Novasonar Boxer 100-2 Stereo / Technical datasheet

The Novasonar Boxer 100-2 Subwoofer is especially designed for drywall installations which always demand the performance of a vibration-free design.

This subwoofer loudspeaker constructed for direct integration in the drywall comprises, on the front, a commercial gypsum plaster board and, on the back, a stable multiplex housing, in which the loudspeaker chassis are mounted.

The Novasonar Boxer 100-2 is the ideal subwoofer extension for all Novasonar flat-panel loudspeakers. It can be directly screwed to the substructure of the drywalls or ceilings without any difficulties and without any additional retaining brackets, and can then be smoothed flush with it.

The special ML Boxer technology means there are almost no vibrations on the loudspeaker housing. It is therefore not necessary to decouple the loudspeaker from the drywall construction because of distracting structure-borne vibrations.

The sound outlet in the form of a very narrow slot is located on the periphery of the loudspeaker front and can thus be positioned unobtrusively just above the skirting board or on the ceiling edge.

Versions and options.

Front: Gypsum plaster board (12,5 mm thickness), different materials on demand.

DIMENSIONS (HxWxD)	500 mm x 625 mm x 12,5 (86) mm
WEIGHT	11 kg
FREQUENCY RESPONSE	38 Hz – 200 Hz
POWER HANDLING	2x100 watts RMS
SENSITIVITY	82 dB 1 watts / 1 meter
IMPEDANCE	2 x 5 Ohms
CONNECTION	2 channels with standard cable
DESIGN	Gypsum plaster board

A & E Specifications

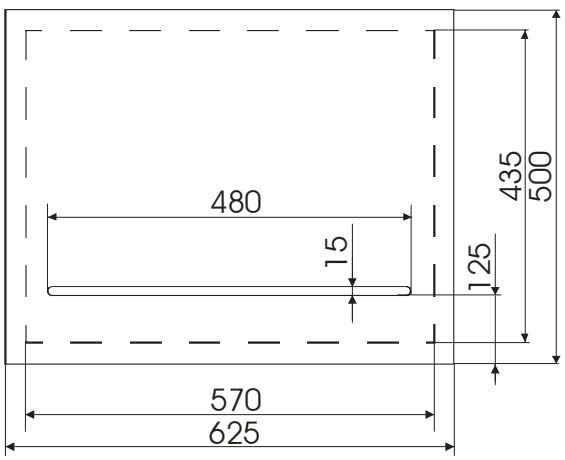
Description:

Subwoofer system on the ML Boxer principle for flush and seamless drywall mounting. The front of the subwoofer system comprises a gypsum plaster board screwed directly to the already existing drywall substructure. Special mounting material is not necessary. The front of the subwoofer and the transition of the wall or ceiling covering can be filled and smoothed with a conventional gypsum fibre filler for filling the joints to make them flush.

Worked into the front is a sound outlet in the form of a 15 mm narrow slot that runs along the loudspeaker front at a distance of some 125 mm. This enables the sound outlet to be positioned, for example, just above the skirting board or on the ceiling edge.

The very small installation depth of 73 mm on the back enables installation in a 75 mm deep substructure. Through the special configuration of the loudspeaker chassis on the ML Boxer principle there are hardly any distracting structure-borne vibrations on the loudspeaker housing. This is why it is not necessary to decouple the subwoofer from the surrounding drywall construction.

Dimensions:	500 mm x 625 mm x 12,5 (86) mm
Frequency response:	38 Hz – 200 Hz
Power handling :	2 x 100 watts RMS / 5 ohms
Sensitivity:	82 dB (1 w / 1m)
Max. SPL:	100 dB (1 m)
Manufacturer:	ML Audio+Carbons
Model:	Novasonar Boxer 100-2



NOVASONAR

NOVASONAR™

INVISIBLE SOUNDSYSTEM

THE INVISIBLE LOUDSPEAKER

WITH THE INTELLIGENT INTEGRATION CONCEPT
FOR A PERFECT INSTALLATION

Do loudspeakers have to be seen?

Novasonar is invisible

Novasonar loudspeakers (flatpanels) offer you besides architectural freedom to place loudpeakers absolutely invisibly in combination with the most natural way of soundwave radiation. These loudspeakers transform walls, ceilings and furniture into sound reproducing surfaces that become invisible within the interior decoration. The walls or any other element of the interior decoration in a room will be turned into an active part of your sound system. We ensure you, you will be astonished by the way these flatpanels will sound. Creating perfect surround sound in an uncompromising interior decoration design, precisely the way you would like.

