which sets such high requirements in a building of this sort. The remit includes:

- Introducing a CAFM system ('Aperture')
- Running and operating all systems
- Fault management
- Maintenance and upkeep of complete systems
- Analysis of weak points
- Warranty follow-up
- Optimising systems
- Media supply and disposal
- Modernisation of sub-areas and systems
- Monitoring compliance with official requirements and regulations
- Events and functions
- Budgeting and reporting
- Ensuring extremely high system availability due to preventative maintenance, reducing shutdown and outage times
- Higher level of value retention for the systems
- Improving the level of efficiency of the systems
- Emergency and evacuation plans and drills

But the most important aspect of the work is to think and act in the owner's interests – to think and act exactly like an owner, in fact. "You can do this only if there is an unusually high level of identification," Mr Ottlinger explains, "and also if you yourself are given a certain degree of flexibility." This is why SAUTER Facility Management in Germany does not advocate growth at any price. Close personal contact at all times is what counts – at sunrise, at sunset or during the night when those impressive lighting effects are on show.

Expertise from Germany for the whole SAUTER Group.

Facility Management throughout the SAUTER Group.

By integrating SAUTER FM as a subsidiary within our German group company some years ago, SAUTER signalled its readiness to offer extended services and to take on overall responsibility for building operation. Thanks to our experience in Germany, SAUTER can now offer facility management as the Group's fourth division wherever the market requires it, in a form that is adapted to each specific market.

They are present in person at the customer's premises. They are confronted every day with the wishes and requirements of investors, building operators and users. They promise that they will actively cut operating costs. And most important of all: our facility management specialists are experts in energy efficiency. Plenty of reasons for SAUTER to raise the status of this service.

Werner Ottlinger, who is both FM Manager and Head of the Service Division at SAUTER Germany, is the pioneer of SAUTER's vision for the future development of building-related services. He and his FM specialists will be able to use their in-depth knowledge and skills to provide outstanding services to the entire SAUTER Group and its customers on every market.

Part of the SAUTER Group, under the SAUTER brand

To emphasise that we intend to take an integral approach to customer requirements on every market, SAUTER is integrating Facility Management as the fourth division in the SAUTER Group alongside Components, Systems and Services, with effect from 1st October 2008.

Nothing will change for customers in Germany: as always, but now more than ever, SAUTER is the Facility Management partner par excellence – thanks to our superb expertise, commitment, loyalty and independence.

However, the successful German model will now be extended throughout the world.



From German subsidiary ...



Facility Management

...to a division of the SAUTER Group



Facts and figures

Architect: Helmut Jahn (Murphy/Jahn Chicago)

