FOR SUSTAINABLE DESIGN

SWEDEN’S MOST
ATTRACTIVE OFFICE

ACOUSTIC CEILING
CREATES DIRECTION

ARCHITECTURE
ART AND SOUND

ENERGY EFFICIENCY
AND ROOM ACOUSTICS
"Read about research on how sound affects people, about thermally active buildings, the new sound standard, and see many examples of acoustic solutions in offices around Europe."

The members of Ecophon OFFICEnet provide assistance for people who plan, build, manage or are responsible for office premises. We provide – free of charge – all the advice, tips and information you need in order to plan and improve the indoor environment in general and the acoustic environment in particular. You are welcome to contact us with your questions, via www.ecophon.com. Under the Acoustics tab you will find your nearest contact person for offices. We also offer a wide range of seminars for a better office environment that you can register for.

Ecophon OFFICEnet members: (back from left) Arto Rauta, Finland; Yoan Le Muet, France; Paige Hodsman, UK; Alexey Archakov, Russia (front from left) Rainer Machner, Germany; Frans Davidsson, Sweden; Ricardo Canto Leyton, Central. Missing in picture: Yvette Tietema, Netherlands.

ECO – For Sustainable Design is a magazine that focuses on the sustainable design of indoor environments. Our aim is to highlight the indoor environment, both from a functional and an aesthetic perspective, through an ongoing dialogue with our readers. Don’t hesitate to contact any of our companies through the website, www.ecophon.com!
WE ALL RECOGNISE that feeling. We hear the beginning of that certain song, making us think of a certain situation – a moment in life we will never forget. We react, we remember, we feel something, and yet, we are often surprised when realising how much sound affects us. Perhaps, this is not so surprising, a long time ago, when we were living outdoors, hearing was an important system to identify threats, what the threat was and where it was coming from – even when asleep. The connection between hearing and reacting was vital to keep us alive.

Good room acoustics improve performance and well-being
In today’s busy world – so different from the outdoors – we often sit at our desk in the office feeling drowned by different sounds – from colleagues talking, from others on the phone etc. Sounds that make us react, even if we don’t want to – we are just designed that way. We lose focus and feel disturbed, even annoyed – and we need to spend time refocusing again. Improved office acoustics can solve this and create environments that support people in their work.

New indoor challenges
The office of today must be sustainable and thus have low energy consumption. One way of achieving this is using thermally active buildings (TABS), such as concrete core activation. This type of building utilizes the concrete to cool the building, thus avoiding energy-consuming air-conditioning-systems.

Another requirement for today’s offices is flexibility, with open spaces being preferred. Instead of the traditional cellular offices where everyone has their own designated workspace. Offices are now often built around activities (new ways of working), where there is no longer a workspace per employee. This makes the open plan office a real acoustic challenge. As the use of each zone of the building is often decided in the later stages of a project, there is a risk that the acoustic solutions applied may not be appropriate. As walls disappear to enhance openness, and glass walls are used to improve transparency, the acoustic environment is at risk of being sacrificed. Yet, it is well-known from research that poor acoustics is what people complain about most in open spaces.

Knowledge within your reach
At Saint-Gobain Ecophon we have a network of experts within office acoustic design. Together we transfer knowledge from many countries; discussing and sharing experiences of different solutions. Our specialists can assist in enhancing the working environment in offices, by helping to define the acoustic requirements. The earlier in the process acoustic design is taken in to account, the larger the chance of success. Acoustic requirements should be included in the workplace design plans, or written into a separate sound policy, specifying requirements for each room or activity zone, at the planning stage.

Standard requirements – and beyond
In order to create a sustainable office environment, the office acoustic design also needs to be sustainable. Using the latest standard requirements according to ISO3382:2012 is the least one can do to achieve this. Obviously, even better, is to try to go beyond standard requirements, and design to support the activity intended for the different zones.

Welcome to the ECO Magazine!
In this magazine you will be able to read about research on how sound affects people, about thermally active buildings, the new sound standard, and see many examples of acoustic solutions in offices around Europe.

Enjoy the reading
Ecophon OFFICEnet Members
“Surroundings have a definite effect on people in a workplace.”

Tony Rydberg, who runs Ideas AB
Transform the office. Activate everyone’s senses and inspire colleagues, customers and partners alike.

UP IN THE ELEVATOR and we’re into Ideas’ new premises and showroom, with a panoramic view over Malmö Central Station and beyond. The offices are set in a parking garage in Malmö, southern Sweden.

Tony Rydberg, a veritable idea machine, welcomes us to an attractive, homely room with a rather unexpected design.

“I definitely think that an office can be furnished like this,” he says. “Cosy, comfortable and – not least – it brings all our senses to life! I think most people want to enjoy being at their workplace. Being inspired by their surroundings helps them to feel job satisfaction. In an environment like this it’s also easier to feel relaxed before meetings and to get into the right mode for important discussions and for making the right decisions.

“It shouldn’t just be ‘spectacular’. Function and aesthetics must go hand in hand.”

Ideas’ office carries on deeper into the car park...
Ideas AB has four employees and collaborates closely with other specialists in an extensive creative network: events, concepts, experiences and interior design. Here is an example of a ‘dreary passage’ in a reconstruction project at Malmö Central Station. It brought a smile to people’s faces during the dark autumn months when the station was being renovated.

**Floating ceiling absorbers**
It’s hard to tear your gaze away from the ceiling. The ventilation is completely visible and has been painted black. Floating ceiling discs of varying sizes, heights and levels light up the ‘black sky’.

The ceiling absorbers have integrated downlights whose design and positioning are such that they provide the right amount of light and mood, without any glare.

**Sound environment with aesthetic values**
“I was inspired early on by the new range of free-hanging sound absorbers and it felt natural to include them when I designed the Heimstaden property company’s Swedish head office in Malmö,” says Tony. “Although I did choose the rectangular shape then. It’s exactly that possibility, to create a three-dimensional feeling, that’s so exciting, with it being so easy to come up with different solutions. It’s proof that even the sound environment can have considerable aesthetic value.”

**Inspired by Ecophon**
“I found good solutions for my ideas after seeing Ecophon’s website when I was looking for sound absorbers. Light, sound, colour and shape are all part of my toolbox for room design.”

**Create strong brands!**
Tony Rydberg, part of a well-known Swedish theatre family, says that what people actually experience and feel is of great importance. “In all of our projects we try to find the company’s soul or story. Customers, colleagues and partners must all have a strong perception of the company’s brand and identity. These can be expressed by interior design, concepts, meetings and events. The overall impression, both from the outside and of the indoor environment, helps to increase competitiveness. It’s important to interpret the company’s soul and to package the whole concept so that is perfectly clear what the company stands for.

“I am convinced about the effect that sound has on us,” declares Tony “Adding sound experience to a workplace in the form of pleasant, natural sound that varies depending on where you are in the room, is a concept I use a lot. All our senses can be activated and stimulated!”

**Sweden’s most attractive office!**
The Swedish magazine Lokalnytt has the country’s biggest portal for rental properties. They announced a competition. A total of 34 office premises was nominated for the contest to be “Sweden’s most attractive office”. The winner is... Tony Rydberg and Ideas AB!
Tony Rydberg of Ideas AB got “an offer he couldn’t refuse” when he was looking for new premises for the company. Spare space in a car park in Malmö. He says that it’s a question of being able to visualise the possibilities...

From parking place to office and showroom. An incredible metamorphosis, isn’t it? The integrated lighting in the floating ceiling absorbers can be dimmed depending on the intensity of the daylight. The absorbers can also be lit from below, and coloured lighting can be used. Just imagine how it looks from outside!

Acoustic systems from Ecophon: Ecophon Solo™ Circle
ACOUSTIC CEILING CREATES DIRECTION IN ARCHITECTS’ OFFICE

In this architects’ office, the acoustic ceiling panels have been used to create a clear sense of direction. By combining a certain number of absorbers with an appropriate number of light fixtures and work stations, the architects have also achieved definite visual rhythm.