The exemplary Novasonar installation concept
provides a reliable way for planning and assembling.

As planner and advisor the first thing to choose for is of course the sound quality in combination with the way a sound system performs and influences the interior decoration optically. In case of applying invisible loudspeakers the mounting of these loudspeakers brings additional costs to the buyer, costs which should not be underestimated.

Over the last decades my company applied many of these systems in a range of national- and international projects. Which brought us the experience and insight how to deal with the "dry-wallers" and project planners/integrators. This exchange of information with them will consume time, thus money. The ML-Audio design creating the way to carry out the installation much easier, prooves mounting can be done significantly more affordable.

Norbert Hönig, NH consult, CTS
Expert Office for Audiovisual Technology

HOME

NOVASONAR

REQUIREMENTS

- Outstanding home cinema loudspeaker system without visible boxes
- No cables lying around
- No obstructions in the room or on wall surfaces. Freedom to use wall surfaces differently
- Connection to conventional hi-fi equipment
- Easy to install for the Dry-waller

SOLUTIONS

Novasonar flat-panel loudspeakers

- 2.1 Stereo system for presentations and videoconferencing for perfect, direction-related interplay between images and sound
- Can be integrated into media furniture without difficulty including factory-made solutions and sound-attuned to perfection
- Ceiling loudspeakers for table microphones to enhance speech
- **Novasonar flat-panel loudspeakers are considerably lower sensitive to feedback than conventional loudspeakers**
- Fully integrated into the building materials used with sound quality matched to perfection
- Faultless installation by the drywaller, there is no need for special knowledge, in fact this is trouble-free
- **Easy to connect to conventional conference systems**
- No special electronics needed

Embedded products:

- **Media wall**
  - Novasonar High Gain 60 PN
  - Novasonar Boxer 100-2 KIT
- **Ceiling**
  - Novasonar GK 60 PN

HOME

NOVASONAR

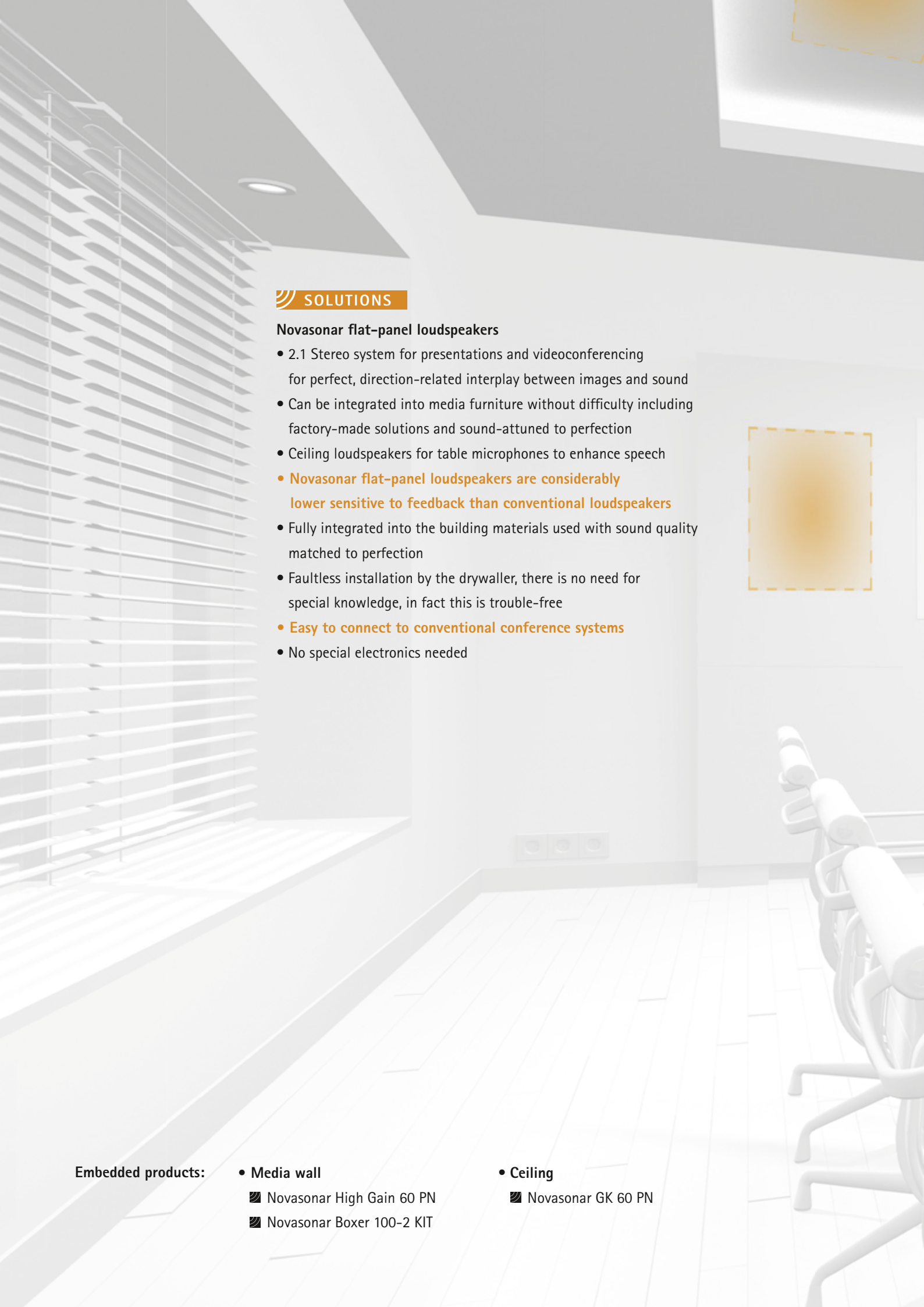
A place for information exchange. Creativity and bargaining are supported by the elegance and clarity of the interior design. Visible technology could disturb here.

