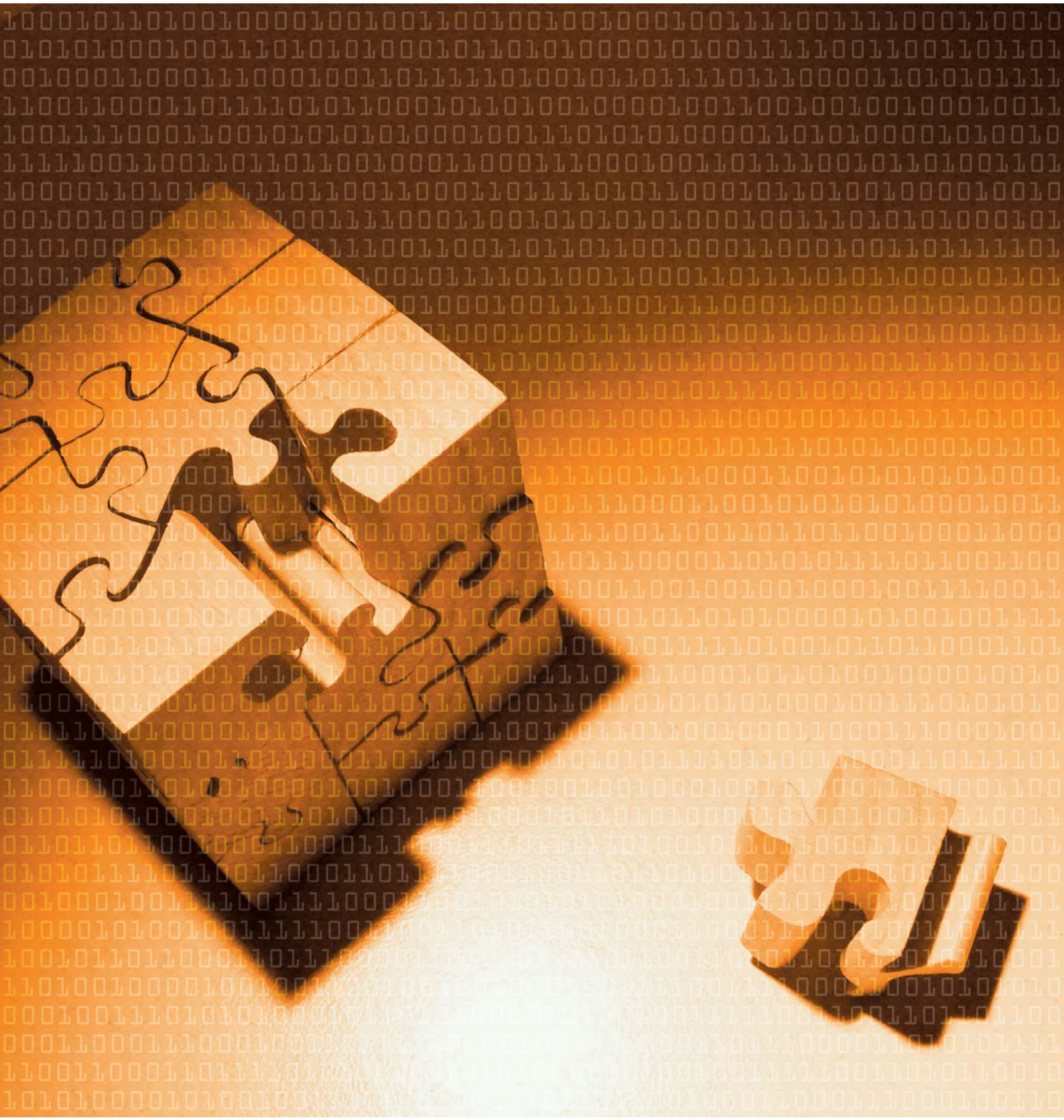
SOLAR COMPUTER

Product catalogue.

Software for Building Services Calculation, Energy Requirement and an intelligent connection with AutoCAD MEP



B02 Building construction components U-value / vapour diffusion

Programme for the calculation and administration of all kinds of components for functions in building construction and technical building equipment. Free administration of building materials and components. Calculation of U-values from layer structure with automatic conversion. Support of various special cases for air spaces as well as transparent and non-transparent components. Layer thickness optimisation. Components with known U-value, composed components. Temperature profile with dew point.