WHEN THE GLOBAL architecture practice Broadway Malyan renovated its office in central Warsaw, part of the aim was to promote employee empowerment. The question of room acoustics was absolutely key. Looking back, the Director of Architecture at Broadway Malyan, Robert Kamiński, declares:

“Our goal has been achieved. The employees have noted a huge improvement in the comfort of their working environment.”

When the architects decided to move, these premises looked completely different. The 200 m² space was divided into small cellular offices along the length of a narrow corridor. And above the acoustic ceiling there was a horrendous tangle of ugly wiring and technical installations.

“Opening up the space was our key decision. We knocked down the walls and dismantled the existing ceiling,” says Robert Kamiński.

There was then nothing in the way of creating exactly the office that the architects wanted – a functional and inspirational workplace.
Open and closed are linked
A zone of open office landscape was created, with a “cube” where two conference rooms and a kitchenette were built. Two fundamentally different areas under the one roof but, thanks to the creative use of acoustic ceiling panels, very much in harmony with each other.

“The Ecophon Focus Lp tiles installed in the cube coordinated the air vents and lighting fixtures in one direction. In the open space, the same direction is provided by the Ecophon Solo tiles and lighting fixtures. They are harmonized with the rows of desks.”

With the acoustic ceiling panels installed side by side, at the same height and in the same direction, the office feels well balanced and well organized. The restrained, monochromatic colour scheme helps to visually enhance this effect.

Encouraging employee empowerment
To encourage “employee empowerment”, they wanted to create a flexible workspace conducive to communication and supportive of the business. But it was just as much about giving the employees individual control of lighting and temperature and of ensuring that the work stations are ergonomically correct.

Broadway Malyan has a 55-year history, with 15 offices in major world centres, and it employs more than 500 people. The company was one of the first to set up an office in the former USSR, more precisely in the city of Baku in Azerbaijan. In Poland, the company has designed the Domoteka home furnishing and decoration centre in Warsaw.

“Our goal has been achieved. The employees have noted a huge improvement in the comfort of their working environment.”

The ventilation system can be glimpsed above the ceiling. The selected acoustic solutions create an impression of uninterrupted ceiling, linking together the office’s different areas.

Robert Kamiński is the head of the Warsaw office and is very pleased with the room acoustics.

Acoustics in most cases do not receive the same level of design attention as thermal, ventilation and other architectural and engineering considerations.

(Salter et al. 2003)
A SUCCESSFUL BRAND BUILDS ON AN OVERALL VIEW THAT COVERS EVERY LAST DETAIL

An exclusive, original exterior combined with a homely yet inspirational indoor environment were essential for this company’s identity.
Welcome to Kaffee Partner’s new head office.

KAFFEE PARTNER’S FOUNDER
Andreas Ost and co-owner Michael Koch had the goal of creating a workplace and office environment that would be even more attractive than the living room in a private home. The company left their old office in Wallenhorst to move into this new, futuristic building that had been designed specifically for them with a focus firmly on the brand.
A total of 300 employees share a U-shaped area of almost 10,000 square metres, to serve 60,000 customers requiring coffee and hot drinks of the highest quality. Kaffee Partner are Germany’s leading supplier of professional coffee machines.

Sound the main problem
The office space occupies 5,000 square metres, most of which is open space. Kaffee Partner realized right from the start that noise levels would be the main problem in getting employees to accept the idea of an open office.

Floating, sound absorbent ‘sails’ above the work stations dampen the noise and radically reduce sound propagation, while light reflects softly from the ceiling.
Measure sound correctly
More than just the ‘classic’ room acoustic parameters (such as reverberation time) are needed to calculate the acoustics in rooms that have considerable depth and large expanses of floor space. This is the conclusion of Scandinavian researchers Dr Erling Nilsson and Professor Björn Helmström in their study “Acoustic design of open-plan offices”.

Concept developer Rainer Machner of Ecophon, who participated in the room acoustic side of the Kaffee Partner project, says about the study:

“The ceiling is of crucial significance in the way sound disperses in a room. An overall, sound absorbent ceiling radically reduces sound propagation. In order to reduce disturbance, both visual and sound-related, screens have to be installed between work stations.”

“It is equally important to take the activity for which the room is intended into account, to plan where the work stations should be situated, to reduce disturbing noise from surrounding activities, and to think about how communication areas, areas for coffee breaks and for technical equipment (printers, fax etc) should be organised.”

Kaffee Partner complied with the ‘rule book’
According to the study, the perception of how disturbing sound actually is depends on the type of work being performed.

Kaffee Partner have complied with the latest room acoustic findings of the study ‘Sound Design of Open Plan Offices’ and with the new sound standard ISO3382-3:2012. Read more about the standard on page 36.

Sound appears to have obligatory access to memory; even when attention is directed elsewhere, sound is recorded and processed by the brain.
(Banbury, Macken 2001)
ARCHITECTURE, ART AND SOUND IN COMBINATION

The ECO magazine phoned artist Maria Dubin at her studio in Paris to find out how a work of art can be created on 1,000 square metres of sound absorbing wall in an office building. The client was Rambøll in Århus, Denmark.

“It wasn’t exactly the Sistine Chapel, but it was big,” says an inspired Maria Dubin about the decoration of 1,000 square metres of sound absorbers. “The challenge was finding a combination of technology, colour and material that worked. And there was no room for error on the finished, sound-absorbing wall surface. It just had to be right first time…”

Got acquainted with the surface
“So I filled my studio with 100 acoustic tiles, which Ecophon provided along with lots of good advice, and I tried out all sorts of different things in order to get well acquainted with the surface’s properties,” explains Maria. “I tested every conceivable colour – bearing in mind that they had to be lightfast and not fade with time! One requirement was that the paint shouldn’t block the pores, which let the sound pass through to the sound absorbent backing. The surface is also dirt resistant and can stand all sorts of ‘pollution’…”

“I finally found a solution – a lightfast ink without any binders, which would otherwise clog the pores in the surface. The ink fixed the way I wanted it to and, combined with the right brushes, I achieved the calligraphic, sweeping touch I was hoping for.”

Won the contest
During the course of a year, Maria Dubin had sketched and painted wild flowers from all over the world, and she wanted to transfer these to monumental motifs. In contest with other artists she was selected to do the mural painting in the extension of Rambøll’s office in Århus.

Maria is of the opinion that art should accentuate architecture. The new building is integrated into the original office building; the architecture can perhaps be described as ‘masculine’, with its strict lines, but everything still had to combine naturally with the new room, but not completely. The plants and flowers painted on the walls created a striking contrast between hard and soft. The glass roof was the inspiration for the motif – the sense of being in a greenhouse.

“I have been given a great deal of help and support on the way,” says Maria. The ‘discussion panel’ included architect Rasmus Holm, experts from the Museum...
of Art in Århus and, of course, the client - representatives of those who were going to be moving in.

**Authentic plants**

“My trip to Madagascar last year was also fantastically inspiring,” she says. “I drew and painted tropical plants for a whole month. When I got home I contacted Anders Barfod, who heads the Biology Institute at Århus University. He was a great help when I was trying to interpret the ‘lyrical rhythm’ in the plants’ different characters.”

**An open, dynamic learning environment**

“Ramboll wanted the new extension and the changes in the office to send out new signals about how creatively and innovatively a global technology company can portray itself,” says architect Rasmus Holm. “You used not to be able to see what was going on in other parts of the building. Now everything is open and accessible and the corridors have gone. Now there are all sorts of meeting places. The café and the ‘amphi-stage’ for training, conferences and other activities are visually accessible as soon as you walk in. A knowledge company like Ramboll builds its entire business on contacts, spontaneous meetings and a dynamic learning environment. The offices are open and the meeting rooms have glass walls.”

**Absorbers where space allowed**

Rasmus explains that, in the older building, there are different kinds of surface material and that, with the new extension, they did not want even more ‘complexity’. So a strict,
Facts Rambøll

Rambøll is a technology company in the Nordic market, with operations throughout the world. The Rambøll group has more than 9,000 employees in almost 200 offices in 19 countries.

Maria Dubin in her element. The skylift takes her right up to the roof, where the wall is 16 metres high, with an area of 1,000 square metres!
A stylish facade of aluminium was chosen – without any detail. Simplicity is the dominating factor in the interior too. Light floors, white walls and other surfaces in the new building interplay with the natural stone walls of the old building.

