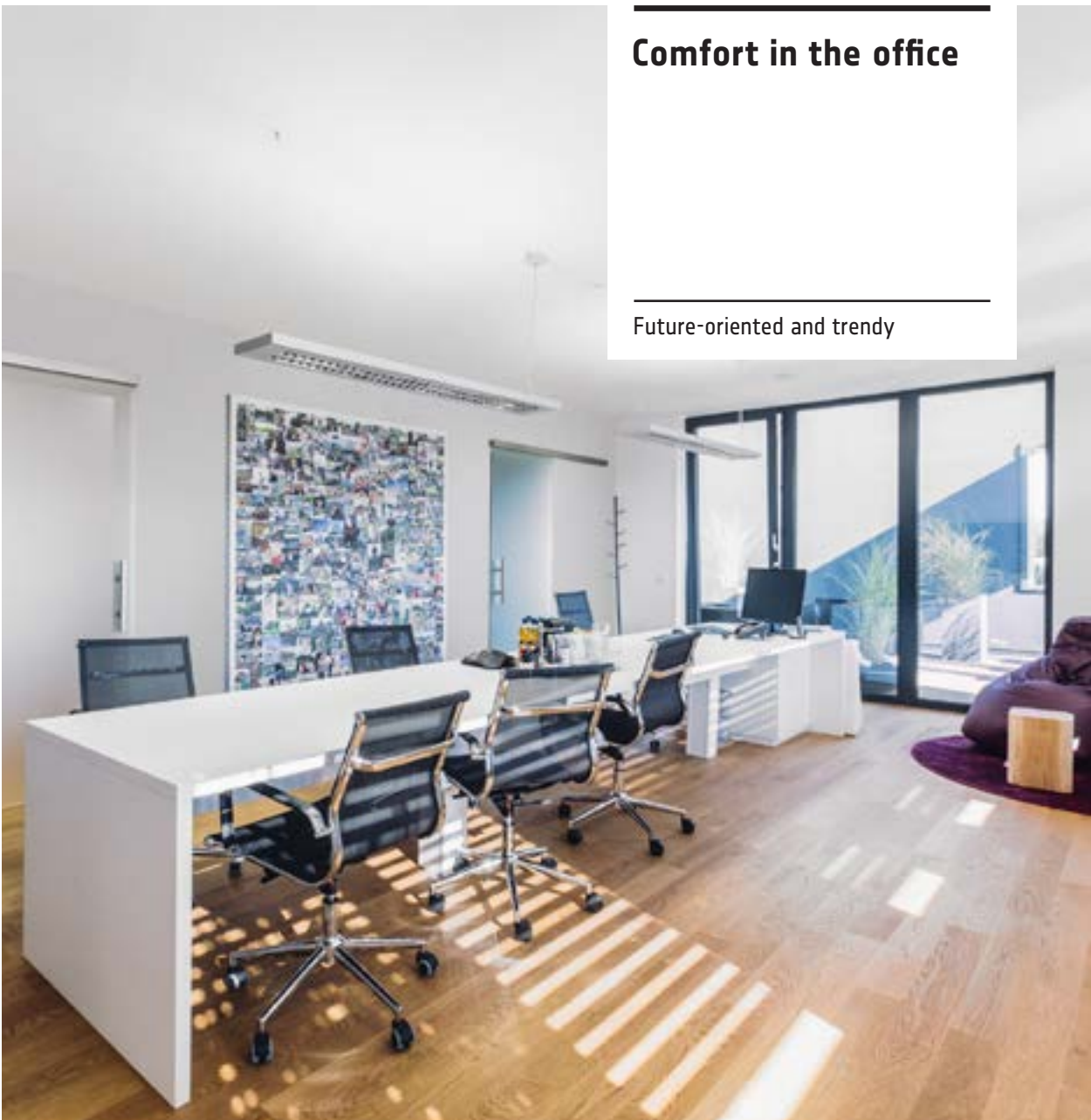

Comfort in the office

Future-oriented and trendy



Comfort in the office

Future-oriented and trendy

40 years of experience constructing office buildings as well as integrated planning from architecture to engineering and facility management are what lie behind the development and creation of our buildings. Criteria based on functionality, design and comfort are amalgamated into one ideal design. We are constantly exchanging ideas and information with research institutions, independent testers and receive our inspiration from international projects. The WELL BUILDING STANDARD, in which the health and the well-being of individuals is the focal point of building design, is currently being established in the USA. This verifies our title "buildings for people". 17 million workers in Germany alone, spend their daily working life in an office*. We are convinced that buildings should be essentially designed for and oriented towards the well-being of their users. We have developed the GOLDBECK Comfort Levels against this background.