- U-value according to EN ISO 6946
- Window calculation according to EN ISO 10077-1
- Construction material dataset according to BS, DIN, ÖN and SIA
- Components with homogenous layer structure
- Composed components (e.g. facades)
- U-value calculated from temperature measurement data
- Layer thickness optimisation in order to comply with specified heat conductivity coefficients
- Condensate formation and evaporation
- Proof of core condensate
- Proof of several condensate zones in complex layer structures
- Graphic illustration for winter and summer
- Temperature profile as graphic and chart
- Immobile air layers, fastenings and inverted roofs
- Calculation of heat transfer resistors according to EN ISO 6946, Annex A
- Determination of weight per unit area
- Graphics as image and printout
- Optional: vapour diffusion module
- Data network with programmes for heating load, cooling load and energy requirement

W37 Cooling load calculation

Calculation of cooling load and room air temperature using the detailed calculation method according to VDI 2078 Country specific datasets (e.g. UK, Ireland, India etc.) can be obtaines and added. Quick and simple editing of data in table form using special facilities for changes and alternatives calculation. Consideration of gliding room temperature, cooling of components and external shading. Time profiles for loads, target temperatures and operating modes. The programme can be used for the compilation of proof during the planning phase as well as for the optimisation of the building and systems included therein.

- Calculation methods according to VDI 2078
- Room air temperature constant or floating according to EN 13779
- Cooling of components
- Worldwide application by free administration of temperature and radiation data
- Continuous or interrupted operation
- Controlled or not controlled air conditions
- Room air temperature freely floating
- Any arranged and slanted components
- Any temperature in the adjacent rooms
- Calculation of the structural heaviness class from room data
- Loads for persons, lighting, machines and material throughput
- With or without humid heat dissipation
- Any air volume streams (e.g. intensive night time ventilation)
- Self-shading of structured facades
- External shading and ground reflexion
- Interior/exterior sun protection equipment
- Calculation of supply air volume flow
- Results in table form or as a graphic
- Data network with programmes for heating load, energy requirement and AutoCAD MEP

W12 Energy requirement

Programme for the calculation and analysis of the energy requirement of heated and air-conditioned buildings in accordance with VDI 2067 part 10+11 on the basis of real hourly weather data throughout the year. Energy requirement may consist of heating, cooling, humidifying and dehumidifying. It is possible to consider utilisation profiles thus allowing for the calculation of heating-up behaviour, cooling and more.

- Detailed cooling load calculation according to VDI 2067 sheets 10 and 11
- Availability of Meteonorm test reference years for locations around the world
- Hourly energy requirement for heating, cooling, humidifying and dehumidifying
- Basic and individual usage according to VDI 2067
- Room air temperature freely floating
- Heating and cooling limit
- Limited system performance for heating/cooling
- Annual, weekly and daily profiles for internal loads and operating data
- Sun protection, building element cooling, persons, lighting, machines, material throughput
- Exterior air volume streams from adjacent rooms or thermally treated
- Determination of room type on the basis of room construction
- Additional structural heaviness class XL (extra light)
- Self-shading of structured facades
- Controllable hourly individual results
- Results in table form and graphic
- Annual energy requirement for the entire buildings or for each room
- Daily results or specific (as required) time intervals
- Temperature pattern and extreme values
- Relative frequency statistics of exceedance/undercut
- Data network with heating load, cooling load and AutoCAD MEP

H72 Heating load BS EN 12831

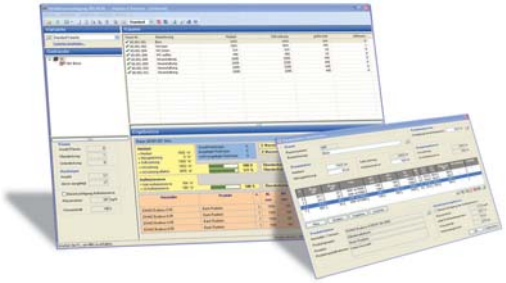
Programme for the calculation of heating load according to BS EN 12831 for projects of all kind and scope. Fast and simple editing in table form using various graphic and logic facilities, e.g. chain dimensions, dormers and the linking of adjacent spaces. There are special functions for specific cases, e.g. high rooms and more.

