

ECOPHON OFFICE GUIDE

WELCOME TO THE SOUND OF NATURE

SUSTAINABLE
OFFICES

Get in
the zone

6 TIPS

ON HOW TO IMPROVE
THE SOUND ENVIRONMENTS
IN OFFICES

Learn all about
**activity based
acoustic design**

Ecophon
SAINT-GOBAIN

A SOUND EFFECT ON PEOPLE

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The sound of nature

IN THE OFFICE

We've spent hundreds of thousands of years perfecting our hearing outdoors. In nature. Yet today we spend up to 90 per cent of our time indoors. Isn't it time we enjoyed the sound of nature there too?

What if we can imitate natural sound environments in an office by learning from our origins? To make spaces for our thoughts to roam free. Our ideas to breathe. Yet 70% of us are not happy about the level of noise in our workplace.¹

Ensuring comfortable acoustics isn't just about making people feel good. It's about raising performance. The less we are disturbed, the more productive, efficient and creative we become.

That's why for more than 50 years, Ecophon has been working on creating indoor environments that resemble what we experience in nature.

So your office feels more, well, natural.

PUTTING THE BALANCE INTO WORK-LIFE

There was a time it was cool to work all day - and all night. To burn the candle at both ends. But today we have to provide a good work-life balance to keep our co-workers happier. That way we help reduce stress and the chances of burnout, two common health issues in the workplace. Offering a good sound environment is one component to worker happiness and health.

Enhance your workplace

WITH ACTIVITY BASED ACOUSTIC DESIGN

Are you in an open-plan office? Look around. And listen. To people talking on the phone, working in teams, having meetings, concentrating on their computer or brainstorming. Sound bounces off walls, ceilings and floors and creates echoes. People raise their voices to be heard and the overall sound level gets higher. It's a poor working environment.

But it's not enough to place people in different sections of an office. Under bad acoustics conditions, speech spreads everywhere. All different activities require their own acoustic solution. A solution that enhances co-workers' job satisfaction, job performance and overall wellbeing.

The answer is Activity Based Acoustic Design.

ACTIVITY

What will people be doing in the space? Talk on the phone, teamwork, focus on their computer or something else? How much time is spent communicating?

PEOPLE

Who performs the activity? Are they many or few, old or young? Do they have any special needs?

SPACE

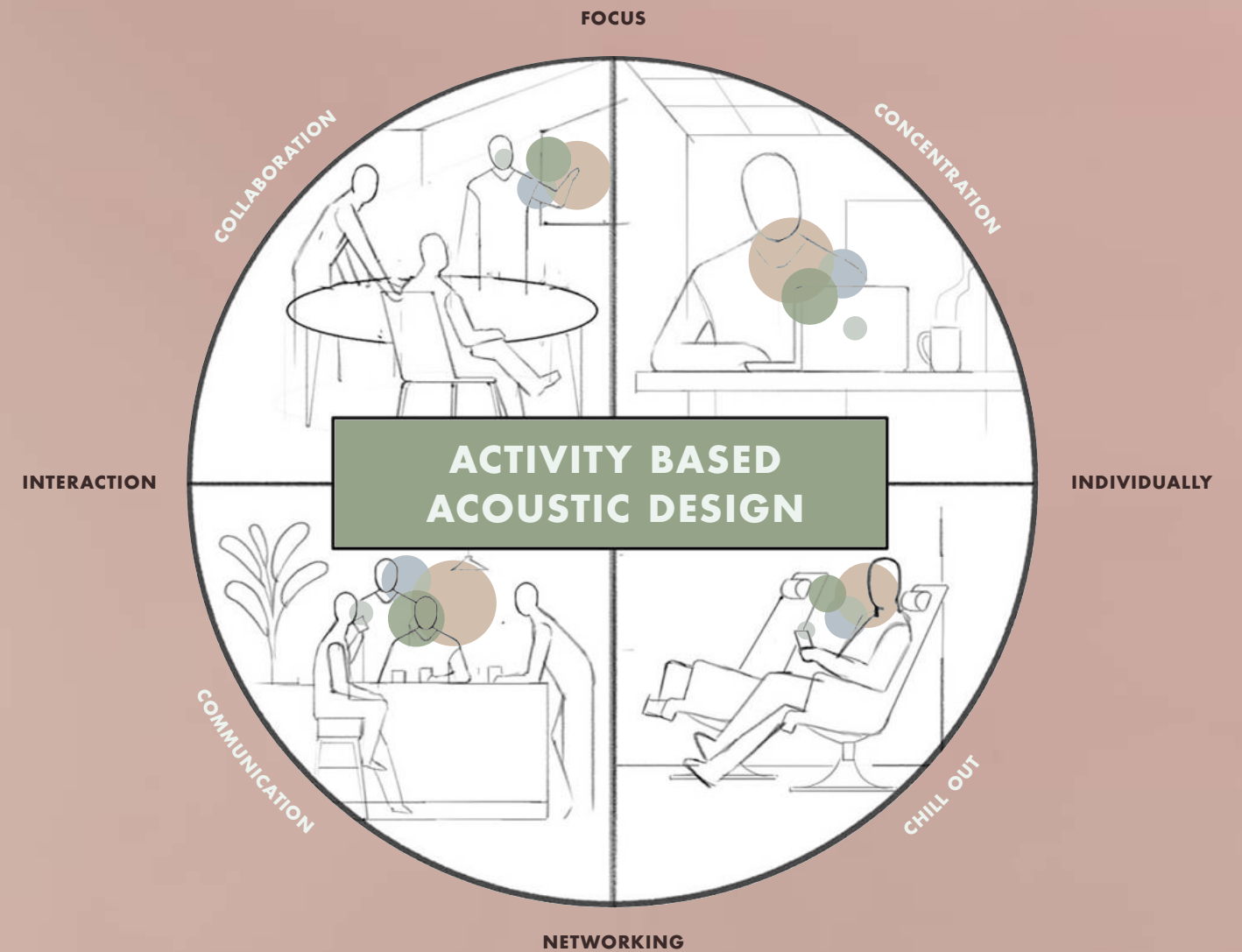
Is the space big or small? Where is it situated in the office? What spaces are next to it and what activities are performed there? Does the building have bare concrete walls, ceilings and floors? Are there fans, projectors or other sound sources in the space?