“Thanks to the excellent co-operation with Ecophon, we were able to do the fantastic decoration of the sound absorbing wall in the new building.”

“It was a bit tricky to create a good sound environment in such a voluminous room with hard surfaces and not be able to use the ceiling for sound absorption,” adds Ole Ebbensgaard, acoustician at Rambøll. “But the solution was wall absorbers on all available wall surfaces, apart from the older natural stone walls, on the aluminium cassettes and on other predetermined surface materials in the room.”

Talking point among the staff
Rambøll’s area manager Ole Bech emphasises the positive effect of the staff’s great interest in how the work of art has progressed in the new extension.

“Thanks to the excellent co-operation with Ecophon, we were able to do the fantastic decoration of the sound absorbing wall in the new building.”

“Thanks to the excellent co-operation with Ecophon, we were able to do the fantastic decoration of the sound absorbing wall in the new building.”

It is also a great honour that the building was nominated for the Århus Municipality Architectural Award 2011. The building won that prize in 1997, but the building was then only half the size.

Maria Dubin looks forward to creating more art on sound absorbers and is now involved in a new project in Paris. She is now also the artistic advisor for the development of a whole town at an abandoned military base in Serbia.

You can see and read the exciting story of how Rambøll’s mural developed in ‘The Wall’. Order the book, which is in Danish and English, directly via mariadubin@hotmail.com. Provide your contact details and Maria Dubin will get in touch with you.
How New Ways of Working Are Challenging Office Design

Frank Duffy, DEGW’s founder, has worked internationally for forty-five years as an architect and workplace strategist. In this article he describes the challenges we face and discusses the basis for acoustic criteria in an increasingly virtual world.

“Room acoustics were beginning to be a major preoccupation in office design when I first entered the field of architecture in the early sixties. A great deal of imagination is necessary today to appreciate from how very low a base working conditions in the office have improved over the past half century.

At the start of the seventies, I was an eye witness to how DEGW’s work was rejected within IBM, whose plan was to build office landscapes throughout the whole of Europe. While the open plan was grudgingly accepted at first in some countries, the concept was rejected by other IBMs, at first in Scandinavia and then elsewhere in Northern Europe.

For IBM to have forced the open plan on unwilling users everywhere would have created a dangerous tension between corporate loyalty and cultural values.

Knowledge work and unrestricted freedom of movement
In advanced economies, we find the occurrence of what is called ‘knowledge work’. The invention, development and dissemination of ideas in increasingly interactive, creative and open ended ways is becoming the dominant mode of production. Universal access to information technology offers knowledge workers unprecedented freedom of movement, open ended choice of multiple locations to carry out their work as well as access to fluid and extended timetables.

In general terms, the range of activities comprising knowledge work will expand and the number of people involved in knowledge work will increase enormously.

Increasing mobility and user choice mean that the geography of work will no longer be confined to office buildings.

“Increasing mobility and user choice mean that the geography of work will no longer be confined to office buildings.”

Professor Frank Duffy is an architect and founder of DEGW for strategic design and architecture, with its head office in London and a total of fourteen offices in Europe, Asia, Australia and North America.
There are six trends that are presented here that will profoundly impact urban design, architecture interior design – and, of course, the design of acoustic environments.

**Challenge 1:** from static to mobile ways of working.

People will become accustomed to using technology to work continuously and connectedly in ever more mobile ways in multiple and increasingly diverse locations, not just confined to internal office environments but in many other complementary, increasingly external settings.

**Challenge 2:** from allocation to choice.

Individuals and organisations will be increasingly empowered to choose the kind of environment and timetables that suit their specific predilections, habits and lifestyles. Office workers will be able to choose to work in places and ways that suit them best.

**Challenge 3:** from uniformity to diversity

Many more choices in accommodation, work settings, and the use of space and time and place will become available to individuals, work groups, and organisations. Most spaces will be designed for multiple uses. However, a minority of spaces will continue to have to be designed to accommodate certain kinds of activity (e.g. training and presentations) and more demanding technologies (e.g. telepresence and the use of holograms) that are particularly demanding in environmental terms.

**Challenge 4:** from individual to collective space allocation.

Despite growth in individual choice and the widening of the spectrum of locational choice, collective settings for developing shared understanding and ideas will become increasingly important, leading to a more intense and demanding use of space. Because the use of such spaces will be optional, intermittent and shared, architects and designers will become increasingly aware that they must be prepared to justify physical places in an increasingly virtual world.

**Challenge 5:** from underuse to increasing intensity of space use.

Growing concern for sustainability will lead overtime to demands for more intensive use of the whole spectrum of space provision. Today office space, and particularly meeting rooms, is high on the list of underused resources in modern business.

**Challenge 6:** from separation to complementarity.

The increasing importance of overlapping networks, serendipitous, complementary encounters, unprogrammed and semi-programmed activities will lead to interstitial spaces within buildings and in the public and semi-public spaces between buildings becoming more valued. Despite continuing concerns about security, spaces and places will be increasingly used, not to separate, but to bring businesses and activities closer together.

The network-based office has been developed from a model that describes the office design of the twenty-first century. Workplace strategy is based on a flow of customers, office workers, and suppliers distributed throughout different places depending on when the work is being performed.
Free-hanging sound absorbers in shape of leaves.

Free-hanging sound absorbers in shape of clouds.
COOL GOOGLE ATTRACTS MOST STUDENTS

WHERE DO YOU most want to work if you’re an IT or software engineering student?

That’s right: at Google, the search engine giant. This was the result of a survey that included 144,000 students from all over the world.

Have fun at work. Be creative. “Don’t be evil”. Google’s recipe for corporate culture has succeeded pretty well. The company is now at the absolute global peak as regards to market value and brand value. The other companies that are up there at the top with them are another three IT giants – Apple, Microsoft and IBM.

It was quite natural that the Dublin office should be designed to put a smile on people’s faces and to get the creative juices flowing.

More than 1,800 free-hanging units

The Dublin office is the Google headquarters for Europe, the Middle East and Africa. The office complex includes three buildings: One Grand Canal, Gasworks and the fifteen-storey Google Docks, which is also known locally as the Montevetro building.

More than 1,800 free-hanging units provide excellent room acoustics within the Montevetro building. There are 34 different special shapes of Ecophon Solo Freedom panels and nine standard shapes of Ecophon Solo – round and rectangular. The panels were made in seven different standard colours plus four special shades.

Google – where does the name come from?

In 1997, the founders Larry Page and Sergey Brin wanted to give their fairly new search engine, then called Backrub, another name. They started playing around with the word “googol”, which means a number written with the digit 1 followed by 100 zeroes. They were alluding to their goal of organizing the apparently infinite amount of information available on the internet. As we all know, computers work with the digit 1 and zeroes. The result was Google, and a behemoth was born.

Now more than 30,000 employees

The following year, in 1998, the company moved into its very first office, a garage in Menlo Park, California, USA, and took on employee number one. The company’s first office dog, Yoshka, turned up in 1999.

Since then, the staff has increased by over 30,000 people (it’s unclear how many animals are on the payroll). Today Google is more than just a search engine, it is an internet giant. Other popular services are Google Earth and Gmail and the company now also owns YouTube and is moving deeper into social media with Google+

It seems a very long time since a garage was big enough, but it’s only fifteen years. Now, nothing other than specifically designed acoustic ceilings is good enough for achieving the right feeling, in combination with modern demands for a good sound environment.

“Tempora mutant or nos in illis” – Times change and so do we.

But then bad room acoustics has never been cool.

Advanced supplier puzzle

Henry J Lyons Architects in Dublin coordinated the design of Ecophon’s Solo panels based on the project architect’s concept for creating different creative spaces within the building. Ecophon worked with construction consultant Gardiner & Theobald to ensure the manufacturing and delivery schedules fitted smoothly into the supply chain as Google delivers search results. And the site installation was completed by Platt and Reilly Drywall.

Architect:
Camenzind Evolution

Acoustic systems from Ecophon:
Ecophon Solo™

Photo: Peter Wuermli Photography
Free-hanging rectangular sound absorbers.