- BS EN 12831
- European wide application
- General or detailed thermal bridges
- Additional heating capacity in general or for each room
- Calculation of components in contact with the ground, simplified or detailed according to EN ISO 13370
- Calculation of horizontal and vertical boundary insulations on ground areas
- Chain dimension wizard (for the simple input of external dimensions)
- Component wizard (for the automatic generation of the room limitation areas of complicated room geometries, e.g. attic rooms, dormers)
- Area and volume wizard (for the simple input of room and/or enclosing wall areas and volumes, e.g. in case of open construction)
- Logical building model with reference to rooms
- Balance diagrams, graphics and the comparison of variants
- Central data change function
- Data network with programmes for radiator, floor heating, cooling load and AutoCAD MEP

H09 Radiator design

Programme for the design of room radiators with or without consideration of thermal comfort (in accordance with VDI 6030). Reading and processing of manufacturer‘s datasets or free editing of additional. Application of the programme for new building design and existing building renovation, e.g. recalculation or conversion of existing radiators. Fast processing in table form with constant graphical checking. Simple switching and verification of alternatives, e.g. product, assortment or basic conditions of the design

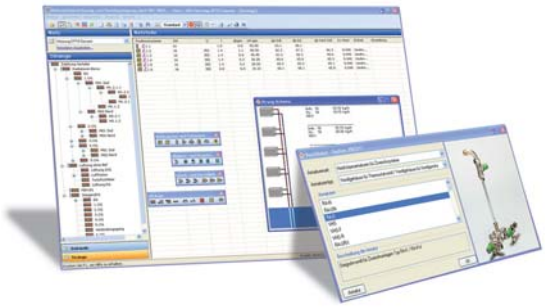
- Manufacturer datasets EN 442, VDI 3805-6 or BDH 2.0 and/or free editing
- Products and assortments can be combined within the project
- Conventional radiator design or with consideration of thermal comfort criteria (requirement steps 1 to 3)
- compensation of descending air and radiation as an option
- Storing typical “design profiles”
- Automatic quick design
- Design within specified tolerances
- Consideration of pressure gauge, surface availability, connection type and connection variant
- Automatic or manual capacity distribution
- Recalculation or conversion of existing radiators
- Central data change function
- Consideration of heating reserve by means of separate radiators or the increase of supply temperature or mass flow
- Determination of real return temperature
- Quick and simple comparison of alternatives
- Equipment automatically according to manufacturer’s data
- Bill of quantities for contract specifications or quotation
- Balance diagram and/or graphic illustration of the outcome
- Data network with programmes for heating load, floor heating, piping network and AutoCAD MEP



H59 Radiator piping network calculation

Programme for designing, recalculating and adjusting complex double-pipe radiator networks of any size including valve setting. The programme supports industrial fittings datasets, e.g. thermostat and control valves, fixed resistors, overflow and differential pressure regulating valves and others. Water or other liquids. By means of "rows" it is possible to define individual planning standards and allocate them to the network or to partial networks. Many facilities for quick, simple and safe editing and checking.

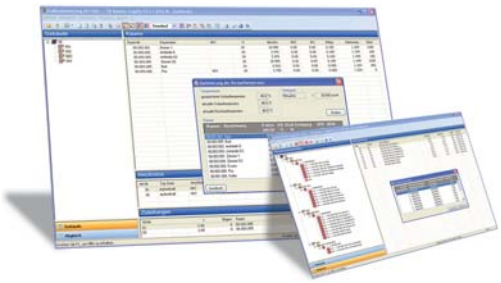
- Renovation of new and old buildings
- Dimensioning and recalculation
- Hydraulic adjustment and valve setting
- Industrial datasets VDI 3805-2 (e.g. Danfoss, Heimeier, Overtrop, KSB, oreg-Drayton…)
- Differential pressure regulating valve, flow control, overflow control and combined control valves
- Gravity and thermal losses as an option
- Consideration of valve authority
- Various media (e.g. water with addition)
- Flow-related zeta-value calculation
- Double-pipe systems – ramification systems
- Pipe design in accordance with Tichelmann
- Single-pipe radiator with special valves
- Distributor connections (e.g. floor heating)
- Systems which can be combined as desired
- Calculation of cold water systems
- Systems with several heating circuits
- Consideration of system deviations (1 K, 2 K)
- Observance of minimum nominal distances
- Any synchronisms
- Quick working with net components
- Visual illustration of current string
- Mass configuration with item numbers
- Data network with AutoCAD MEP



H13 Floor heating EN 1264

Design of a panel heating on the basis of the manufacturer's data. A design made under the assumption of standard conditions can be made as "quick design" immediately after the heating load calculation. Alternative for the detailed planning with deductible and covered areas, peripheral zones, supply pipes, integrated heating circuits, deviation of areas, etc. Optimisation of supply temperature and material consumption. Residual heat requirement. Material summary with item numbers.