Sufficient acoustic treatment reduce error rates of office workers with **10%**⁵

THE FACTS:

- Noise exposure correlates to absence due to sickness³
- The top 25% workplace performers are protected from disruptions⁴
- The biggest cause of lost productivity in open workplaces is conversational distractions⁵
- It takes around 25 minutes for a co-worker to return to the original task after an interruption, and another eight minutes until the co-worker has reached the same level of concentration⁶
- The cost of the people is 82% of the total cost of an office over ten years²



A GOOD ACOUSTIC ENVIRONMENT CAN:

- Reduce adrenaline levels by 30%⁷
- Improve task motivation by 66%⁷
- Increase performance during tasks that require concentration by up to 50%⁸
- Improve mental arithmetic performance by 20%⁹

Get in

THE ZONE

Our workplace needs spaces for working individually and other zones that encourage social interaction.

Quiet, high-focus areas are designed for work tasks that demand undisturbed concentration.

Chillout zones offer a comfortable environment for rest and relaxation or low-intensive networking.

GO TO THE ZONES



WELCOMING AREAS: We need to absorb sound, hinder echoes and improve speech clarity. Keeping conversations at the reception desk from spreading throughout the space.

Let's be more welcoming, use a sound-absorbing ceiling with good absorption qualities, add lowered sound absorbing free-hanging units directly above the reception desk and wall absorbers on the wall behind the desk.

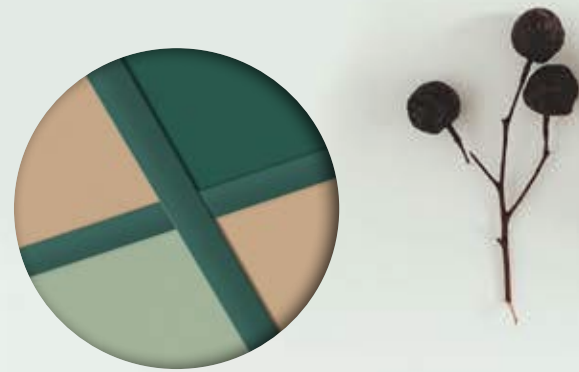


MULTITASKING: Each working day includes a lot of different things, from calling on the phone to concentrating on a computer to presenting and brainstorming.

So how do you stop noise from spreading and disturbing co-workers while people are multitasking? By installing a sound-absorbing ceiling and sound-absorbing screens dividing people into groups.