CONFERENCE

NOVASONAR

REQUIREMENTS

- Sophisticated atmosphere without any disturbing visible technology
- Pristine, undisturbed interior design
- Optimum interplay between images and sound reproduction
- Ceiling audio system for speech support on behalf of table microphones
- Low sensibillity to feedback when microphones are used
- The surfaces can be freely designed as desired
- Connection to any existing conference system
- Simple installation



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CONFERENCE

NOVASONAR

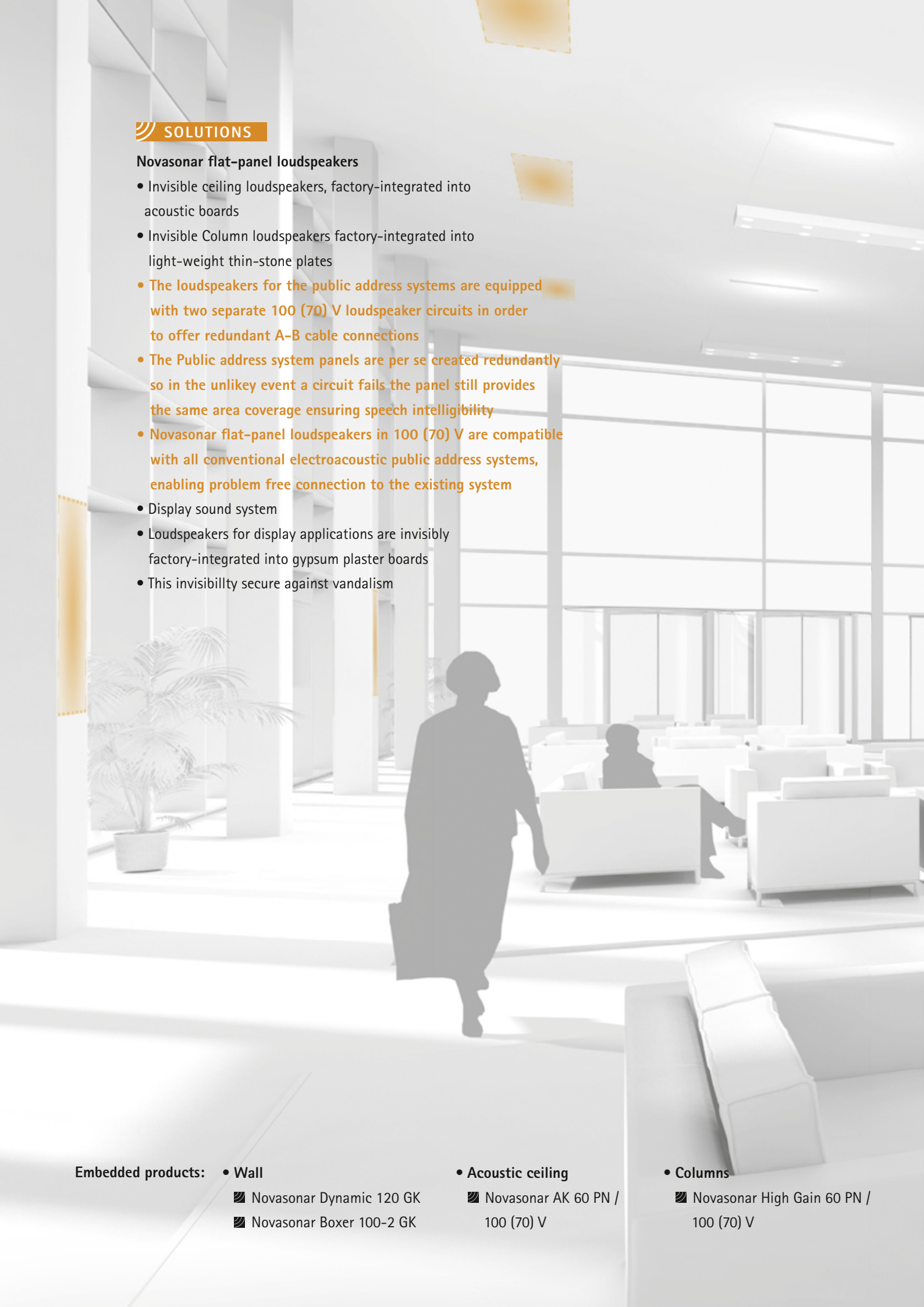
No matter where to apply this Flat Panel Tecnology, Shopping Centres, Airports and Railway Stations, a public area demands architectural freedom to express a future vision. Invisible technology offers vistas for architecture and design.