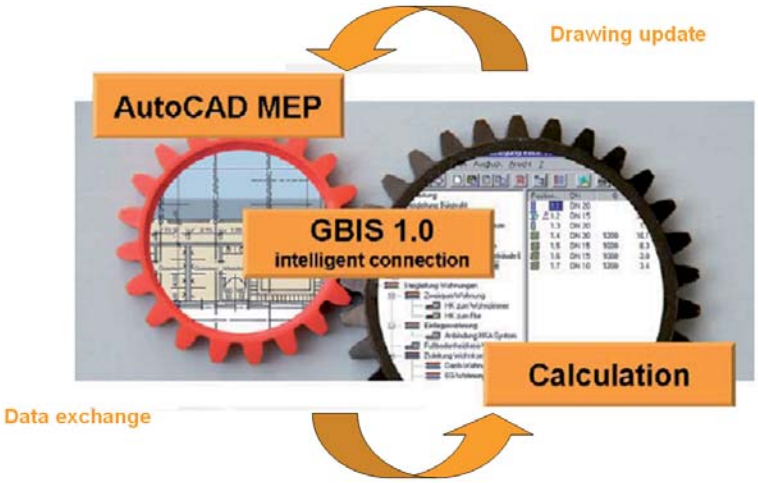
- Import of manufacturer's datasets
- Selection of a system from a type list, e.g. floor heating, industrial floor, wall heating, etc.
- Requirements for supply temperature, minimum and maximum spread angle
- Proof of critical rooms and supply temperature optimisation
- Automatic generation of peripheral zones
- One-click quick design including heating circuit allocation
- Automatic heating circuit division if the limit of pressure loss or pipe length are exceeded
- Heating circuits with fixed dimensions, e.g. taking pavement joints into account
- Peripheral zones and dwelling zones integrated or in separate heating circuits
- Series connection of heating circuits, e.g. porch / toilet / corridor
- Calculation of excess heat, e.g. corridor with heating circuit distributors
- Variant design with different basic conditions
- Consideration of the heat loss of traversing supply pipes as an option
- Consideration of different insulations and subsoil temperatures
- Adjustment and valve presetting project-based or for each heating circuit distributor
- Graphic allocation of heating circuits to distribution connections
- Many pages of printouts including landscape variant
- Data network with calculation of radiator and piping network
- Bill of quantities including equipment determination



GBIS 1.0 - More Than Just An Interface

GBIS connects AutoCAD MEP with SOLAR-COMPUTER calculation programs for buildings and systems in an intelligent way. GBIS creates SOLAR-COMPUTER toolboxes in the user interface of AutoCAD MEP, checks drawings for “incalculable drawing errors” and prepares drawing data for calculation purposes. The real advantage, however, is the integration of the calculation results in form of automated data updates, labels or dimensional adjustments in the drawings. Moreover, GBIS provides throughout all calculations, for the visualisation of rooms, radiators, pipe work, etc.

“GBIS” stands for “Green Building Information System”. In the background, it saves any linked data for comfortable and efficient working throughout all consultation, planning and implementation phases.