TEAMWORK: Having meetings, discussions and work sessions are all part of the job, often done in semi-open spaces or completely open spaces. You need to keep sound from spreading, prevent sound levels from escalating and avoid people having to raise their voices.

Install sound-absorbing ceilings and wall absorbers, and sound-absorbing screens in open spaces.



BRAINSTORMING: Releasing creativity is lively and dynamic, often done in a "cool" meeting room. You need to avoid echoes and prevent sound from entering and leaving the space.

Sound-absorbing ceilings, free-hanging units and wall absorbers covering at least one wall will do the trick.

TALKING ON THE PHONE: Speech flows in all directions when people talk a lot on the phone, resulting in escalating sound levels and impaired speech clarity. So how do we prevent this?

By using a sound-absorbing ceiling with best absorption qualities at all frequencies, sound-absorbing screens dividing people into groups and wall absorbers on every possible wall space.



FOCUSING IN THE OFFICE: Everybody needs to focus without being disturbed and they need concentration spaces. You need to hinder wall-to-wall echoes, enhance speech clarity and to keep sound from entering and leaving the space.

The way to do this is through a sound-absorbing ceiling and wall absorbers on at least one wall.

FORMAL MEETINGS: We need to hear each other clearly – even during video conferencing – while preventing sounds from the meeting spreading through the office.

The solution is a combination of good sound insulation and absorption. Through a sound-absorbing ceiling, wall absorbers covering at least one wall, and preferably two adjacent walls.



INFORMAL MEETINGS: Informal meetings, either improvised or in breakout- or lounge spaces, are often where ideas arise and culture is built. But these short meetings often take place in spaces where other activities are taking place.

So how do we keep the sound levels from escalating and stop the noise from spreading? By installing a highly sound-absorbing ceiling, covering walls with wall absorbers, using sound absorbing screens near workspaces as dividers and where possible making sure these spaces are not too close to activities that demand concentration.

FOR A BETTER SOUND ENVIRONMENT AT THE OFFICE

#1 START WITH THE WHY

Research shows that a good sound environment at the office leads to increased well-being, less tiredness, better communication and concentration and increased job satisfaction.

#2 THERE IS NO ONE-SIZE-FITS-ALL SOLUTION

Each office is different. But there are some common denominators for a good sound environment: a small talk policy, separated spaces for quiet and socialising, and high-quality sound absorbing walls and ceilings.

#3 THINK THREE-Dimensionally

Sound moves in 3D, so look around and up. The ceiling should make sound dissipate rather than reflect it. Sounds bounce between hard surfaces. Adding sound absorbers to at least one of two opposing walls can do wonders for the sound environment.

#4 NEVER COMPROMISE ON QUALITY

Make sure you choose acoustic materials with an absorption quality of $\alpha_w = 0.9$ or higher – class A. Think as well about indoor air quality, fire safety and sustainability.

#5 FIND THE SOURCES OF NOISE POLLUTION

Office workers consider small talk the most disturbing noise. By placing acoustic materials and sound absorbers as close to the noise source as possible you minimise its effects. Get people who must communicate to sit near each other, and acoustically separate different work groups.

#6 USE NATURE AS A HALLMARK

Our sense of hearing has been optimised for outdoor environments through thousands of years. Today, we spend almost 90% of our time indoors in unnatural sound environments. You can design them to resemble the sounds of nature with proven long-term benefits for office workers.

COMPARATIVE NOISE LEVELS (DBA)

When you know what will happen in your space, you need to think about different acoustic qualities. Then it's much easier to find the acoustic systems you need. But in general, in office premises, it is not actually the noise levels (how many decibels) that is the main problem. It is more disturbance by speech and/or the propagation (spreading) of sound in an open space.



The illustration shows general and approximate noise levels for a rough comparison between outdoor and office noise levels. There is a difference between background noise levels and sound sources which this illustration does not take into account. 10 decibels is experienced as a doubling/halving of the sound pressure. Around 46 dB(A) is the ideal background noise level for workstations in offices.¹⁰

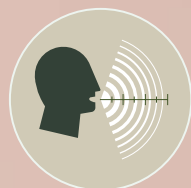
Understanding acoustic terms

SOUND PROPAGATION



Sound propagation is sound spreading through a space. If you don't prevent sound propagation, sound will spread, leading to increased sound levels and constant disturbance. You need a ceiling with at least absorption class A or $NRC > 0.9$. You will probably need to supplement the ceiling with sound-absorbing screens and wall absorbers. Since speech is the most common sound in offices it is important that sound absorbers perform well at frequencies where speech is predominant. Your ceiling should also have a high Articulation Class value.