Owner: Parkstadt München-Schwabing KG

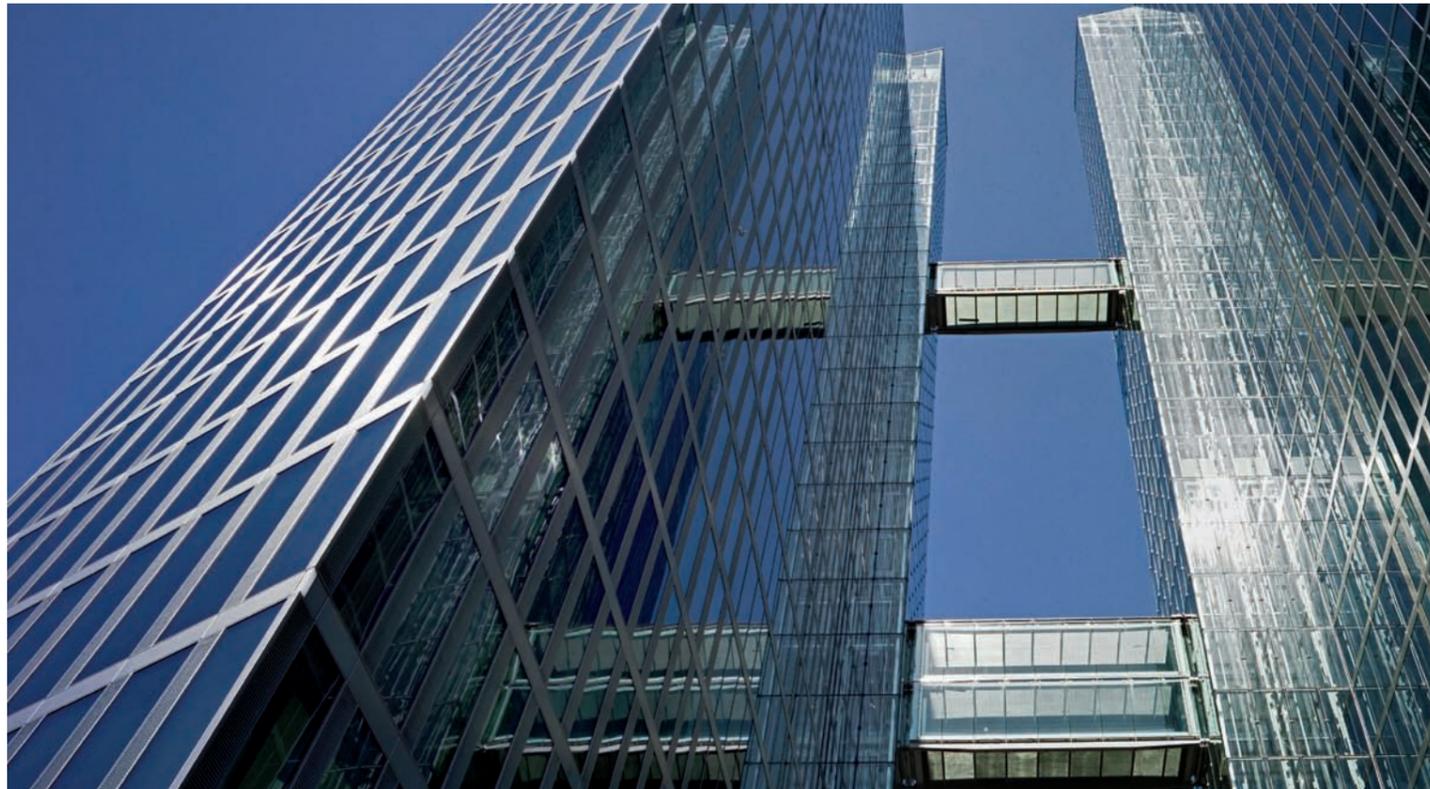
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By integrating SAUTER FM as a subsidiary within our German group company some years ago, SAUTER signalled its readiness to offer extended services and to take on overall responsibility for building operation. Thanks to our experience in Germany, SAUTER can now offer facility management as the Group's fourth division wherever the market requires it, in a form that is adapted to each specific market.

They are present in person at the customer's premises. They are confronted every day with the wishes and requirements of investors, building operators and users. They promise that they will actively cut operating costs. And most important of all: our facility management specialists are experts in energy efficiency. Plenty of reasons for SAUTER to raise the status of this service.

Werner Otilinger, who is both FM Manager and Head of the Service Division at SAUTER Germany, is the pioneer of SAUTER's vision for the future development of building-related services. He and his FM specialists will be able to use their in-depth knowledge and skills to provide outstanding services to the entire SAUTER Group and its customers on every market.

Part of the SAUTER Group, under the SAUTER brand

To emphasise that we intend to take an integral approach to customer requirements on every market, SAUTER is integrating Facility Management as the fourth division in the SAUTER Group alongside Components, Systems and Services, with effect from 1st October 2008.

Nothing will change for customers in Germany: as always, but now more than ever, SAUTER is the Facility Management partner par excellence – thanks to our superb expertise, commitment, loyalty and independence.

However, the successful German model will now be extended throughout the world.



From German subsidiary ...



Facility Management

...to a division of the SAUTER Group



India is becoming greener.

SAUTER is a founder member of the Indian Green Building Council.

The country with the world's second-largest population has the ambition to become a leader in ecological building, with a focus on energy efficiency and renewable energies, and motivated by the realities of climate change and the need for environmental protection. The initiators of the Indian Green Building Council (IGBC) have a great deal in common with SAUTER, so it was a logical step for SAUTER Race India to become a founding IGBC member.



As a sub-organisation of the Green Business Centre (GBC) and the Confederation of Indian Industry, the IGBC is an important interface between public and private sectors. The Indian government pays close attention to this platform and already has a significant influence on key decisions.