PUBLIC AREAS

NOVASONAR

REQUIREMENTS

- Use of invisible loudspeakers for a decentralised public addres- and background sound system in 100 (70) V technology applied in an acoustic ceiling and embedded in stone columns
- The loudspeakers have to be redundant in order to ensure speech intelligibility and coverage at all times even if in the unlikely event a loudspeaker circuit should fail
- Connection to the existing public address sound system
- Paging using invisible loudspeaker systems
- Preventing against vandalism
- Easy to install



SOLUTIONS

Novasonar flat-panel loudspeakers

- Invisible ceiling loudspeakers, factory-integrated into acoustic boards
- Invisible Column loudspeakers factory-integrated into light-weight thin-stone plates
- **The loudspeakers for the public address systems are equipped with two separate 100 (70) V loudspeaker circuits in order to offer redundant A-B cable connections**
- **The Public address system panels are per se created redundantly so in the unlikey event a circuit fails the panel still provides the same area coverage ensuring speech intelligibility**
- **Novasonar flat-panel loudspeakers in 100 (70) V are compatible with all conventional electroacoustic public address systems, enabling problem free connection to the existing system**
- Display sound system
- Loudspeakers for display applications are invisibly factory-integrated into gypsum plaster boards
- This invisibillty secure against vandalism

Embedded products:

- **Wall**
  - Novasonar Dynamic 120 GK
  - Novasonar Boxer 100-2 GK
- **Acoustic ceiling**
  - Novasonar AK 60 PN / 100 (70) V
- **Columns**
  - Novasonar High Gain 60 PN / 100 (70) V