The GBIS concept

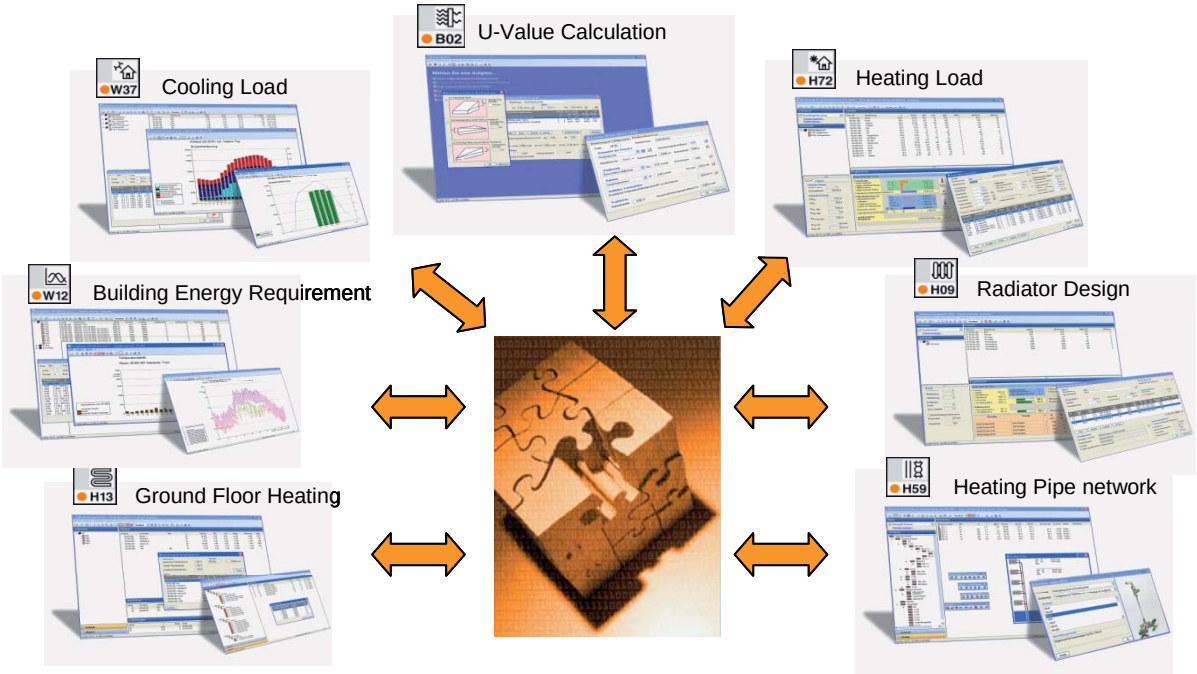
- Working in a simple, quick and intuitive way
- Intelligent data network between AutoCAD MEP and building and system calculation
- Import and export of building data, in particular of room geometries
- Import and export of radiator data
- Import and export of pipe network data
- Verification of the function of drawing data
- Function for setting the SOLAR-COMPUTER room stamp
- Automatic addition of CAD room characteristics data with calculation results
- Visualising the position of the current calculation in the CAD drawing (e. g. zoom on the hit radiator)
- Highlighting of numerous room characteristics (heating load, temperatures, etc.) by colouring the room

GBIS 1.0 connects

- AutoCAD MEP 2010 and
- SOLAR COMPUTER software (heating load, radiator, heating pipe system and cooling load)

The Modular Structure of SOLAR-COMPUTER Software

Facilitates Parallel And Process Orientated Working



On complex projects numerous designers are often working simultaneously on different phases and packages. SOLAR-COMPUTER software supports this with its unique modular concept. Each module can be used as a stand-alone software, however, maximum benefits are achieved by its ability of data exchange and transfer in-between the various SOLAR-COMPUTER modules.

In addition, external data (from e.g. key suppliers and manufacturers of components) can be imported into the SOLAR-COMPUTER calculation software

SOLAR-COMPUTER software - Overview

- **Building Physics**
  - U value calculation EN ISO 6946
  - Water vapour diffusion
- **Heating**
  - Heating load calculation (BS EN 12831)
  - Radiator calculation
  - Floor and wall heating (BS EN1264)
  - Pipe network calculation
  - Pipe calculation in accordance with Tichelmann
  - Single pipe calculation
- **Climate**
  - Cooling load calculation VDI 2078
  - Component cooling
  - Cooling load for international Projects
  - Room air temperature calculation
- **Energy**
  - Energy requirement VDI 2067 part 10+11
- **CAD**
  Intelligent Interface GBIS for AutoCAD MEP

Please contact us or visit our website
www.solar-computer.co.uk
for further information

About SOLAR-COMPUTER UK Ltd:

SOLAR-COMPUTER UK Ltd. was established in 2009 and is the branch for sales and distribution of SOLAR-COMPUTER calculation programmes in the UK and Ireland.

For 30 years, the German head office of SOLAR-COMPUTER GmbH has been developing high-quality software applications for building physics and its associated calculation of energy, heating, sanitary, climate, ventilation and cost effectiveness.

During this time, the company has continuously strengthened its position as a market leader providing high-quality service engineering software in Germany, Austria and Switzerland. Presently, more than 30 employees are working in development, marketing and sales for international customers.

The software particularly stands out due to its modular structure allowing for solutions which are tailored to the needs of the customer. Due to our vast experience with interface programming, SOLAR-COMPUTER has achieved major benefit for the user throughout the entire consulting and planning process.

The software sets the scale for user friendliness when calculating most complex tasks.

Support Center

Our qualified staff will assist you in our support center at any time.
We will provide support in all aspects of the product.
If you have any further questions with regards to the installation and the application of the product or in case of any further enquiries …

…… we are here to help you.

Maintenance/Service

Become a service customer! Use the benefits of our comprehensive support. As a service customer you need no longer worry whether your software still complies with the current standards. Once a year we will automatically send you all updates of your software. Interim updates can be accessed on our internet page. Furthermore, our competent support staff will give you free advice and practical support.

…we are here to help you.

Please send your questions via internet, email or directly to:

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