Eight comfort criteria
Three comfort levels
One individual solution

Contents

Indoor climate.....	04
Air and light quality.....	05
Room acoustics and sound insulation.....	06
Quality of the fittings and furnishings.....	07
Flexibility.....	08
Operability.....	09
Energy efficiency and sustainability.....	10
Operation.....	11

* Source: baua (Federal Institute for Occupational Safety and Health), Wohlbefinden im Buero (Well-being in the office), 7th edition (2010), available at: <http://www.baua.de/de/Publikationen/Broschueren/A11.pdf> (Date: 18.03.2015)



Employees can only perform **about 50%** of their full potential from temperatures of **33° C ***

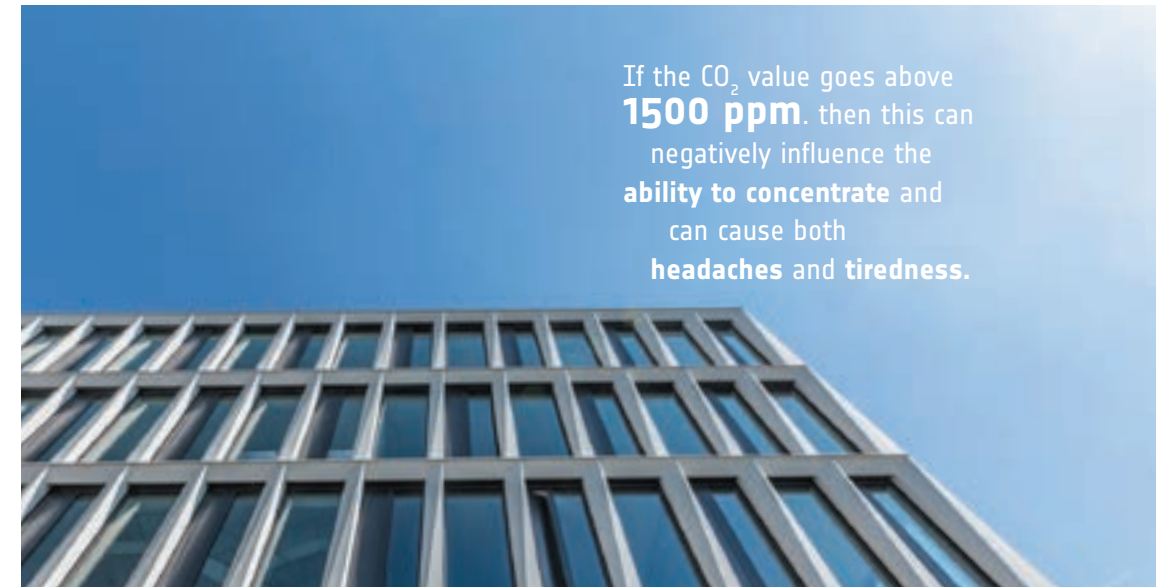
Indoor climate

The GOLDBECK climate system is there for you all year round, just like a perfectly fitting piece of clothing – not too cold, not too hot and with a high well-being factor. Apart from the ideal room climate, the individually tailored energy consumption is very impressive. For example, an economical cooling system is no longer oriented towards the theoretical maximum load but towards the real needs of the user instead. In addition to this, our sustainable system works with intelligent sun protection systems as well as energy and heat-saving lighting so that the heat

input can be clearly reduced. Surface cooling or passively generated geothermal energy also adds to the efficiency of the cooling system performance. As a supplement to the sun protection on the exterior, interior sun glare protection can also be installed. Furthermore, every individual user sets the temperature and the fresh air supply via the heat and cooling control system depending on personal preferences.