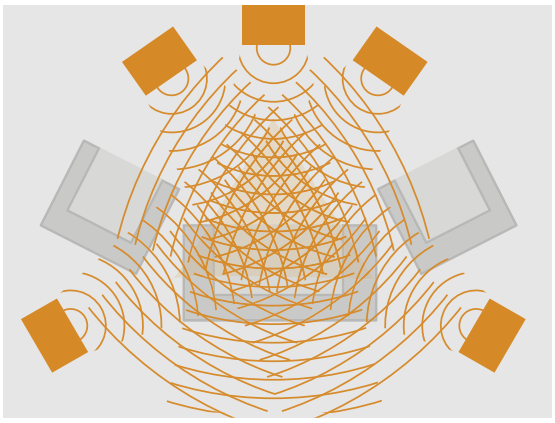
PUBLIC AREAS

NOVASONAR

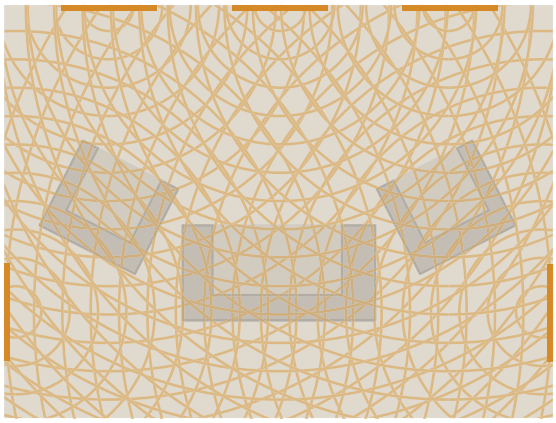
Our flat-panel technology

Optimal sound for everywhere in the room

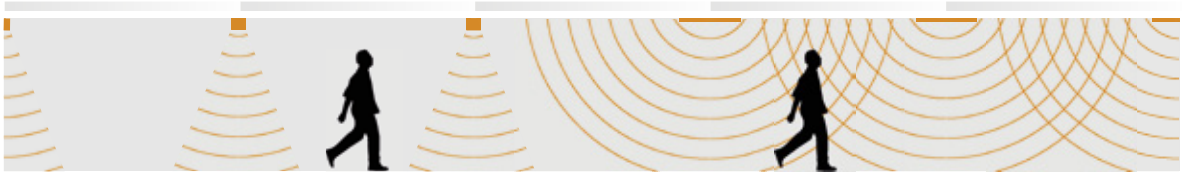
The sound-wave emission of the Novasonar flat-panel loudspeakers equals the way acoustical musical instruments radiate their soundwaves, instruments like for example, violins and guitars. The soundbody of such musical instruments vibrate and thus emits soundwaves in all directions. The Novasonar flat-panel loudspeaker is also a soundbody, which is brought to vibration by electrical exciters. The dispersion angle of Novasonar flat-panel loudspeakers is for all frequencies equal to that of musical instruments, and with a 180° radiation pattern considerably broader than the dispersion angle of conventional loudspeakers. Dynamically, space-filling sound waves, offering optimum sound – anywhere you are in the room, no square meter hot spot – you`ll be amazed at how good it sounds!



Traditional loudspeaker placement solution for Dolby 5.1. In this case you find optimal a one square meter listening position offering the best sound impression, spatially, fullness of tone etc.



Novasonar solution for Dolby 5.1.
Room-filling acoustics without visible loudspeakers . The Novasonars offer a 180°, spatially correct dispersion pattern. In this case, an optimum sound is provided for each listening position in the room. Novasonar flat-panel loudspeakers can be used with conventional amplifiers and the integrated volume overload protection ensures a high degree of operational safety. Meaning these panels can be easily hooked up to existing equipment such as a hi-fi system or home-cinema amplifier. Individual sound adjustment is possible applying conventional DSP control technology.



Conventional loudspeakers, showing the typically inadequate coverage of the room with the same number of loudspeakers.

Novasonar flatpanels provide a full coverage of the room in combination with high speech intelligibility, even when ceiling heights are relative low.

Novasonar flat-panel loudspeakers have considerably lower affinity to feedback than conventional loudspeakers and are therefor excellently suitable for applications in combination with microphones. Moreover, they have a very low installation depth, even with an integrated 100 (70) V transformer.

Trouble-free installation of the Novasonar sound system

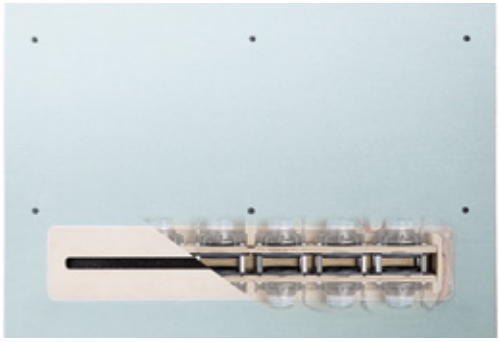
Section
gypsum plaster board

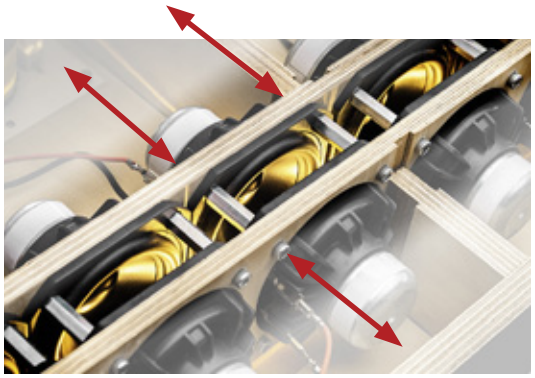
Novasonar flat-panel speakers are factory build into several kinds of construction materials

for example, drywall installation with gypsum plaster boards

- Connecting the pre-installed Novasonar loudspeakers
- Inserting the dry wall board with a pre-installed Novasonar loudspeaker into the opening provided
- Screw the dry wall board to the conventional substructure. Fill the joint all around.
- Design the surface as desired

Vibration-free subwoofer – Novasonar Boxer technology





The vibrational forces of frames, act exactly in an opposite direction to each other, thus cancelling out each other.

