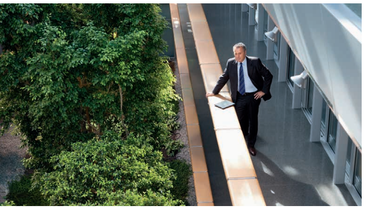


Wide variety of applications for enhanced energy efficiency

Using Desigo™, heating, ventilation and air conditioning plants as well as other building systems, such as lighting and shading, can be controlled and monitored flexibly and based on demand. Intelligent applications – tested under practical conditions – prevent unnecessary energy usage. And since the Green Leaf of the operating unit indicates the plant's current state of efficiency by changing its color, room users can take action and save energy. At the level of the Desigo Insight management station, the Green Leaf stands for Eco Monitoring and shows the optimization potential of primary plant. This way, the use of innovative applications sustainably cuts building operating costs, preserves energy resources and lowers CO_2 emissions, thus saving money and protecting the environment.

– Added plant value due to the use of energy-saving, modern equipment

– Contribution to meeting the requirements of EN 15232 in the highest efficiency classes

– Room users save actively energy thanks to the Green Leaf

– Utilization of energy saving potential with Desigo Eco Monitoring at the primary plant level

– Sustainable reduction of energy and building operating costs

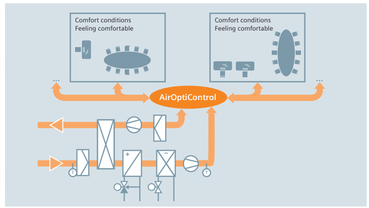
RoomOptiControl: perfect room climate, optimized energy usage

Use: active energy management by room users

With Desigo Total Room Automation (TRA), the room user gets actively involved in building energy management. The RoomOptiControl energy efficiency function identifies unnecessary energy usage and indicates it on the room operating unit. When the Green Leaf's color is green, the system ensures energy-optimized operation. If the color changes to red, there is energy saving potential – for example when blinds are closed and lights are on. By pressing on the symbol, room control returns automatically to energy-optimized operation. This way, the room user is enabled to easily stop the waste of energy – with no need for expert knowledge. Important: The intelligent RoomOptiControl function ensures a comfortable room climate, good air quality, the right room temperature level and optimum lighting, even in energy-optimized operation.

– Perfect room climate for productive, healthy working environment and well-being of room users

– Up to 25 percent energy cost savings and contribution to environmental protection



AirOptiControl: optimized volumetric air flow saves costs

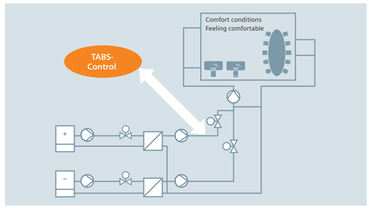
Use: ventilation and air conditioning

AirOptiControl optimizes the volumetric air flow, thus providing an excellent basis for energy-efficient operation of ventilation and air conditioning systems. At the same time, comfort control ensures adherence to the boundaries of temperature, indoor air quality and humidity. The innovative, modular designed application offers a number of function variants for the control of air handling plants or for optimum fan operation. Demand control can be varied depending on the design of the VAV (variable air volume) controls installed in the plant. AirOptiControl is suited for individual room systems or several zones and also controls basic load heating.

– Energy costs reduced by up to 50 percent in comparison with constant pressure control systems thanks to unique energy efficiency mode for demand-based air volume control

– Full adherence to the required temperature, indoor air quality and humidity levels

– Existing plants can be upgraded while ensuring short payback times



TABS-Control: unique control of concrete building structures

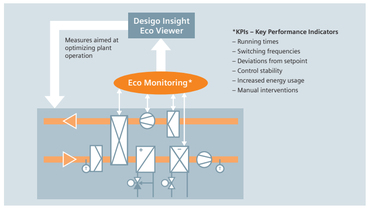
Use: heating and cooling

Using thermally active building structures (TABS), concrete floors of entire stories are heated or cooled. This approach for room air conditioning places demanding requirements on the respective control system. Desigo TABS-Control satisfies these needs based on a patented process. Additional benefits are offered by advanced control functions like the one for the cycling module that controls the pump for circulating water through the concrete structures. In case of a typical office building, up to 75 percent of pumping power can be saved.

– Innovative control functions like cycling pump operation for reduced energy usage

– Lower maintenance costs thanks to automatic operation throughout the year

– Optimum adjustment of control using calculated values during commissioning and when usage changes



Eco Monitoring: energy management based on demand

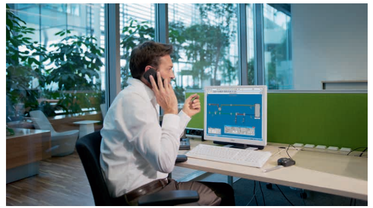
Use: monitoring of process and consumption data

The Eco Monitoring function continually delivers data to assess economical operation of plant. Inefficient operation of primary plant is indicated to the facility manager by the Green Leaf on the management station, when its color changes from green to red. With the help of the Desigo Eco Viewer, the facility manager will then be enabled to pinpoint the cause fast and straightforwardly and to take appropriate action. Facility managers benefit from the continued monitoring of process and consumption data since irregularities are identified during operation and can then be rectified.