Green buildings

Ecological building has experienced a dynamic development in India. The total area used for green buildings has jumped from 2,200 square metres in 2003 to almost 1.1 million square metres in 2006, and this figure continues to rise. In particular, most green buildings tend to be: major residential developments, exhibition complexes, hospitals, education centres, laboratories, IT parks, airports, government or corporate buildings.

Decisive factors

A study covering building operators and occupants highlights three main factors that contribute to the popularity of ecological buildings:

- Lower operating costs: a comprehensively ecological building consumes 40-50% less energy than a comparable conventional one. Moreover, construction costs are only approximately 5-8% higher, and the difference will be amortised within 3-5 years.
- Plenty of daylight and some nice views: an ecological building that is flooded with daylight and in close contact with

nature will generate a greater sense of well-being. The productivity of the people working in such buildings is 12-15% higher.

- Air quality: continuous fresh air circulation and the use of materials with low volatile organic emissions create a fresh ambience.

Primarily, three prerequisites must be met if ecological building is to be sustainably successful:

- Integrated design: constructing ecologically sound buildings is not the product of one isolated design idea, it requires an all-embracing approach. Investor, architect, planner, building contractor and owner/operator must pursue the shared goal as a well-rehearsed team.
- Top-level commitment: the decision to plan and build an ecological building must be taken at executive level by the building's owners.
- Ambition and consistency: the targets for an ecological building should be extremely ambitious. The plan must be

to surpass the benchmarks achieved by comparable buildings.

The experience gathered by an ambitious threshold country in the field of ecological building deserves to be noted in the developed nations. After all, the objective is the same everywhere, regardless of climatic differences: to build or refurbish buildings according to the highest ecological and efficiency standards.

Indian Green Building Council (IGBC):

- 386 members
- 259 registered buildings
- 29 certified buildings

SAUTER Race India:

- Part of the SAUTER Group since 2006, as a joint venture
- Based in Chennai
- 230 employees
- Market leader in India for building management solutions in the pharmaceuticals and biotech fields



World Bank, India



ETL Building, India

Spain is taking climate protection seriously.

Renewable energies are being heavily subsidised.

New regulations and framework agreements introduced in Spain are designed to achieve a reduction in energy consumption and an increase in the use of renewable energies, especially solar energy. This creates new challenges, but also new opportunities for the industry, not least for the building automation sector. "In this field, SAUTER Ibérica is right at the leading edge," says Carlos Crespo, Managing Director of SAUTER Ibérica.



In connection with the current European standard on the use of renewable energies, various new laws have been introduced in Spain, including regulations concerning heating installations in buildings (*Reglamento de Instalaciones Térmicas en Edificios, RITE*) and the technical building code (*Código Técnico de la Edificación, CTE*).

The sun is to be used for heating – and for cooling.

The RITE lays down new rules for, amongst other things, the use of solar energy for: air-conditioning systems: the heating of swimming pools, both indoor and outdoor; and the air-conditioning of places that are open to the public.

The CTE stipulates the minimum portion of solar energy required to be used in the running of certain installations. These rules vary, depending on the geographic location of the installation, the type of auxiliary energy source employed, and the installation's use, i.e. whether it is for heat genera-

tion or chilling, or for heating indoor swimming pools.

Where renewable energies are concerned, SAUTER takes the route to efficiency.

SAUTER Ibérica is aware of the importance of renewable energies and, for a long time now, has been following paths that promote the efficient use of these energies, including the following examples:

- Integration of modules for electricity generation from solar energy into the control system of electrically-operated air-conditioning systems.
- Agreements signed with manufacturers of solar panels concerning the fitting of solar modules.
- Holding of specialist training in the field of solar energy in SAUTER Ibérica's training centre. The training course for 'Installers of solar-thermal systems', in particular, has become so popular that the company has had to introduce waiting lists for it. There is more on this topic in the following article.

Extensive experience of solar power systems

There is already a large number of buildings equipped with a control system that was produced by SAUTER Ibérica for hot-water generation or for other energy usage using solar panels. For example:

- Library at Sant Joan de Vilanova
- Citizens' centre, Manresa



Spain is divided into five climate zones. Different regulations concerning the required percentage of renewable energies apply in each of these zones.