DISTANCE OF COMFORT



This is the distance speech travels before it is perceived to be halved (58 dB to 48 dB). The shorter the distance – the better. A combination of acoustic ceilings with high Articulation Class values, acoustic wall panels and acoustic screens help you improve the distance of comfort.

BACKGROUND NOISE LEVEL



The combination of all sounds present in a space. A high sound level leads to people having to raise their voices to be heard above the surrounding noise – the so-called Café Effect. To absorb as much sound as possible, you need to make sure that all sound absorbers are of the highest quality.

REVERBERATION



Sound that bounces back to you. In smaller spaces and larger spaces with a lot of hard surfaces, it is easy for sound and speech to bounce off walls and surfaces and create echoes. These echoes make it hard to hear what you want to hear. To prevent reverberation, you need the right amount of absorption in the ceiling and on the walls compared to the size of the space.

SPEECH CLARITY



Being able to be heard and understood without having to raise your voice. Late reflections (echoes) and background noise from installations, such as office equipment and video projectors/beamers, reduce speech clarity and hinder communication. A combination of acoustic ceilings and acoustic wall absorbers help you create a space where speech clarity is high.



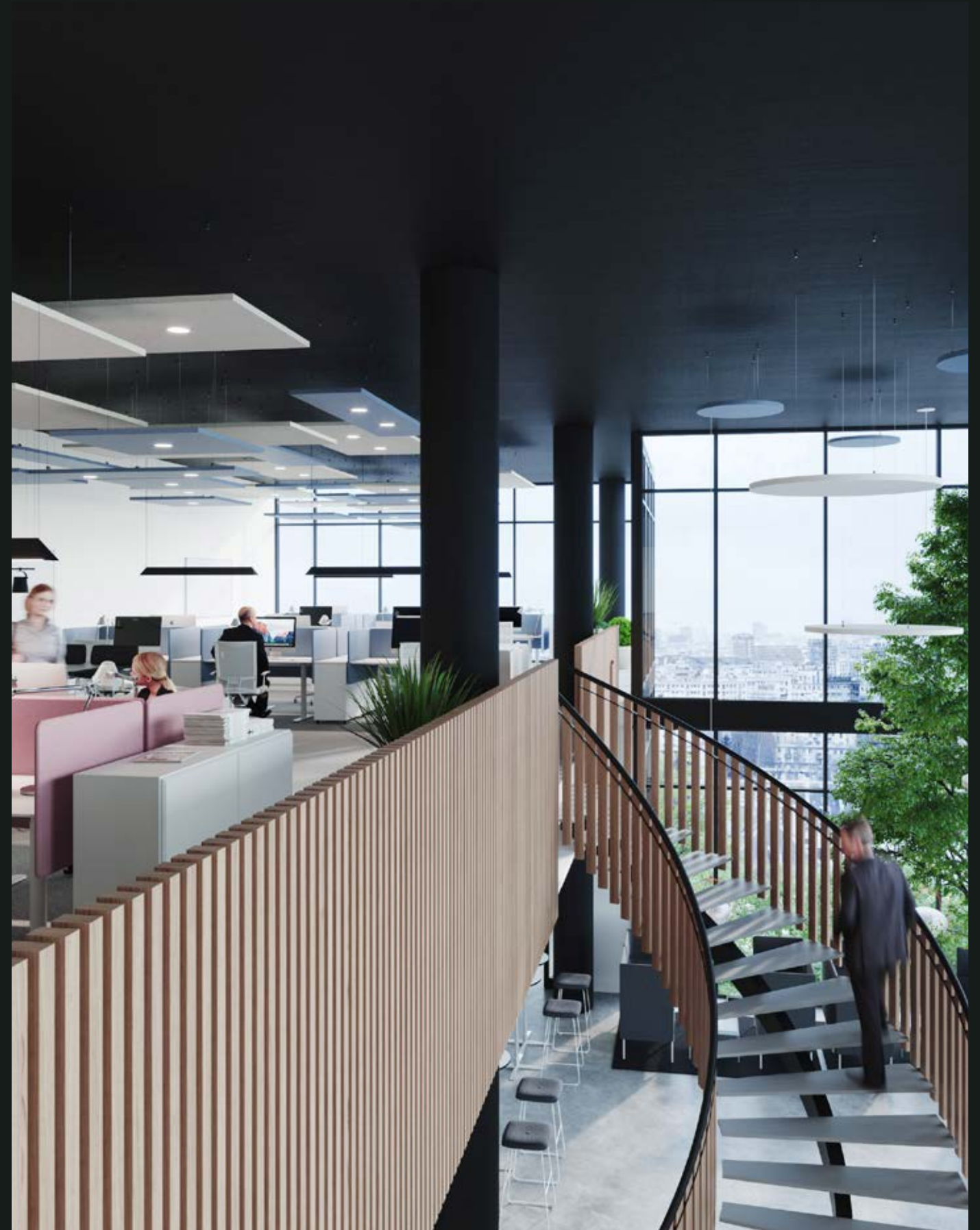


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A wall-to-wall acoustic ceiling is the easiest way to get a large sound-absorbing surface area into a space. Vertical absorbers such as screens and wall panels can be added for a truly optimal acoustic environment.



Sound insulation is important to reduce distractions and ensure speech privacy, especially in meeting rooms.



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Free hanging units can be an alternative or a complement to wall-to wall solutions.

Materials for better acoustics

CEILING

A fully covering suspended acoustic ceiling gives the best results. It provides the highest degree of absorption over the entire frequency spectrum. Suspended ceilings are the ideal way to handle this. If a suspended ceiling is impractical or undesirable you can choose other solutions like free-hanging units or directly mounted panels.

WALLS & SCREENS

For optimal acoustic conditions at least one of every pair of opposing walls should be treated with class-A acoustic material. You can also consider lesser absorbing materials such as curtains.

Sound-absorbing screens offer strategic acoustic performance throughout a workspace. Use them to add extra sound absorption, making the spread of speech shorter and improving the acoustic comfort.