	Standard	Premium	Premium-Plus
Cold	Surface cooling via energy floors with individual room control	Surface cooling + ventilation according the draft of VDI 2078 (max. 10% above 26° C)	Additional induction via the ventilation (temperature always ≤ an outside temperature of 26° C to 32° C)
Heat	Individual room control with ≥ 20° C (can be regulated +/- 2° C)	Heat input via the ventilation (no loss of heat through ventilation)	Additional induction via the ventilation
Shading	Sun protection via Raffstore	Sun protection via Raffstore including sun sensors and daylight control	Sun protection via Raffstore including sun position tracking

* Source: SIFA Tipp Praxisportal fuer Sicherheitsfachkraefte, Die optimale Temperatur am Arbeitsplatz, (Practice portal for safety experts, the optimum temperature at the workplace) 04.08.2009, 1st edition (2011), available at: <http://www.sifatipp.de/fachwissen/fachartikel/arbeitsstatten/die-optimale-temperatur-am-arbeitsplatz> (Date: 02.06.2015)



If the CO₂ value goes above **1500 ppm**, then this can negatively influence the **ability to concentrate** and can cause both **headaches and tiredness**.

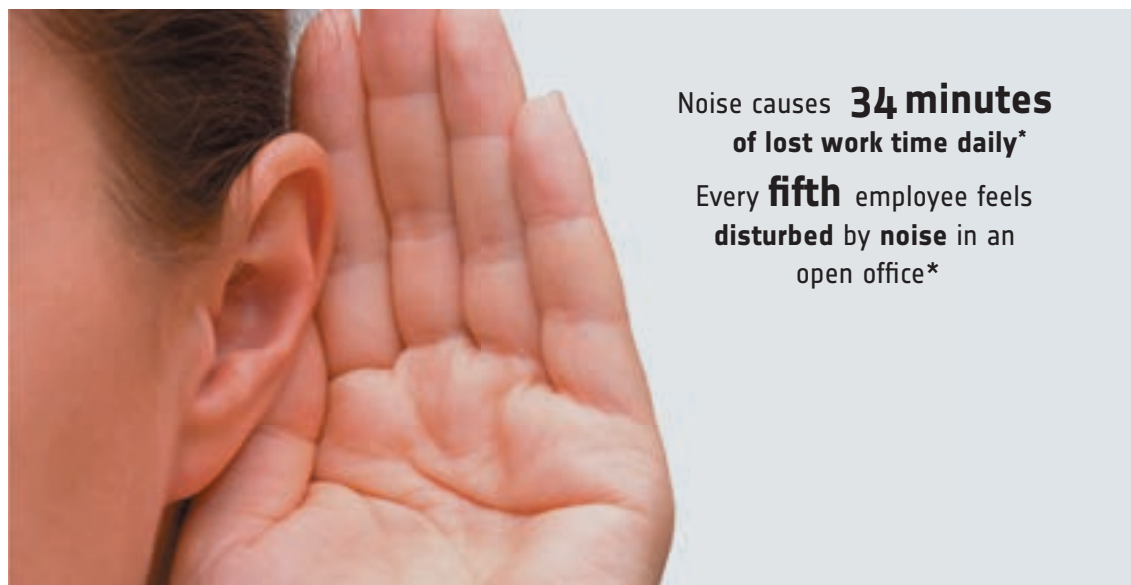
Air and light quality

With our three comfort levels for air quality, the concentration of pollutants in the indoor air can be easily tracked and controlled. The amount of CO₂ in the air in offices is above the recommended levels after 40 minutes with the windows closed. The recommended levels are exceeded after only 20 minutes when meeting and conference rooms are in use. The GOLDBECK System provides you with the possibility of supporting the health and

performance level of your employees. The fresh air supply can be controlled both manually and mechanically, whereby the windows should always be opened. An air humidification system can also be installed if desired.