Free-hanging circular sound absorbers.
Free-hanging square sound absorbers.

Free-hanging sound absorbers in shape of letters.
MAKE TIME FOR THOUGHT:
DISRUPTED TIME AND LACK OF
SETUP TIME DESTROY OUR DAY

“Don’t let the clock command your soul. Make sure you develop your personal, experience time, the time from which you can benefit and that you can influence in order to avoid stress,” says Bodil Jönsson, professor at Lund University.

Bodil Jönsson describes the difference between clock time and experienced time in her book “Ten Thoughts About Time”.

Allow yourself enough setup time
Bodil Jönsson says that everything one does requires setup time. “Some things are done much better not only if one is undisturbed but also after a certain setup time,” she claims. “Setup time” means time to prepare, switch off and adjust (as when calibrating and converting a machine from the manufacture of one product to another). It’s all about your inner being – your brain has to be tuned in and prepared if you are to perform something successfully. Most things are done better and are more enjoyable if you allow yourself the necessary setup time. Thought must be given time.

Different things require different setup times. Naturally, the least setup time is required for simple tasks. Unfortunately, we are tempted to do what is easy and dull first, such as emptying the wastepaper bin and making coffee. You’re fooled into thinking “great, that’s done now”, and you put off what’s important.

Tackle the difficult tasks first instead, and don’t be in too much of a rush with the simple little things. You need the setup time and startup period in order to prepare yourself for the difficult tasks and to enable you to complete your work in time without being stressed.

Divided or undivided time?
Everyone remembers their childhood summers. Sunshine day after day, with a host of never-ending activities. You were rarely disturbed and all the activities took all the time they needed – a good example of undivided time, with experienced time completely dominating clock time.

“For many of us, undivided time is much more valuable than divided.”

“Don’t let the clock command your soul. Make sure you develop your personal, experience time, the time from which you can benefit and that you can influence in order to avoid stress,” says Bodil Jönsson, professor at Lund University.

Conscious time planning
- Get an understanding of what is meant by divided and undivided time, and consider how you can influence your situation. One thing at a time, as far as possible...
- Distinguish between clock time and experienced time. Take command over your personal, experienced time and don’t be ruled by clock time!
- Allow your new thoughts to permeate your whole life – work, leisure and family. Then make your choices consciously and plan activities in as undisturbed a way as possible.
- Convince yourself “I have plenty of time”.

Ten thoughts about time
No other book about leadership and management has sold as well in Sweden as “Ten Thoughts About Time”. The book has been translated from Swedish to English, American English, French, German, Spanish, Italian, Dutch, Portuguese, Russian, Danish, Norwegian, Finnish, Estonian, Lithuanian, Czech, Hebrew, Korean and Thai.
MOST PEOPLE need to start and finish a task from A to Z with as little disturbance as possible in order to avoid new setup times (see adjacent article). Cognitive tasks require a long setup time, meaning that continuous interruptions create stress with new, time-consuming setup times every time someone is interrupted in their work.

In an office, people are often dependent on being able to communicate with each other, which is problematic when someone is totally focused on a task. In an open landscape, most people have or can quickly get visual contact. With respect and correct conduct, you can see whether someone seems busy or not, and show consideration accordingly. On the other hand, one might be disturbed by continual movement in the room, by telephones and loud voices.

Combi-offices or cellular offices can be negative in another way. If people are dependent on each other’s communication they might shout to each other through open doors, disturbing other colleagues. In other cases, people come and stand in the doorway of an office, waiting for a response from someone who is completely absorbed in their work or is talking on the telephone. Is this familiar? It creates stress for both parties. The one being interrupted has to return to their task with new setup times as a result, while the other person is irritated by not getting a response quickly enough, perhaps having to return later for a new contact.

All this takes time. A lot of time. Make sure you listen to your inner time experience and that you are in a state of calm before facing your tasks, create rules for yourself and for others, and avoid sources of disturbance as much as you can. Noise, unwanted sound, can be reduced significantly for the benefit of necessary communication – on the individual’s own terms.
Energy Efficiency and Room Acoustics

Thermal joists can be combined effectively with high demands on room acoustics. This was the reason for the architect choosing Ecophon for the French insurance company MAAF’s new offices. The employees’ constant telephone conversations had risked becoming an acoustic menace in the concrete-dominated building with its hard walls and ceilings.

The storage of heat and cold in a building’s concrete frame is an idea that often comes up when wanting to build for energy efficiency. Concrete has the correct degree of inertia for releasing heat and cold into the premises and thus is the perfect reservoir for the storage and release of energy.

If good room acoustics are also required, one obstacle has to be dealt with. The acoustic ceiling, which is a prerequisite for the room acoustics reaching an adequate standard in concrete-dominated premises, has to allow the heat or cold to pass to and from the joists above.

In such cases, free-hanging units are a suitable choice. With its free-hanging units, this particular acoustic system can provide free passage for the energy. In addition, the system is extremely effective in absorbing sound.

These were two of the factors that made architect Pierre Cara at Hobo Architecture to make their choice of acoustic systems for insurance company MAAF’s new offices in the French town of Chauray.

Unique acoustic approach
With their long experience, Ecophon have developed an acoustic approach that allows architects, acousticians and others to adapt room acoustics in accordance with the activities that are carried out in the room in question, thus achieving which is usually called “room acoustic comfort”. Is it the sound strength that is most important? Is it speech intelligibility or resonance that should be taken into primary consideration? Or is it mainly a question, as with MAAF, of reducing the sound propagation?

The acoustic requirements come from HQE environmental rating system [Target n°9]. For the acoustician it was necessary to reduce sound propagation.

The staff in MAAF’s premises work in open office landscapes where one demand was to minimize sound propagation and thus control the sound pressure level in the different areas.

As the staff talk on the telephone for most of their working day, there is a risk that they disturb each other. At the same time, the room acoustics must allow a team’s members to communicate effectively with each other without causing too much noise for other work groups in the same area.

Pierre Chigot, Julien Damy and Yoan Le Muet of Saint-Gobain Ecophon have been heavily involved of the room acoustic part of the project.

New office for claims handlers
MAAF’s offices have been built in order to accommodate the company’s staff who work with vehicle claims handling. The offices cover an area of 8,100 square metres, providing workspace for 475 people.

MAAF stands for Mutuelle d’Assurance des Artisans de France and was established in 1950 to provide car insurance for craftsmen. It is now number 1 in France among mutual insurance companies – companies of which the insured parties are also shareholders. The company is the fifth largest in the vehicle insurance sector and it also offers other types of insurance.
The office building, with its energy-storing concrete frame, has been constructed in accordance with the TABS principle (Thermally Activated Building Systems). It is classified according to HQE (Haute Qualité Environnementale) — a French environmental classification system — as a BBC-building (Bâtiment Basse Consommations) and BEPOS (Bâtiment à Energie POSitive). This means that the building produces more energy than it consumes. Solar panels on the roof will fulfil the planned energy requirement. The cold that is stored in the frame during cool nights is released indoors on warm days, giving a pleasant feel than air conditioning, which is often perceived as being draughty since it sets the air in motion.

“To make the building as flexible as possible with regard to different room solutions, the architect departed from the general French standard, which prescribes that prefabricated concrete elements must be 2,700 mm wide. Instead, elements of half that width, 1,350 mm, have been used, thus increasing the possibilities for creating exactly the rooms needed. The architect found that the dimensions of the free-hanging sound absorbers were suitable.”

“Reverberation time (T) or Equivalent Absorption Area (EAA) is traditionally used to assess whether room acoustics are good or bad,” explains Yoan Le Muet, concept developer at Saint-Gobain Ecophon in France. “But this is often not an adequate measurement for correctly gauging the room acoustics. To achieve a good sound environment, what we call room acoustic comfort, we have developed an acoustic approach that is more extensive and accurate than basing room acoustics on reverberation time alone. In an open office, for instance, the room’s geometry and proportions affect how sound is propagated, and this is one of the most important factors to consider when choosing the correct acoustic system.”