GEOMETRY

As a general rule of thumb, a more asymmetrical room geometry will provide better acoustic conditions if absorbing materials are already present. Slanted or curved surfaces affect the direction of sound waves and ensure they are not reflected back and forth between parallel surfaces.

SCATTERING

As in an asymmetrical room shape, rough and uneven surfaces improve acoustic conditions when used in conjunction with absorbent materials. They scatter sound and prevent reoccurring reflections between parallel surfaces.

SOUND INSULATION

Dampening unwanted noise from the surrounding environment can lessen distractions and reduce noise levels. Sound insulation is also important between rooms to reduce distractions and ensure speech privacy for sensitive matters.

Make sure you maximise sound insulation from adjacent spaces where walls only extend to the height of a suspended ceiling.

A
good acoustic
environment can improve
task motivation by

66%⁷

Creating great places

TO WORK

Tomorrow's offices are where impromptu meetings happen. Where creativity and innovation occur. Where people talk and ideas flow.

CELL OFFICE VS NO OFFICE

The office is where four generations work under one culture, where cell offices and permanent workplaces meet mobility and agile working. The older generation may want that corner office with mahogany furniture and an office chair in leather.

For the next generation it may all be about communities, belonging in a permissive environment where they feel secure.

Research shows that by 2025, 75% of the global workforce will be Millennials.¹¹ They will change the way we build our work culture and physical surroundings.



Engaging work with colours

Add colour to both
grid and panels



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Research shows that colours contribute to a happier, healthier and more engaging work environment.¹¹ To make offices of the future places where unexpected meetings happen, where creativity and innovation flow.

There's so much you can do to create great places to work – where people are productive and thrive.

Our product ranges offer endless design possibilities using different colours, textures, sizes, shapes and installation methods. An acoustic ceiling is often the largest continuous surface in a room. It will affect not only the entire look and feel of the interior, but also the end-users' wellbeing.

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Sustainable Offices

...USES HEALTHY MATERIALS. Choose building materials and products with a safe chemical composition and low emissions of volatile organic compounds, use Health Product Declarations (HPDs) and certifications such as Eurofins Indoor Air as guidance to healthy materials.