	Standard	Premium	Premium-Plus
Ventilation	<ul style="list-style-type: none"> Manually via the windows in office areas Mechanically in meeting rooms 	Mechanically throughout the building	<ul style="list-style-type: none"> Mechanically throughout the building Meeting rooms are regulated as required (e.g. via presence or CO₂)
Freedom from pollutants	Building materials in accordance with legal requirements	Low-pollutant building materials in accordance with the requirements of the DGNB multiple certificate	Measurement of the indoor air in accordance with standards of the DGNB
Air humidity	-	-	Air humidification (rel. humidity ≥ 30% in the winter)
Natural lighting	Daylight at in the workplace in accordance with the Workplace Guidelines (ASR)	Daylight in the corridors/ combination zones through glass side panels or skylights	Increased daylight percentage in corridors and combination zones through at least 50% transparent components in the associated partition walls
Anti-glare protection	No additional anti-glare protection	Pre-fitting for internal anti-glare protection	Additional internal anti-glare protection

* Source "Richtlinie zur Bewertung der Luftqualitaet von Innenraeumen (Guideline for assessing the air quality of interior spaces)", Part 7 "CO₂ als Luftungsparameter" [CO₂ as a ventilation parameter] of the BLMFUW (Ministry of the Environment), August 2011



Noise causes **34 minutes** of lost work time daily*
 Every **fifth** employee feels **disturbed** by noise in an open office*

Room acoustics and sound insulation

Studies show that noise is the largest single disturbance in the workplace. It is not only caused by the outside world (street noise, etc.) but also by sounds and noise which are generated inside. Optimal acoustics help to minimise irritating noise and to amplify what needs to be heard. Think about the old amphitheatres: you can hear the actors, but the audience's whispers do not reach your ears. The various GOLDBECK Comfort Levels are all in accordance with the newest

guidelines and regulations and offer the highest level of acoustic quality. Different thicknesses of both wall and ceiling insulation provide you with customised sound insulation.

	Standard	Premium	Premium-Plus
Room acoustics	Acoustically effective suspended ceiling	Acoustically effective suspended ceiling in accordance with the recommendations of DIN 18041	Simulation and calculation of the measures required in the important rooms
Indoor noise protection Acc. to DIN 4109	<ul style="list-style-type: none"> Normal noise protection on the office walls and doors Meeting rooms in accordance with the stipulations set down for rooms with confidentiality requirements 	<ul style="list-style-type: none"> Erhöhter noise protection by the office walls and doors Meeting rooms in accordance with the requirements n for rooms for private discussions 	<ul style="list-style-type: none"> Erhöhter noise protection by the office walls and doors Meeting rooms in accordance with the requirements n for rooms private discussions
Outdoor noise protection	Windows in accordance with the location-related requirements	Windows in accordance with the location-related requirements + mechanical ventilation	Windows in accordance with the location-related requirements + mechanical ventilation + sound insulation of the technical building roof structures

* Source: HoerTechGmbH, Stoerfaktor "Laerm" im Buero (Noise, a disruptive factor in the office) (press release April 2011), available at: http://www.hoerTech.de/web/dateien/PM2_Stoerfaktor_Laerm.pdf (Date: 14.04.2015) | *Source2: WirtschaftsBlatt, Groesste Stoerfaktoren im Buero sind Laerm und Kollegen (The biggest disruptive factors in the office are noise and colleagues), Andrea Machel, 31.10.2013, available at: <http://wirtschaftsblatt.at/home/life/karriere/1470975/Groesste-Stoerfaktoren-im-Buero-sind-Laerm-und-Kollegen> (Date: 09.04.2015)



Quality of the fittings and furnishings

The quality of the fittings and furnishings determine the appearance, usability and feel-good character of an office. No matter whether it concerns technical fittings or visual highlights, GOLDBECK provides you with individual solution in design and function which create a comfortable user experience.

Up to **36% more productivity** in an optimum working environment *

	Standard	Premium	Premium-Plus
Surfaces	<ul style="list-style-type: none"> Fibre-bonded needle floor coverings in offices, porcelain stoneware (30x30cm) in staircases Mineral fibre ceilings hole-punched, visible rail Woodchip wallpaper 	<ul style="list-style-type: none"> Loop pile fabric or velour in offices, porcelain stoneware (30x60cm) in staircases Mineral fibre ceiling smooth, visible rail Paint substrate or glass fabric 	<ul style="list-style-type: none"> Loop pile fabric or velour in offices, artificial stone or natural stone in staircases Mineral fibre ceiling smooth, invisible rail Paint substrate or Q3-smoothed
Electrical	<ul style="list-style-type: none"> Recessed louvre luminaires Switches and room thermostats 	<ul style="list-style-type: none"> Pendant luminaires Switches and thermostats with function display 	<ul style="list-style-type: none"> Standing luminaires Room control units
Sanitary appliances	<ul style="list-style-type: none"> Partitioning walls elevated Fittings manually operated Porcelain stoneware (30x30cm) 	<ul style="list-style-type: none"> Partitioning walls room-high Washbasin fittings contact-free Porcelain stoneware (30x60cm) 	<ul style="list-style-type: none"> Partitioning walls in dry construction Completely contact-free Porcelain stoneware (60x60cm)