Architect:
Hobo Architecture

Acoustic systems from Ecophon:
Ecophon Solo™
Ecophon Gedina™
UNIQUE FIELD STUDY SHOWS THAT FREE-HANGING SOUND ABSORBERS AND TABS ARE AN EFFECTIVE CLIMATE CONTROL COMBINATION

**FREE-HANGING SOUND ABSORBERS** are the obvious choice in buildings constructed on the TABS (Thermally Activated Building Systems) principle. Wall-to-wall acoustic ceilings are not a viable alternative in such buildings. They prevent the cold from the cooling system embedded in the concrete soffit from flowing out into the premises.

But how easy is it for the cold to pass between free-hanging absorbers?

“The first major field study performed in order to find an answer to that question suggests that obstruction is minimal”, explains Yoan Le Muet, locally responsible for the study.

**0.3 °C difference**

The unique field study compared temperature as well as room acoustics in two cellular offices of the same size.

With half of the soffit covered by free-hanging absorbers in one office, it was only 0.3 °C warmer there than in the other office in which the soffit was completely exposed. A minor difference that was only 1/10 of the permitted daily variation of 3 °C.

The field study took place during a period of five summer weeks in 2012 and was performed in the WOOPA building complex in Vaulx-en-Velin on the outskirts of Lyon in the south of France.

For a fair comparison, the offices were unmanned. Special technology was used to create realistic air currents and to simulate human body heat and the heat of equipment.

**WOOPA – cutting-edge construction in Lyon**

WOOPA was designed by the Amsterdam-based architect Thomas Rau and is a cutting-edge project in Lyon, a city with a strong environmental focus. The building is CO₂-neutral and energy-positive - producing more energy than it uses - partly due to the use of solar cells. Glass and recycled concrete reinforced with glass are examples of environmentally adapted building materials.

The WOOPA building comprises of offices, shops, apartments and parking areas. The total area is 21,000 m².

“Woopa”, according to the Urban Dictionary web forum, is a term to express excitement, joy or happiness.
“One important result of the Field Study is the indication that 50% coverage of the soffit with free-hanging sound absorbers improves the sound environment efficiently in buildings with TABS, with a minor impact on average room temperature”, says Hanneke Peperkamp, project manager indoor air climate at the consulting firm Peutz, who conducted the thermal measurements at WOOPA.

**New standard in practice**
The project also studied room acoustics in open plan offices. The results show that sound propagation and sound level both decrease markedly with an increase in use of free-hanging sound absorbers.

These are both central problems in open offices and they have resulted in a new international room acoustic standard, ISO 3382-3, which was used in the study.

ISO 3382-3 has been developed in order to replace the “reverberation time” measurement with other gauges that are more important for the correct assessment of room acoustics in open offices. National standardization bodies in 163 countries are included in ISO, the International Organization for standardisation, and the new room acoustic standards came into force last year.

**Broad collaboration in field study**
In the WOOPA project, Ecophon in France (Yoan Le Muet, Thomas Bonnet) and Ecophon R&D (Jonas Skeppås) in Sweden have collaborated with:

- Saint-Gobain Research
- Peutz (consulting firm) in France (acoustic measurements) and the Netherlands (thermal measurements)
- COGECI (real estate owner 22% and end user)
- KATENE (fluid consultant)
- DIC (installation)

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**Dutch architects RAU was given the assignment to design the Woopa building in Lyon after presenting a CO2-neutral and energy positive design which, in terms of layout and sustainability, outperformed the requested standard. Architect Thomas Rau in a room with TABS (Thermally Activated Building Systems).**

**Photo from the field study: the cellular office where free-hanging sound absorbers were installed. The photo shows testing apparatus such as “mannequins” – the two round, blue, upright pipes that were used partly to emit heat similar to human body and equipment heat and partly to create realistic air currents.**

**The water pipes in the concrete soffit cool the offices during the summer, creating a pleasant climate for all employees.**

**Free-hanging sound absorbers make it possible to transfer the cold air from the ceiling down to the working plane.**

**Architect:**
RAU Architects

**Acoustic systems from Ecophon:**
Ecophon Solo™
KIA IMPOSES HIGH DEMANDS ON THE SOUND ENVIRONMENT

The new European head office of the Korean Kia Motors has recently been based in a newly designed Experience Centre near Breukelen in the Netherlands. The brand’s rapid progress is reflected in the new Dutch head office, which exudes a feeling of growth and optimism. Much thought has also been put into creating top-class room acoustics.

When Kia’s Dutch operation moved to a new head office in Breukelen just south of Amsterdam, it went without saying that the premises should exude an atmosphere of success, growth and optimism.

To emphasise that Kia is a brand offering that little extra, an Experience Centre was developed in a perfect, prominent location beside the busy A2 motorway.

Combining a head office, showroom, demonstration workshop and staff dining room, the design of the building fits exactly with the growth expectations and future models Kia is planning.

Sustainability and style

“Kia's starting points for this project were 'sustainability and style,'” explains interior designer Chiel Heijnsdijk of D+Z Architecten+Projectmanagers.

The guidelines for D+Z’s work were laid down in Kia’s global Space Identity Guide, which regulates suitable choices of colours, designs and furnishings.

About seventy relatively young employees work at the Centre, and Chiel Heijnsdijk explains that the staff were very involved in the building project.

Together with the previous MD for Kia Motors in the Netherlands, Cor Baltus, much effort was put into finding the best ceiling solution, both visually, technically and room acoustically.

“We imposed high demands on the sound environment,” declares Chiel Heijnsdijk.
“Ecophon Focus™ Dg fulfilled all our requirements and was installed in the office landscapes, boardroom and dining room. Visually, the ceiling is exactly what we wanted, and it’s also technically perfect.”

**Hard surfaces require highest absorption class**

According to Heijnsdijk, an office’s acoustics are a decisive factor with regard to employee wellbeing and how they perform their work. He explains that consideration had to be made to the fact that the walls are hard, being made of smooth cement, and the floor is also relatively hard. It was absolutely necessary to choose an acoustic ceiling of the highest absorption class in order to reduce the sound pressure level.

A dining room is a place where large numbers of people gather, talk and make a noise with cutlery, plates and glasses as well as with chairs. With all this noise, the atmosphere still has to be relaxing. To reduce the noise to as pleasant a level as possible in Kia’s dining room, the choice fell on Ecophon Solo™ Circle, which is suspended from Ecophon Focus™ Dg to provide an effective, stylish combination.

“This was our immediate choice. It is hyperfunctional as well as being attractive,” is how Chiel Heijnsdijk describes the free-hanging acoustic ceiling.
Interaction and communication in office landscapes is the perfect concept for Kia’s youthful organisation. Hard, sound-reflecting surfaces on walls and floors are compensated for by acoustic ceilings of the highest absorption class (A).

Ingenious. The conference and boardroom conceals several clever solutions: the architects constructed the table to rest on a discrete framed structure so that nobody sitting at it will be annoyed by table legs getting in the way. Technical solutions are concealed above the acoustic ceiling. Displays for multimedia presentations are mounted on each of the inner wooden border’s four sides, easily viewable by everyone present.

Function and design go hand in hand. An acoustic suspended ceiling, complemented with two different shades of free-hanging units, ensures effective muffling of noise that could otherwise be annoying in the dining room. During lunch hour, people must be able to relax and recharge their batteries for the rest of the day. A lowered sound environment helps.

A further element to take into account is the type of job, which may be more or less affected by noise, depending on the requested level of mental activity

(Martellotta 2011)

Colours code à la Kia: red is one of the colours in Kia’s global Space Identity Guide which the architects followed their work on the new Dutch head office. Above, acoustic ceiling with integrated lighting.

Architect:
D+Z Architecten+Projectmanagers

Acoustic systems from Ecophon:
Ecophon Focus™ Dg
Ecophon Solo™
What The Eye Doesn’t See

Is it possible to combine an open office together with unlimited space for individual needs? This question affects architects, users and acousticians all over the world.

A HIGHLY TOPICAL BOOK, “About the Office Landscape’s Acoustics & Architecture (What the Ear Hears but the Eye Doesn’t See)” (published by Arkus), outlines a way that can result in a successful combination. The book is by the Swedish professor Björn Hellström, who is also an acoustic designer and lectures in architecture.