– Identification of energy saving potential by monitoring and displaying the plant's efficiency

– Immediate interference before high energy consumption or excessive wear and tear occur

– Suited for upgrading existing plants



Quick and easy presentation of energy-related information

Use: analysis and optimization of building's energy balance

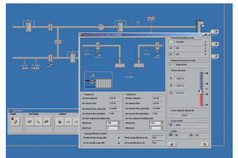
With Desigo Insight, energy-related information can be delivered quickly and straightforwardly. Using energy efficiency coefficients, similar types of buildings can be compared with each other. Facility managers are thus enabled to keep a close watch of total energy usage, energy costs and CO_2 emissions. After entering the building and energy data, a detailed analysis of the relevant building can be made while giving consideration to the number of heating degree days, if the meter readings for the same period of time (minimum 36 months) are available.

Based on historical data, the system also delivers a consumption forecast for the next 12 months, which becomes increasingly accurate as data are continually recorded. When the calculation is completed, a report can be printed.

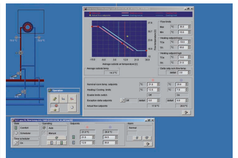
– Comparison of energy-related data between different types of buildings

– Presenting options for cutting building costs and reducing the impact on the environment

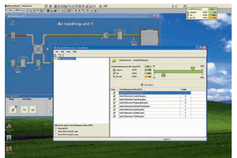
Specific visualization options for managing and monitoring the energy-efficient plant operation with Desigo Insight.



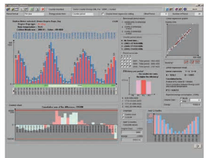
Desigo Insight plant diagram with setpoint window.



The Green Leaf indicates the current state of plant efficiency. If required, Desigo also informs directly about unusual events via SMS, fax or e-mail.



Graphic evaluation of energy-related data on the Desigo Insight management station:
– Presentation of historical energy consumption data
– Comparison and analysis of consumption periods
– Energy usage forecast

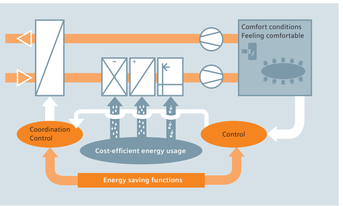


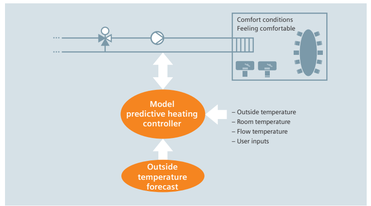
Siemens Switzerland Ltd
Infrastructure & Cities Sector
Building Technologies Division
International Headquarters
Gubelstrasse 22
6301 Zug
Switzerland
Tel +41 41 724 24 24

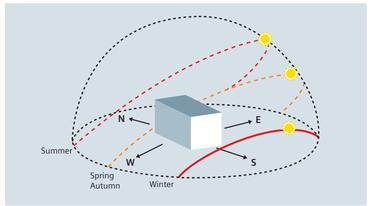
Siemens Building Technologies
Infrastructure & Cities Sector
Brunel House
Sir William Siemens Square, Frimley
Camberley
Surrey, GU16 8QD
United Kingdom
Tel +44 1276 696000

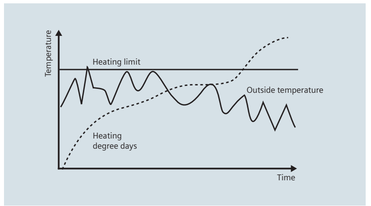
Siemens Ltd
Infrastructure & Cities Sector
Building Technologies Division
22/F, AIA Kowloon Tower, Landmark East
100 How Ming Street
Kwun Tong, Hong Kong
Tel +852 2870 7888

www.siemens.com/desigo









tx2 Economizer: energy-optimized control of air conditioning plants

Use: air conditioning

Desigo tx2 Economizer controls air conditioning plants with a focus on energy and CO_2 optimization. The air supplied to the rooms is always conditioned by utilizing the most favorably priced form of energy. Using the patented process, the air conditioning costs are continually calculated to be able to choose the cheapest air handling method. If, for example, a plant calls for cooling in the summer, the application selects the most suitable way of cooling, depending on energy costs: For example cooling coil, air humidifier or a combination of both. The tx2 Economizer ensures the required comfort level and delivers energy savings of up to 50 percent compared with conventional air conditioning systems.