*Source: Fraunhofer Institute for Industrial Engineering & Organization, Zwischenauswertung Office-Excellence-Check zur Orgatec 2006 (Interim evaluation of Office Excellence Check for Orgatec 2006), available at: <http://www.erfolgsfaktor-buero.de/downloads/officeexcellencecheckresults2006.pdf> (Date: 19.06.2015)



Flexibility

GOLDBECK Office Buildings are flexible both in design and in usage. Various possibilities and combinations present themselves during the interior construction phase. There are variations on the ceiling height, the window wings and the sun protection per grid, the allocation of the heating and cooling, the location and control of the ventilation and the lighting. These options enable you to think the office of the future today as the possibilities for use remain variable: everything is conceivable from an open space office to an individual offices and can be implemented at any time.

Worldwide there are:
34% individual offices
41% combination of individual and open space offices
25% open space offices*

	Standard	Premium	Premium-Plus
Clearance height	2.825 m	3.00m in the office, 2.825m in the corridor	3.00m throughout
Window wings	One wing per 2.50m/2.70m grid	One wing per 2.50m/2.70m grid	Two wings per 2.50m/2.70m grid
Sun protection	Louvre blind slat, coupled w=2.50m / 2.70m, motor every 5.00m/5.40m	Louvre blind slat w=2.50m / 2.70m, each with a motor	Louvre blind slat, coupled w=1.25m / 1.35m, motor every 2.50m/2.70m
Distribution of heating/cooling	2-pipe-system in the entire building	4-pipe-system in the shaft, 2-pipe-system in the storey	4-pipe-system in the shaft and in the storey (can be controlled for each facade)
Allocation of heating/cooling	Control unit every 2.50m/2.70m grid	Control unit every 2.50m/2.70m grid	Control unit every 1.25m/1.35m grid
Ventilation outlets	-	Supply and extraction of air every 5.00m/5.40m	Supply and extraction of air every 2.50m/2.70m

* Source: haufe.de/personal, Buerformen, Mitarbeiter fordern flexible Konzepte (Office forms - employees demand flexible concepts), 20.05.2014, available at: http://www.haufe.de/personal/hr-management/buerkonzepte-mitarbeiter-fordern-flexible-konzepte_80_2556482.html, (Date: 07.04.2015)