- Centre for vocational training, La Celsa, Madrid
- Casa de Campo health centre, Madrid
- Joan Gamper sports centre, Barcelona
- Police commissioner's department, Tarragona
- Pavilion 0, Barcelona Exhibition Centre
- Ciudad Pegaso fitness centre, Madrid
- Hapimag, Girona
- Hotel Dolce Sitges, Barcelona
- Hotel Princess, Barcelona
- Swimming baths in Castellbisbal, Barcelona
- Public swimming baths in Manresa
- Daoíz y Velarde sports centre, Los Docs, Madrid
- El Pujolet sports centre, Manresa
- Apartments in Talavera de la Reina
- Centre for citizens' security, Barcelona
- Private spa centre in El Cigarral, Toledo

SAUTER Ibérica is recognised all over Spain as a highly competent partner in the field of solar energy usage and provides regular further training for both its own energy specialists and those of its clients.



Great thirst for knowledge.

Solar energy takes possession of a whole country.

Sergi Esteve of SAUTER Ibérica is quite sure about it: "This is just the beginning." The training course for installers of solar-thermal systems offered by the Training Centre at SAUTER Ibérica has been booked up for months, and the waiting lists are full.



Sergi Esteve, Sauter Ibérica



As perspiring athletes shower at the Joan Gamper Sports Centre in Barcelona, they also make sure that the environment stays clean: with hot water from solar energy thanks to SAUTER.



The Hotel Dolce Sitges (Barcelona): economic and ecological leadership.

To record all the actual and target values for the use of renewable energy, the country was divided into climate zones with different recommended values. The auxiliary sources of energy are also differentiated – examples include petroleum, propane, natural gas or electricity using the Joule effect – and buildings were divided into different types, such as covered or open swimming pools. The amount of renewable solar energy in Spanish buildings is obtained from the annual figures for the percentage of solar energy required and the annual energy requirement, based on monthly figures. Is all of that clear?

It's certainly no simple undertaking to see your way through the maze of laws and decrees, nor is it easy for technicians, consultants and installers to change their mindsets. And this is precisely why SAUTER's training courses are so popular.

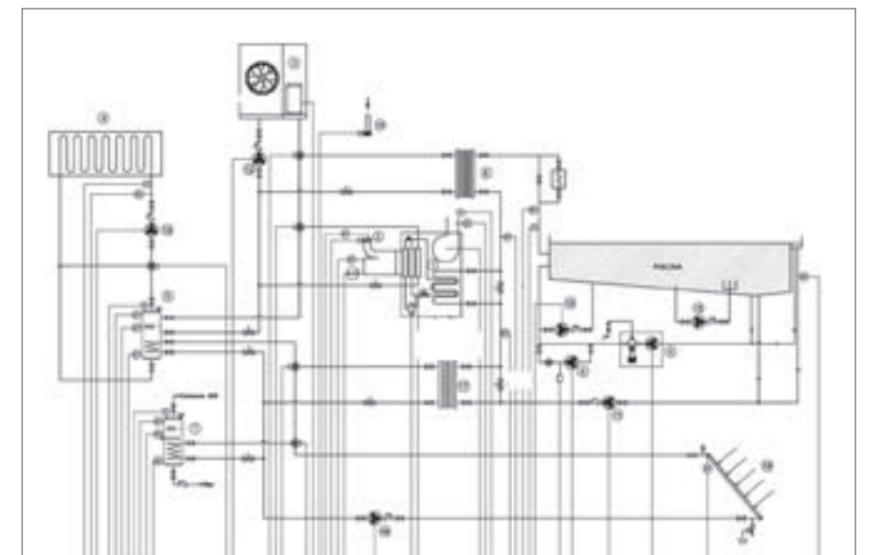
"Life punishes those who come too late"

This saying has made history, but as far as the situation in Spain is concerned, it feels rather as if its truth is being proven again day after day. Sergi Esteve, Marketing Manager at SAUTER Ibérica, is also aware of this. He reports that SAUTER's

solar-based power production modules are being integrated into controls for electrical air-conditioning systems, he knows about agreements with manufacturers of solar panels, and he explains how solar modules are installed. SAUTER Ibérica can already present a host of references, especially for using solar energy to handle the control of hot water production. They include educational facilities, hotels, sports centres, swimming baths and public sector buildings.

Higher energy prices and responsibility for the environment: with SAUTER's help, the hot water production control system at the Hotel Princess (Barcelona) cuts the building's CO₂ emissions and energy costs at a stroke.