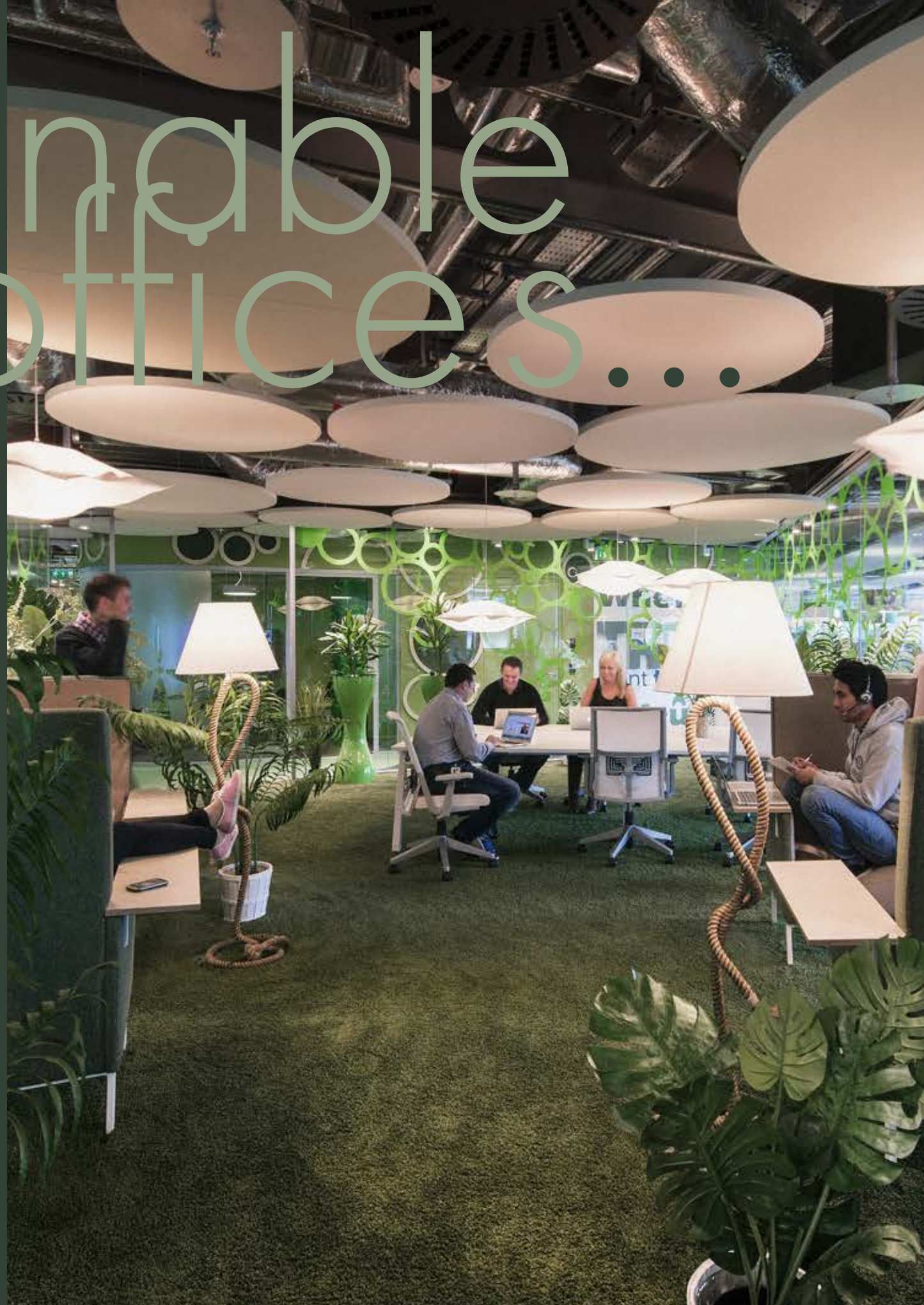
Ecophon solutions meet or exceed indoor air quality demands of the world's most respected regulatory bodies.

...MINIMISES THE CARBON FOOTPRINT. Reducing these emissions is a global challenge, choose building materials with a documented low carbon footprint throughout its entire life cycle.

Ecophon's glass wool acoustic panels have industry-low CO₂ emissions compared to other ceiling products containing carbon-intensive materials, such as cement-bonded wood wool.

...LETS THE LIGHT IN. Not only does maximising the inflow of natural light to the office contribute to user comfort and wellbeing, but it also limits the need for artificial light and therefore reduces energy consumption.

The surface of Ecophon's white and light ceiling panels contribute to the diffusion of natural light in office spaces.



...MAXIMISES THE CIRCULAR USE OF MATERIALS. Preserving resources is crucial to reduce the environmental impact of office buildings. Choose long-lasting building materials with high recycled content and 100% recyclability.