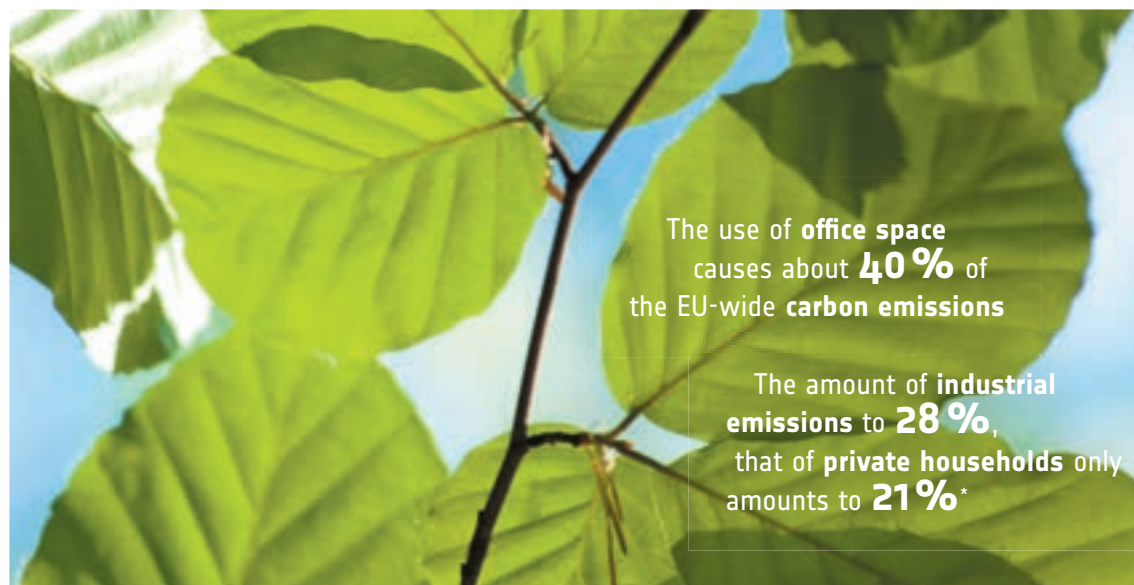
Operability

User-friendly surfaces are not just in demand in the virtual world but also when it comes to controlling building functions. If desired, our systems manage windows, switches, operating devices, thermostats and presence detectors, depending on the requirement, weather and other internal measuring values. It goes without saying that analogue fittings or a mixed form consisting of analogue operating elements and digital control systems can also be selected.

Up to **27% savings** due to an automated sun protection
 Up to **30% savings** due to automated lighting
 Up to **40% savings** through combined functions*

	Standard	Premium	Premium-Plus
Sun protection	Manually via switch	Sun protection control + manually via switch	Via building automation, including sun position tracking
Temperature	Room thermostat	Room thermostat with function display	Via building automation, including weather forecast
Lighting	Switch	Presence detector	Daylight and presence detector

* Source: Biberach University of Applied Sciences, Institute for Building and Energy Systems (IGE), Energieeinsparpotenzial und Energieeffizienz durch Bustechnik sowie Raum- und



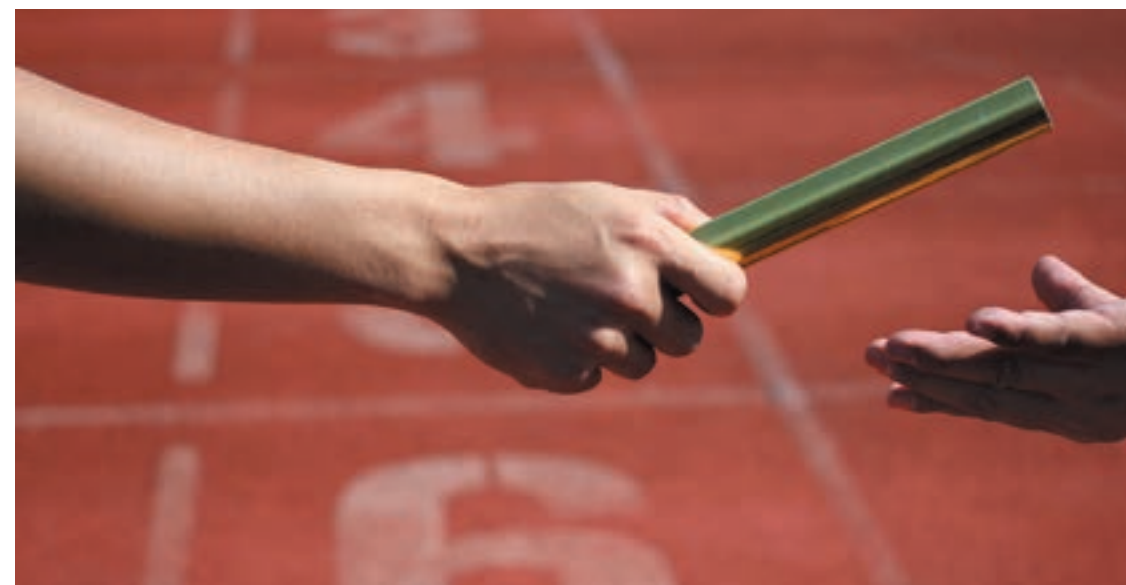
Energy efficiency and sustainability

The “ecological footprint” which every single individual and company leaves behind them every single day has been a familiar term for a long time. Our claim is that we design, construct and manage buildings in an energy-efficient and sustainable manner. The GOLDBECK Office Building System was certified by the DGNB (Deutsche Gesellschaft fuer Nachhaltiges Bauen - German Sustainable Building

Council) in October 2014: every single office building constructed according to this standard complies with the DGNB criteria specified for sustainable buildings. All of the available GOLDBECK Comfort Levels in this area are therefore of a very high quality.