An example of the use of solar energy: hot water production for underfloor heating, air-conditioning in the swimming pool and power consumption for the air cooling system.



Where every minute counts: healthcare with energy efficiency.

SAUTER Ibérica accompanies the 'sustainable hospital' in Fuenlabrada and helps to save almost a quarter of the energy costs.

The basis for maximum energy efficiency – SAUTER controls systems throughout the hospital:

- 4 cooling systems
- 4 heating boilers
- 9 cooling and heating sub-stations
- 80 air handling units
- 150 VAV controllers
- 570 fan coils
- Compressed air systems
- Electrical signs and displays, lifts, emergency power groups
- Medical gases
- Central steam unit
- Integration of network analysers
- Integration of the fire detection system

Project data

- Automation stations: approx. 1000
- Data points: approx. 15,000
- Management software: novaPro32 at three control points:
 - Technical services
 - Maintenance
 - Visualisation of alarms

Year	Gas consumption (kWh)	Elec. consumption (kWh)	Total consumption (kWh)
2005	14.348.186	14.505.168	28.853.354
2006	9.836.851	12.259.828	22.096.679
Difference (%)	-31,44 %	-15,48 %	-23,41 %

Efficiency right from the first year.

When human life is at stake, every hour, minute – indeed, every second, in some cases – is vital. Patients should receive the best possible care with no delays whatsoever. To achieve this, hospital staff also need the best possible working conditions: and to ensure that this happens, SAUTER has been a partner of the construction manager for this hospital building right from the outset – a partnership that is leading to vast savings.

Economising where the most valuable thing of all is involved? Cutting costs where people are making every effort to save lives? Or cutting costs for that very reason? Yes, is the simple answer. Because at Fuenlabrada Hospital, the building's energy consumption is being drastically reduced so that all the economic 'energy' can be devoted to the quality of medical care.

The 'Sustainable Hospital' project: savings of 350,000 Euros.

A package of measures that could achieve energy savings of about 25% was developed and implemented in co-operation with the service department at SAUTER Ibérica:

- Control of the air-conditioning is based on the principle of free cooling.
- Time programming for the air-conditioning systems is based on actual demand.
- Thermostats were replaced with higher-quality controllers.
- Programmable panels control the lighting circuits.

- The level of efficiency of the lighting was increased.

Consistent implementation of these measures cut the hospital's consumption costs by an incredible 350,000 Euros in the first year, freeing up financial resources that the facility can put to better use for medical care in the future.

Visible effects and a high level of safety.

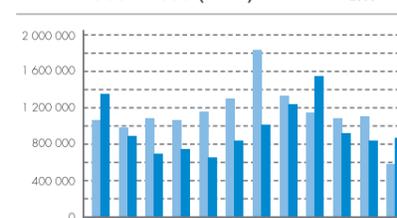
Throughout the close co-operation with the manufacturers of the central control systems and the hospital operators, SAUTER proved its excellence as a consulting specialist for energy-efficient building management and devised flexible methods for integration. At every stage of the project, patient safety was given top priority. Another welcome effect was the assistance given to our 'sick' natural environment – and this was not a side-effect but a deliberate objective. Now the hospital can project itself as a socially

committed facility thanks to the significant reductions in its CO₂ emissions. It rightly and proudly bears the name of the 'sustainable hospital'.

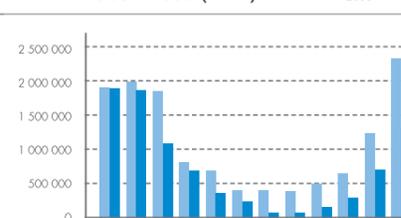
What next?

Success has aroused even greater ambitions on the part of everyone involved. New projects that will reduce energy consumption even further are soon to be tackled, including the integration of the use of renewable energies into the control system (with the help of existing solar collectors, for example). Time- and temperature-based control of the air-conditioning equipment for sections of the hospital in different geographical locations is another of the next steps. The goal: to maximise comfort and efficiency, regardless of the prevailing meteorological conditions. SAUTER Iberica and the hospital's technical staff are ready for the challenge.

Electricity consumption 2005 – 2006 (kWh)



Gas consumption 2005 – 2006 (kWh)



Overview of the savings achieved.