Ecophon's acoustic panels, steel grids and packaging are 100% recyclable and are made using high levels of recycled materials.

...OPTIMISES ACOUSTIC COMFORT. A sustainable office considers the social dimension by ensuring office workers the highest level of comfort and wellbeing. The green office is an office with great acoustics. Consult an acoustician for a tailored solution for your office, there is no "one-size-fits-all" solution.

Ecophon's absorption class A acoustic solutions improves the sound environment even in the most challenging offices.

...GOES FOR GREEN BUILDING CERTIFICATIONS. Green Building certifications is key, if you want an office with low environmental impact that promotes the office workers' health and wellbeing. Use indicators from respected third-party certifications, such as BREEAM and LEED, as criteria to maximise the office's sustainability performance.

All Ecophon solutions contribute to Green Building certifications. You can find all relevant documentation to support your Green Building certification on Ecophon Green Building Download Centre.

Products that bring

THE SOUND OF NATURE
TO YOUR OFFICE

ECOPHON FOCUS™



ENTERING A UNIVERSE OF DESIGN FLEXIBILITY

Focus ceiling solutions offer excellent acoustics with a wide range of design opportunities through different edge designs, forms, levels and installation options. Ecophon Lighting is easily and seamlessly integrated with Focus.

ECOPHON MASTER™



TAKING CARE OF DEMANDING ACOUSTICS

The Master family of complete ceiling solutions offers unrivalled sound absorption and speech clarity. Perfect for when you have a tough sound environment, such as a space where phones are used frequently.

ECOPHON AKUSTO™



EXPLORING A VERTICAL ART VARIETY

Akusto wall solutions and screens complement acoustic ceilings to create the best possible acoustic comfort. Akusto gives you opportunities to follow current trends in design using an array of colours, textured finishes and stylish profiles.

ECOPHON SOLO™



EXPERIENCING FREEDOM OF EXPRESSION

Solo free hanging panels come in several shapes and sizes. And you can even create your own shapes. Solo gives you total design freedom and the opportunity to create your own expressions while keeping up to date with sustainable architectural developments.



GET TO KNOW US

Let's Connect. Saint-Gobain Ecophon develops, manufactures and markets acoustic products and systems that contribute to a good working environment by enhancing peoples' wellbeing and performance. Our promise »A sound effect on people« is the core backbone of everything we do.

Use our digital tools, for the different phases of the building process, from the inspiration phase to specific maintenance instructions for your Ecophon products.

www.ecophon.com

By following us on Social Media you stay abreast of all the latest acoustic findings, acoustic research and product development, and can also see inspirational new reference cases.