Interaction at any price?
Björn Hellström declares in his book that increased interaction and communication among colleagues at work are two important forces behind the rapid growth of open offices.

But – are interaction and communication always positive?

Yes, hypothetically, according to Hellström, adding, “if much of the communication were to be soundless.” The problem is that sound is generated at the same moment the interaction starts, such as when someone passes another person’s work station and starts a conversation. Sound that enriches those involved in the conversation but that can disturb others in the vicinity.

Apart from solving room acoustic questions, architecture’s functional aspects have to be examined. Two key concepts that should be taken into consideration are positioning and movement.

Analyse and design open offices
According to Hellström, in order to analyse the connection between positioning and movement, use of a method called space syntax is an advantage. How do the rooms function in relation to each other? How often is a room used as regards to

Björn Hellström gives a warning for a “one size fits all” philosophy when planning open offices. On the contrary, in each project it is vital to carefully study how spatial structures can best be adapted to mutual and individual needs.
movement? Space syntax allows us to study and analyse people’s behaviour (interaction) when they spend time in a given space. The method is also useful in designing offices. Space syntax analysis usually reveal that the quality of the positioning of an office’s individual work stations can vary markedly. This in spite of the ambition having been to create a flat organisation and full mobility in that office. It appears that the work stations are often organised in structures. For example, many work stations are set up round a single stairwell or entrance, which influences the patterns of movement. With two stairwells or two entrances, the movement pattern is more even. Professor Hellström emphasises that, when planning open offices, one must be aware that different plan views affect positioning quality and movement patterns.

**What the eye doesn’t see, the ear hears**

Björn Hellström thinks that one drawback when planning open offices is that focus is invariably placed on the visual aspects, with the role of the sound environment in the design and perception of a room being missed. One’s field of view is limited. Hearing, on the other hand, functions within a range of 360 degrees and can also pick up impressions from unseen activities on the other side of a wall. Sound is spatial.

The goal should be to customise the acoustics to be in harmony with the room’s activities. A few problems should be highlighted in this context. How are customers and others who are lay people in the field of room acoustics to be able to specify their wishes when most of them don’t know how to express themselves nor know what the possibilities are? How is the acoustics consultant to obtain a justified influence on the planning? And does the consultant communicate with the customer in the right way?

**Acousticians – assert yourselves!**

Instead of focusing mainly on sound classes, absorbers and dB-levels, Björn Hellström recommends that acoustics consultants assume a more assertive attitude. His advice is to emphasise, for instance, the spatial criteria of sound, its effect on people, and how sound can be designed.

One important measure for solving acoustic problems is via organisational measures in the room, to control where communication will take place. The positioning of entrances, stairwells and passages affects what personal meetings will occur. In addition, common functions can be located in order to promote meetings, thereby reinforcing a group’s affinity.

With the conscious design of plan views, décor, furnishings, installations and activities, it is possible to influence qualities relating to space, movement, integration and communication.

Regarding the development of the open office landscapes of the future, Björn Hellström thinks one should ask oneself: Am I productive because of the openness of the office? Or is the office productive because I am open?

There is no question that noise is among the most consistently reported problems in open-plan offices.

[Navai, Veitch 2003]
OPEN OFFICE WAS A BOOST

After just a few months in the new, open premises, the earlier worry and scepticism were transformed in a positive direction. The ECO magazine asked why.

The result is stylish, light and fresh. Now everyone can communicate with each other and still not suffer unnecessary disturbance, thanks to the well planned sound solution. An overall acoustic ceiling in the best sound absorption class (A), as in the picture, is one of the ways of fulfilling the demands of good room acoustics.
Prior to the move, many employees were worried that the work environment would deteriorate when they were sharing an open office landscape on the same floor. One of the sceptics was Jessica Jonsson, educational materials developer and editor, who has worked for eleven years at Gleerups Utbildning in Malmö in southern Sweden. “I have had jobs before where I’ve sat in an open office and I always thought it was difficult to concentrate. It was too noisy,” says Jessica.

In meetings with management, some employees referred to articles indicating that open office landscapes resulted in poor effectiveness and a high level of stress and sick leave.

Participation in planning
For Gleerup’s management, the move was strategically important and they decided early on that the new premises should have a well planned working environment with the best possible sound, air and light quality. The staff were also to participate in the planning of the new premises. One employee representative from each department was appointed to join an advisory group. The group also enlisted the help of the consultant company Position A, which helps organisations to create good work environments by ensuring that the premises are adapted to the employees’ interests and needs.

Anna Boman of Position A, who had noticed the employees’ scepticism and frustration, invited Frans Davidsson, concept developer for room acoustics at Ecophon, to Gleerups. The idea was to let an expert deal with the staff’s misgivings. He answered questions and explained about how a good sound environment can be created in open offices by making the building and the office furnishings function in harmony.

Good sound in open offices?
“An open office landscape does not need to be contradictory to a good sound environment. It’s all about designing the interior correctly, using sound absorbing materials and positioning the groups so that people are seated sensibly,” explains Frans Davidsson.

“You want to be able to hear what the people you’re working with are saying, not what’s said at the other end of the room. It’s the companies that don’t take the sound environment into consideration when they remove walls and seat employees in open landscapes that end up with a dreadful sound situation,” he says.

Gleerups Utbildning decided to use absorbers and sound absorbing screens at each desk. The employees were offered headphones, and a number of silent rooms were constructed to which people could go for longer telephone calls or when having to do something requiring more concentration. The copying machines were placed in small, separate rooms for minimum disturbance. A modern fitted carpet that muffles impact sounds as well as absorbent ceilings that reduce the noise level had already been installed at the time of the move.

Six months after the move, Gleerups Utbildning conducted an employee sur-
Survey: Staff are pleased

Six months after the move in mid-July 2011, an employee survey was conducted about the move to Öresundshuset, and the answers are as follows:

- 58% soundproofing is good
- 13% soundproofing is very good
- 85% satisfied with their positioning
- 44% seldom disturbed by others
- 40% occasionally disturbed by others

The open office landscape means:

- 40% ... a definite increase in contact among colleagues
- 29% ... a certain increase in contact among colleagues
- 15% ... a definite increase in contact among departments
- 40% ... a certain increase in contact among departments
- 34% ... a definite increase in participation
- 15% ... a certain increase in participation
- 19% ... a definite increase in job satisfaction
- 52% ... a certain increase in job satisfaction

Survey. Almost 71 per cent thought that the sound absorption was good or very good, and 85 per cent were pleased with their positioning. And almost 70 per cent felt that the new work environment had a positive effect on the contact between colleagues. One of the people who had changed their mind after the move was Jessica Jonsson.

Soundproofed and more social

“I’m more positive now than I was prior to the move. I felt that management took our misgivings seriously. My boss, Sirpa Sternad, let me decide how and where I wanted to sit,” says Jessica.

“It’s a little more social now. I used to sit with the door shut. Now we can see each other. It’s easy to ask a colleague questions. People can still distract me, but the company has done its best to shield the work stations. I wanted to sit in a corner, and that’s what I got. I’ve got screens round my work station, both at the side and in front. The room is soundproofed. The air and light in the room are good.

The silent rooms are important for me. I go there when I need peace for a telephone call or when I have reading to do. There are 17 of us in my area, and we share three of these rooms, which is enough.”

Facts Gleerups Utbildning AB

In 1826, the young, enterprising Christian Wilhelm Kyhl Gleerup moved from Copenhagen to Lund in southern Sweden. That same year he opened a bookshop and started running a publishing business.

That business has progressed from being a traditional publisher to also offering digital solutions for teachers and school heads.

Gleerups Utbildning now has about 60 employees and is one of Sweden’s leading players in the area of successful teaching.

“I am more positive now than I was before the move from our old office into our new, open premises.”

Photo: Martin Palvén

Acoustic systems from Ecophon:
Ecophon Master™ A
HOW FAR CAN YOU HEAR IN YOUR OFFICE?

IF THERE IS ANYTHING you should ask yourself when designing an office, it is this: How far do I want the sound to travel before it stops disturbing people? Should I accept that it takes 20 metres for the sound level of someone’s voice to drop to a comfortable non-distracting level, or should I reduce this to 10 metres so that workgroup-to-workgroup distractions are minimized?