– Targeted usage of the most favorably priced form of energy and of the associated heating or cooling method

– Cost savings based on a selectable setpoint zone for temperature and humidity

Predictive heating controller: saving energy and costs

Use: heating

The innovative, patented predictive heating controller combines the following elements: outside temperature forecast (based on previously recorded outside temperature data or weather forecasts), adaptation of heating curve and building model parameters, model-related forecast of room temperature, start/stop function, plus optimization of flow temperature setpoint. Due to complete adaptation of the building model parameters, commissioning and maintenance costs are cut and energy savings are reached. Excellent system management improves both the transition from boost heating to comfort mode and the behavior in case of undersized heating output.

– Shorter pump running times and lower energy costs

– Upgrading with no need for installing extra plant components

– Inherently correct behavior in different heating systems and with different types of usage

Heat storage charged by solar energy for more energy efficiency

Use: heating

The Desigo application ensures optimum charging and discharging of heat storages. Charging takes place primarily through solar energy, then by heat supplied by a heating boiler. When using solar collectors, discharging and consumer return can be operated at two levels. The integrated charging level indication shows the operating state of the heat storage.

– Cost savings and lower emission levels to protect the environment thanks to efficient usage of renewable energy sources

– Investment protection due to high plant reliability and availability

– Low costs thanks to quick and straightforward commissioning and maintenance

Calculation of sun position: saving valuable energy in the building

Use: optimization of building's energy balance

The sun as the largest energy source has an impact on a building's energy demand. Depending on the situation, the energy delivered by the sun is desired, or adversely affects the energy balance and comfort conditions. The Desigo application for calculating the sun's position gives consideration to vertical and inclined building facades and – depending on the situation – makes it possible to take appropriate actions, such as blind control providing protection against sunlight and intrusion or enhancing comfort, or control lighting. Furthermore, it ensures optimum usage of the solar collectors.

– High investment protection thanks to compliance with DIN 5034-2 (daylight in interior rooms)

– Implementation of room automation functions as per VDI 3813 directive

– Low investment costs since installation of sensors is not required

Heating degree days: the basis for successful optimization

Use: optimization of building's energy efficiency

Heating degree days are used to calculate the impact of the climate on a building's energy consumption. Heating degree days in connection with a building's energy usage show the success of the optimization measures taken and reveal the weak points of a plant at an early stage. The application calculates the number of heating degree days from the difference of daily average of outside temperature and daily average of room temperature. If the daily average lies below the heating limit, the day is classified as a heating day. The calculated heating degree day is added to the total number of heating degree days and stored.

– Reference value for making consumption comparisons and basis for energy data

– Helps reveal weak points at an early stage to support energy-optimized building operation

Sustainable energy savings – with Desigo

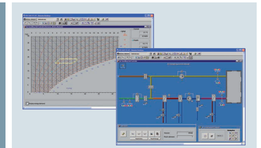
The Desigo building automation and control system controls and monitors reliably not only the entire HVAC plant, but also all other building systems, thus representing the brain of a building. Desigo affords effective control as well as active optimization of energy usage and energy costs. With innovative energy saving functions and the versatile, proven applications, Desigo delivers sustainable building energy savings. This is also confirmed by EN 15232 that Desigo conforms to in the highest efficiency classes.

– Compliance with EN 15232 – proof of impact of building automation and control on the energy efficiency of buildings

– Application library used to satisfy the requirements of efficiency class A as per EN 15232

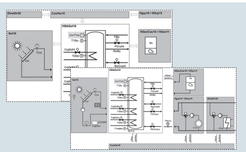
– Individual room controllers Desigo RX with best-in-class eu.bac certification due to their high level of control accuracy

The comfort zone is selected with the help of the graphic user interface of the Desigo Insight management station and is clearly presented on the h,x chart.

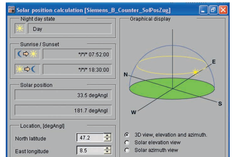


Graphic Desigo Insight user interface for display and readjustment of set-points, and for optimum plant operation.

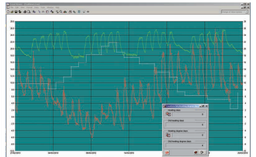
Consistent documentation of all applications ensures efficient service, even after years of operation.

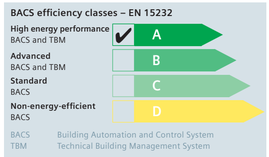


Calculation of sun's position while giving consideration to the geographical location, date and time of day. Graphic visualization of sun's position on the Desigo Insight management station.



Clear presentation of heating degree days in Desigo Insight.





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Desigo

Proven applications – sustainably energy-efficient

Answers for infrastructure and cities.