	Standard	Premium	Premium-Plus
EnEV Standard	needs in accordance with the requirements of the applicable EnEV	needs 10% below the requirements of the applicable EnEV	needs 20% below the requirements of the applicable EnEV
Certification	-	Execution in accordance with the quality standards of the DGNB multiple certificate (gold)	Execution in accordance with the quality standards of the DGNB multiple certificate (gold) + project-related certification
CO₂-footprint	-	CO ₂ -reduced building method (ca. 50% below the average according to DGNB)	CO ₂ -neutral building method (certified CO ₂ -offset through a climate protection project)

* Source: Durham Business School und JB Associates, Is the way we work sustainable?, End of 2007



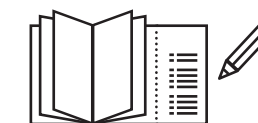
Operation

The building is finished, the keys have been handed over. However, GOLDBECK, is still there and will continue to be the partner at your side, as we work together with you and support you during the start of operation at your office building, no matter whether it concerns the format of a manual, a hotline or the personally supported start of service operations during the first year. In addition, we provide a usage cost forecast, energy monitoring and the tendering of additional facility management services.

Up to **30 %** less power consumption thanks to energy monitoring*

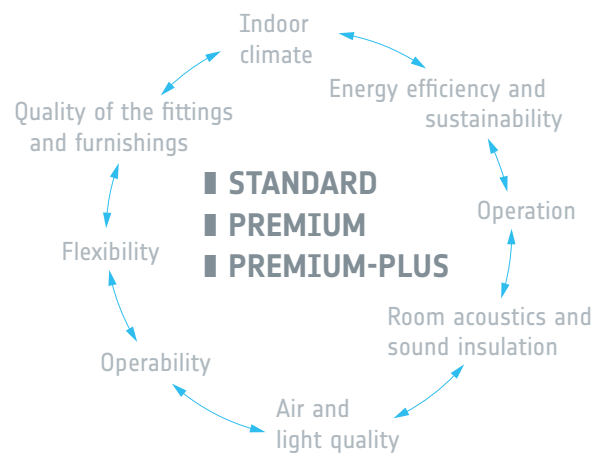
	Standard	Premium	Premium-Plus
Start of operation	Briefing in the systems engineering technology	Briefing in the systems engineering technology + project-related user manual	Start of Operation Service
Energy monitoring	-	Per building	Per rental area
Facility management	-	Usage cost forecast	Usage costs forecast and tendering of the FM services

* Source: Siemens AG, Siemens Building Technologies, Steigerung der Energieeffizienz in Gebäuden, EU-Verordnung (EN15232/SIA) [Increasing energy efficiency in buildings, EU Regulation (EN15232/SIA)], page 3, April 2010, available at: http://www.powerbuilding.eu/2_Seitz_-_das_energetische_Sanierungskonzept.pdf (Date: 19.06.2015)



Your comfort levels

	Standard	Premium	Premium-Plus
Indoor climate			
Cold			
Heat			
Shading			
Air and light quality			
Ventilation			
Pollutant-free			
Air humidity			
Natural lighting			
Sun protection			
Room acoustics and sound insulation			
Room acoustics			
Indoor noise protection			
Outdoor noise protection			
Quality of the fittings and furnishings			
Surfaces			
Electrical			
Sanitary appliances			
Flexibility			
Clearance height			
Window wings			
Sun protection			
Distribution – heating/cooling			
Allocation – heating/cooling			
Ventilation outlets			
Operability			
Sun protection			
Temperature			
Lighting			
Energy efficiency and sustainability			
EnEV Standard			
Certification			
CO ₂ -footprint			
Operation			
Start of operation			
Energy monitoring			
Facility management			



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Checklist

Record your requirements in the checklist. Simply flip it open and mark what you need with a cross. We would be more than happy to answer your queries in a face-to-face meeting.