It has long been well established in the acoustic field that, in open office spaces, traditional acoustical measurement qualities such as reverberation time are insufficient for defining the resulting sound environment. Research in the field confirms instead the fact that, in open plan solutions, it is the distance that the sound travels that influences how people experience the sound environment. The need for redefining the measurements in open plan spaces was identified in the acoustic community and, after many years of work and research, this resulted in a standard from the International Organization for Standardisation, ISO, which was finalized in 2012 – the ISO 3382-3:2012.

The standard, which focuses on distance-dependent acoustic qualities, enables us to plan and monitor a good working environment that makes it easier for people both to communicate and concentrate, simply by fulfilling four specific target values. The values measured according to the standard can, as presented at the Euronoise 2012*, be converted into a single target value – a “distance of acoustical comfort” – which can be incorporated into open space office design.

By defining an acceptable speech level at a certain work station, it is possible to obtain the distance in the office that is needed between a person talking and that work station. The distance of comfort provides a good indication of how to proceed in the acoustic design work relating


** Nordic Innovation strives to stimulate innovation in the Nordic region through cooperation between national innovation actors within and outside the region.


In the Nordic Innovation report “Acoustic design of open-plan offices” **, it was found that in a Swedish call centre, when reducing the distance of comfort from more than 16 m before acoustic refurbishment to less than 4m thereafter, the proportion of people rating their acoustical environment as “bad” was reduced from 40% to 10%, and the proportion rating it as “good” increased from 20% to 60%.
to absorbent materials, screens, furnishing etc. The acceptable speech level depends among other things on design requirements and can vary depending on the activity needing to be supported in that zone or room.

A difference that can be felt
Thanks to the standard ISO 3382:3:2012, it is now possible, in a given office, to state that - “I want the distance of acoustical comfort to be reduced from the current 20 m to 10 m” and thus ensure that someone’s voice (~ around 60 dB) falls below 40 dB within a radius of 10 m instead of 20 m [see figure].

Would you like to know more? Feel free to contact our OFFICEnet members for advice.

Keep in mind additional factors that influence the sound environment, such as:
- Information about advantages and disadvantages of open plan offices
- Including sufficient number of silent rooms
- Placing people in the right teams
- Minimising through-traffic and impact noises
- Establishing good acoustical etiquette
- Providing portable technical solutions
MOSCOW OFFICE AT FOREFRONT
FOR GOOD WORKING ENVIRONMENT

Satisfied expressions after the rebuilding of Schneider Electric’s Moscow office. The company took the unexpected step of enlisting the help of consultants to design the work environment – still unusual in Russia.

When Global Company Schneider Electric rebuilt their Moscow office, they chose a route that is common in much of the rest of Europe but still rather unusual in Russia. They hired consultants to design the work environment. A step that certainly paid off.

“Our aim was to achieve the best possible acoustics and we got a lot of advice from our consultants,” says Svetlana Pronina, head of administration at Schneider Electric in Moscow.

“The consultants recommended a silent ventilation system and highly absorbent acoustic ceilings. The aim was to keep the noise level and sound propagation down in the open office landscape, both as a whole and at each individual work station.”

Interruption noise is more disruptive than a continuous schedule. These effects occur more strongly with speech noise and for resource-demanding cognitive tasks. (Szalma, Hancock 2011)

A good lesson for prescribed standards
The quality of the work environment exceeds the recommendations of local standards by a good margin.

“The room acoustics played a central part in the efforts to create a really good office environment.

To gather the employees’ thoughts and opinions, working groups were formed with all the departments represented. The groups’ ideas were a driving force in implementing positive changes in the office design.

Being a modern office landscape, there are of course separate meeting rooms where people can meet and confer without causing any disturbance.

“The office environment is very comfortable and everything is very logically organized,” says Dariya Grigoeva, to the right, who works with administration.
The staff are extra proud of their idea of naming the meeting rooms after famous scientists in the fields of physics and electronics, such as Einstein, Newton and Ohm. The next step will be to add details to the interiors of these rooms that are reminiscent of the scientists in question.

New energy through relaxation
The coffee zones are a popular element in the new office. Here the architects from Line Architect have introduced lighting that can be toned down to a pleasant level, ergonomic furniture for the best kind of comfort and, of course, good room acoustics that are gentle on the ear. Everything for the creation of a pleasant, relaxing environment to help generate new energy for tackling the day’s work.

To keep the level of creativity and inspiration up, and not to miss any flashes of genius, there are flipcharts placed around the office.

A total of around 900 people work in the office, which has an area of just over 9,000 square metres.

Room acoustics played a central part in the efforts to create the best possible office environment.

“Our aim was to achieve the best possible acoustics and we got a lot of advice from our consultants”

Quick facts
Schneider Electric
Schneider Electric is a global energy specialist with more than 130,000 employees and operations in over 100 countries. The company focuses on energy effectiveness and offers integrated solutions in the areas of automation, uninterruptible power, power distribution and power installation.

Schneider Electric is listed on the French Stock Exchange in Paris and sales amount to more than EUR 20 billion per annum.

Architect:
Line Architect

Acoustic systems from Ecophon:
Ecophon Combisan™
NATURAL STEP WITH OULU’S NEW BUILDING

WHEN NORTHERN FINLAND’S largest town, Oulu, moved parts of its municipal operations, it was to a building with a distinct eco-profile. The best possible use has been made of natural daylight in the five-storey building that covers more than 11,000 square metres.

The attractive, brownish red facade is of a material that is very popular among architects at the moment and signals a clear focus on natural materials.

Inside, the construction is such that, if a different layout of rooms would be needed, it could be done without extensive, costly measures having to be taken. As requirements alter, open offices could easily be made into cell offices, and vice versa.

This is all very much in line with present environmental trends, in this case an environment in an office building for approximately 260 employees. The Oulu Environment Building accommodates the Technical Centre, Building Regulations Department and Environmental Department of the City of Oulu as well as the technical services of nearby municipalities that have been merged with Oulu.

As almost half of the area consists of office landscape, the issue of room acoustics occupied a central role during the planning of the new building.

The architect in charge was Jyri Kotilainen of the Vauhtivuori Oy firm of architects.

“In addition to sound absorbing materials, other important elements include the sloped ceiling surfaces and the wooden glazing beads used in the glass walls. They scatter the sound and shorten the reverberation time”, he explains.

Another acoustical measure was to install wall absorbers on at least two of the walls of the office landscape.

In order to reduce the level of disturbing noise, special rooms have been made for speaking on the telephone, and also separate areas for the copying machines.

“For the central corridors, we chose acoustic tiles with the DG edge. This specific feature was chosen because the tiles conceal tightly-packed technology and therefore have to open directly downwards when they are demounted”, continues Jyri Kotilainen.

To easily be able to reorganize the building, the air conditioning and lighting have been planned with such foresight that new room divisions can be constructed without excessive costs being involved.

This means that the lifetime of the building is extended considerably.

No throwaway thinking

The lifetime of the facade will also be long as it is clad with a naturally-based material - steel. But it’s not just any steel – it is corten steel. This is a type that was developed in the USA in the 1930s and it is alloyed with copper, withstanding corrosion better than carbon steel. Corten steel has been having a global renaissance among architects, and is being used for more than just: the bridges that are the most common use for this rust-resistant type of steel.

Apart from good room acoustics, the possibilities for modifying the premises and the use of the natural light were also areas of priority.

“Some of the employees used to have their own offices and have just started working in an open-plan office. It was therefore very important for us to have an environment where people can concentrate and where the working atmosphere is peaceful”, says the administrative manager Päivi Saari.

“We have an excellent, light working environment that is also quiet enough. Now that we’re all working in the same building, cooperation between different units is much easier than it used to be.”
The corridors are an office’s busiest areas. The highest sound absorption class (A) restrains the sound levels and sound propagation and, with an acoustic ceiling like this, it is easy to access the installations above.

“For the central corridors, we chose acoustic tiles Ecophon Focus™ with the Dg edge. This specific feature was chosen because the tiles conceal tightly-packed technology and therefore have to open directly downwards when they are demounted”, explains architect Jyri Kotilainen.