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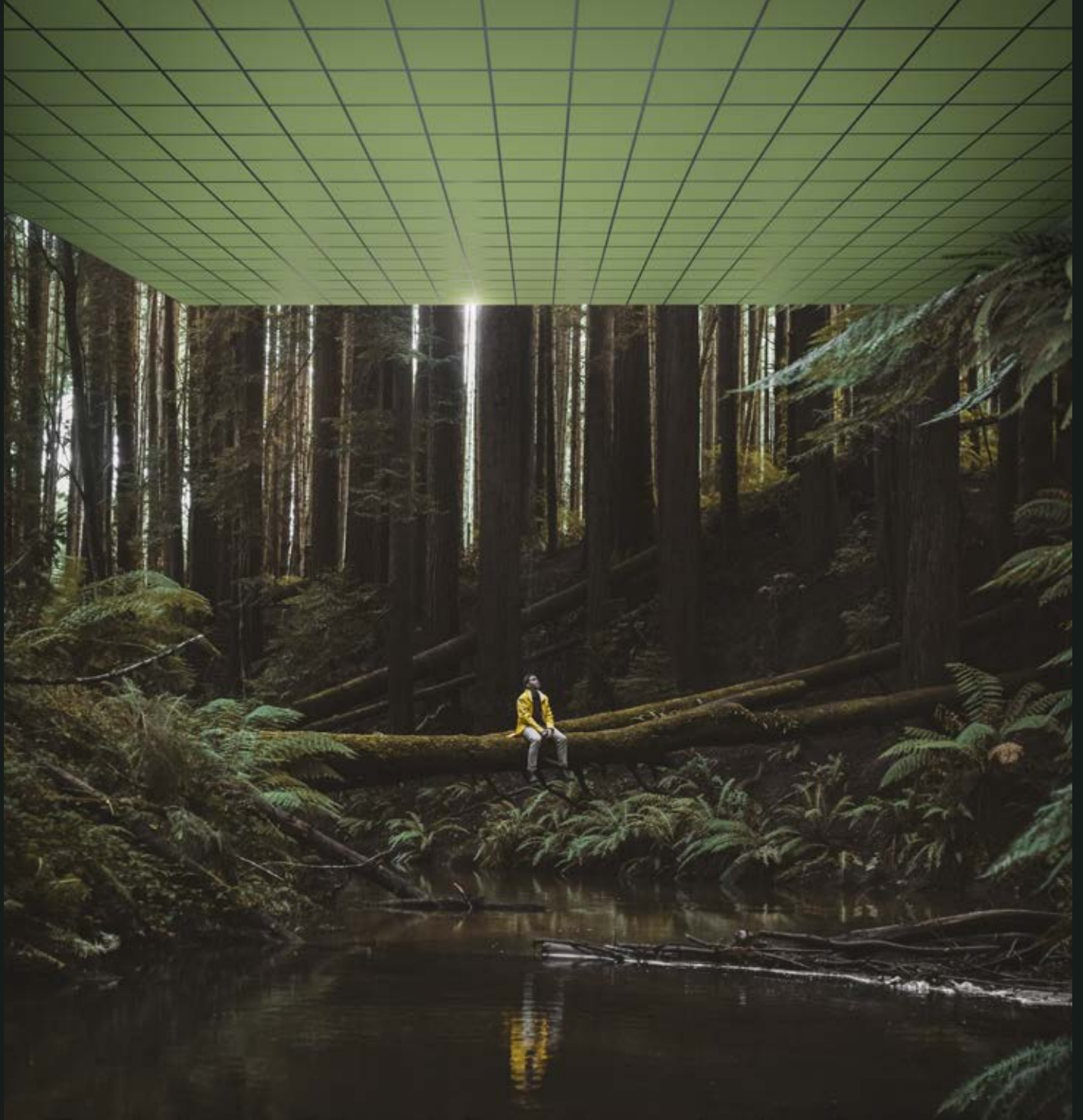
www.youtube.com/c/EcophonTV

www.pinterest.se/saintgobainecophon

www.acousticbulletin.com

REFERENCES

1. Leesman Index - Global Workplace Survey, 2020
2. Brill, Weidemann, BOSTI, "Disproving Widespread Myths about workplace design", BOSTI associates, 2001
3. Fried et al "The joint effects of noise, job complexity and gender on employee sickness absence", Journal of Occupational and Organizational Psychology, 2002, 75, 131-144, 1985, ICSE '85
4. DeMarco, Lister, "Programmer performance and the effects of the workplace", Proceedings of the 8th international conference on Software engineering
5. David M. Sykes, "Productivity: How Acoustics Affect Workers' Performance in Offices & Open Areas." Palgrave Dictionary of Economics, 2004
6. Mark, Gonzalez, "No Task Left Behind? Examining the Nature of Fragmented Work", University of California - Irvine, 2005
7. Evans, Johnson, Cornell university, "Stress and open office noise", Journal of Applied Psychology, 2000, vol. 85, no. 5, 779-783
8. Weinstein, University of California, Berkeley, 1974, "Effect of noise on intellectual performance", Journal of Applied Psychology 1974, vol. 59, no 5, 548-554
9. Banbury, Berry, "The disruption office-related tasks by speech and office noise", British Journal of Psychology, 1998, 89, 499-517
10. Parkin, Andrew, 'Lessons to be learnt from open plan offices and classrooms.', Internoise 2009
11. Big demands and high expectations, The Deloitte Millennial Survey, Deloitte, Page 2, 2014
12. Nancy, Kwallek, Work week productivity, visual complexity, and individual environmental sensitivity in three offices of different color interiors, 2007



Ecophon is the leading supplier of solutions for indoor acoustic environments that improve working performance, wellbeing and quality of life.

The principles guiding our work are grounded in our Swedish heritage, where a human approach and a common responsibility for people's lives and future challenges come naturally. Ecophon is part of the Saint-Gobain Group, a world leader in sustainable habitat solutions that balance the need for comfort and cost-effectiveness with energy efficiency and environmental responsibility.



Saint Gobain - making the world a better home.