Spacious, bright and welcoming.

Architect: Vauhtiviiva Oy
Acoustic systems from Ecophon:
Ecophon Focus™ Dg
Ecophon Wall Panel™ A

For an open plan office the most important component affecting the acoustical privacy is typically the ceiling reflection.

[Wang C, Bradley 2002]
HOW DO SCREENS WORK?

Are screens always necessary?
In most cases, an absorbent suspended ceiling is sufficient acoustic treatment for an ordinary room. Occasionally, acoustic demands have to be reinforced due to the activities taking place in or the architectural design of the rooms. In such cases, screens or other solutions such as wall panels can be the answer.

When is it good to have screens?
In acoustically challenging environments, such as open spaces. To allow privacy of speech between workplaces in open areas or to create less noisy areas in industrial premises or larger dining rooms, it could be very useful to install shielding screens.

How do screens work?
The main purpose of a screen is to act as a shield between the sound source and the receiver, thereby reducing the noise level at the receiver position.

What about the location of screens?
Generally, a screen should be located close to the sound source or the receiver. An intermediate location is less effective.

How is the effectiveness of a screen measured?
The reduction of the sound level at the receiving point when the screen is installed is called the insertion loss. The insertion loss is a common way of quantifying the effectiveness of a screen.

How high does a screen have to be?
To be effective, the sound source should not be visible from the receiver position. Research indicates that a screen should have a height of at least 1.3 m from the floor, so that the person who is the sound source (e.g., on the telephone) and the receiving person (colleague) are below the level of the screen when seated.

What can be done to increase the effectiveness of a screen?
Introducing an absorbent ceiling, wall panels or other types of sound absorbing material will increase the shielding effect of a screen. In open-plan offices, the ceiling should preferably be fully covered with a highly absorbent suspended ceiling. If work stations are located far from the walls or if absorbent wall panels are fitted on the walls, the acoustic environment would be similar to that existing outdoors, and the effects of screens could be fully utilized.

How does a screen improve the acoustic environment in an open-plan office?
Using screens in open-plan offices is often a useful tool to increase the privacy between neighbouring work stations. A screen combined with a ceiling with a high AC-value, at least 180 according to the ASTM standard E1110, will improve the insertion loss and reduce noise transmission between work stations. It is important to note that screens affect medium and high frequency sounds, such as speech, more than low frequency sounds.

Do screens have to be sound absorbing?
Generally, it is of benefit if both sides of a screen are covered with thick, porous absorbers. In cases where several work stations are situated in a row and are separated by screens, the absorbent material will prevent repeated reflection between screens and thus reduce the sound level between them. [See illustration.]
Screens with absorbent material on both sides will also contribute to the total sound absorption in the room and thus to the room’s overall acoustic environment. In rooms where the ceiling may not be completed covered with an absorbent suspended ceiling, such as in cases of thermally activated building systems (TABS), the additional absorption supplied by the screens will be significant for the acoustic conditions in the room.

**Besides the insertion loss, you’ve mentioned several other things such as absorption and dimension, that are important for a screen’s performance. Are these reflected in a standard?**

Not at present. However, there is an ongoing revision of the standard ISO 10053, which could lead to the inclusion of more qualities than just insertion loss, such as equivalent absorption area, when measuring the effectiveness of a screen.

![Graph showing sound pressure level comparison between non-absorbing and absorbing screens.](Photo: studio e/rickard svensson)

**In the case of non-absorbing screens (red line) between two opposite screens, the sound pressure level does not continue to decline with distance (straight line). Due to the multiple reflections between the non-absorbing screens, the sound level is more or less constant between the screens. In the case of absorbent screens (yellow line) the sound pressure level continues to decline also between screens, as we move further from the sound source.**
CONSIDERATION
FOR BOTH THE OUTDOOR AND INDOOR ENVIRONMENT

Some examples of “green buildings” that house office premises, where people and environment are main priorities. The sound environment, not least, has been high up on the priority list, with Ecophon having contributed knowledge and advice and supplied acoustic systems. The buildings meet the requirements for either LEED, BREEAM or HQE.

LEED in Sweden
Rating: Gold.
Property owner: Vasakronan
Offices: 10,426 m²

Architect: Reflex Arkitekter
Acoustic systems from Ecophon:
Ecophon Focus™ Ds
**ECO - FOR SUSTAINABLE DESIGN OFFICE**

**BREEAM in the UK**
Durham County Council, Seaham, St John’s Square. The building holds a public library and café as well as offices for Durham County Council and Seaham Town Council. A building project with thermal joists (TABS). BREEAM-classified. Rating: Very good.

**Architect:** Mouchel  
**Acoustic systems from Ecophon:**  
Ecophon Focus™ E Wing  
Ecophon Solo™

**LEED in Germany**
MK3 North Station, Deutsche Bahn AG, Berlin. The 9,550 square metre site, in close proximity to the new headquarters of the Federal Intelligence Service in Chausseestraße and a few minutes’ walk from the Central Station Berlin, is planned for the expansion of the central administrative departments of the Deutsche Bahn AG at North Station. LEED commissioning. Certification: LEED certification (gold)  
Gross floor area: 50,980 m²  
Implementation: 2009–2010

**Architect:** RKW  
**Acoustic systems from Ecophon:**  
Ecophon Master™ B

**HQE in France**
The MAAF insurance company has invested in thermal joists to save energy at their office in the French town of Chauray. It is classified according to HQE (Haute Qualité Environmentale) – a French environmental classification system – as a BBC-building (Bâtiment Basse Consommations) and BEPOS (Bâtiment à Energie POSitive). Offices: 8,100 m²

**Architect:** Hobo Architecture  
**Acoustic systems from Ecophon:**  
Ecophon Solo™  
Ecophon Gedina™

Photo: Nicolas Claris  
Photo: Rainer Machner
AESTHETICS AND ACOUSTIC ENVIRONMENT GO HAND IN HAND

As ceiling and walls are the largest free areas in a room, that is where we can influence the whole spatial feel. They are also the surfaces that are so decisive in meeting the requirements for a good acoustic environment. Make the most of them!

THERE IS TODAY a wide variety of aesthetic sound absorbers and acoustic systems that can help to create a room’s character. Ecophon’s extensive range meets all aesthetic needs as well as the important demands for achieving the best sound absorption class (A).

Create your own room!
A host of shapes, colours and patterns for walls and ceilings, free-hanging sound absorbers and panels that can be mounted at different distances. The possibilities for creating a room of your own are almost endless.

Ecophon Wall Panel™
Ecophon Wall Panel™ is a system of wall absorbers in a wide variety of colours and patterns, developed by professional designers.
Visit www.ecophon.com and search for Ecophon Solo™ and Ecophon Wall Panel™ and let the new range bring you some inspiration.

Ecophon Solo™
Ecophon Solo™ free-hanging sound absorbers come either in 10 geometric shapes in the Solo Regular family or, for someone wanting to create their own particular shape, in Solo Freedom. With three different hanging systems, there are lots of possibilities for individual solutions. Ecophon Solo is also available for walls and can be mounted at different distances.

Ecophon Wall Panel™ C/ Muralis, pattern: Glory at Ecophon’s office in Prague, the Czech Republic.

Ecophon Wall Panel™ C/ Texona in the colours Chilli, Sea salt, Tangerine and Garlic. Mounted with Connect Thinline and Structure profiles at Wooninc’s office in Eindhoven, Holland.

Ecophon Solo™ Square in Whitstable Community College, the UK.
This magazine focuses on the sustainable design of our indoor environment. Our aim is to highlight the indoor environment, in both a practical and an aesthetic perspective, and to make people, effectiveness and wellbeing our first priorities.

People use speech and hearing to exchange ideas, opinions and experience. A good acoustic environment increases our feeling of wellbeing.

ECO – FOR SUSTAINABLE DESIGN will be available in four different versions, one for each of our concept areas: office spaces, educational premises, healthcare premises and industrial premises with hygiene requirements.

We want to provide you with the necessary knowledge and advice for influencing or making the right decisions during the planning of environments where people spend time, work and communicate.

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