The opposite positioning of the loudspeaker frames and their metal bracing cause mechanical vibrational forces to be cancelled out. Meaning vibrations in the housing cannot develop at all. Acoustic decoupling from drywall construction or furniture is therefore not necessary, making seamless integration simple.

Two channels separated from each other enable a stereo amplifier to be connected. By way of example, two satellite loudspeakers and a Boxer are run jointly (in parallel) on two amplifier channels.

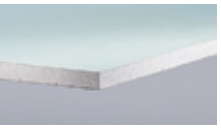
The following finishes are possible

- Paint coatings
- Plaster techniques
- Plasters
- Wallpapers
- Tiles
- Glass
- Stoneware
- Laminated plastic materials
- Veneer
- Wooden boards
- Plastic sheets
- Metallic plates

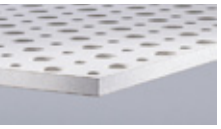
Novasonar worry-free-concept: Building material and the sound system come from a single production source

Novasonar flat-panel speakers are factory build into several kinds of construction materials, making installation very easy. Materials and assembly do not differ from other construction materials used and as a result, there are no „alien bodies" in the drywall. This means the contractor deals with construction materials he already is acquainted with. For him, installation is simple and logical right from the start. Errors, encurring during installation of the speakers will not happen, because the loudspeakers are already incorporated in the construction materials at the ML factory, and the contractor only has to deal with his building materials as usual. This ensures stress free co-operation of all concerned, with perfect results.

The Novasonar worry-free-concept comes in the following kind of materials



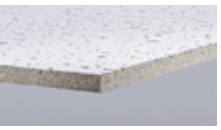
- Gypsum plaster boards in all existing versions
  Novasonar GK, Dynamic GK



- Perforated Gypsum plaster boards in all existing versions
  Novasonar GL

- Cement boards
  Novasonar ZB

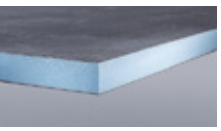
- Gypsum fibre boards in all existing versions
  Novasonar GF



- Grid ceiling boards in all existing versions and designs
  Novasonar RA

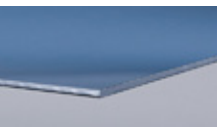
- Acoustic boards made of expanded glass granulate, mineral wool, glass wool, wood wool, chipped wood, etc. in all existing versions
  Novasonar AK

- Acoustic canopy panels for ceilings in all existing versions and designs
  Novasonar DS

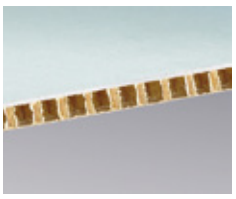


- Construction boards made of hard foam in all existing versions
  Novasonar KW

- Wooden boards such as chip boards, MDF, etc. in all existing versions und surface designs
  Novasonar KIT, High Gain, also available, on request, as loudspeaker module for self-assembly. We will be glad to offer advise



- Glass, thin-stone, plexiglass, sandwich boards, advertising billboards, etc. .
  Novasonar KIT, High Gain, also available, on request, as loudspeaker module for self-assembly. We will be glad to offer advise.

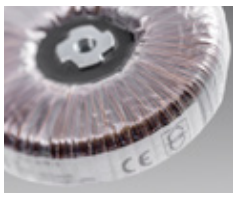


Sandwich membrane: The extremely sturdy and light sandwich membrane is the carrier of building material layers and enabling reproduction with high pulse fidelity. The building material layer is milled down to a minimum thickness and thus will behave sound-neutral.

Sturdy frame construction: The frame creates a sturdy connection between the sandwich membrane of the loudspeakers and the mounting edge of the building material. Example acoustic board.

Exciters: High-grade, powerful exciters with overload protection ensure operational reliability and perfect surround sound.

Frequency crossovers and frequency filters (PN): High-quality components ensure perfect tuning.



70 / 100 V transformers: High-grade, sound-neutral and extremely flat toroidal transformer for hooking up to public address systems.

Rear panel: It not only protects what is inside the loudspeaker but also serves as retainer for the internally placed components. It also defines the distance between the membrane and back side, thus becoming an important component for the sound the panel reproduces.

Example: Installation in a grid ceiling board made of mineral fibre.

The flattened edge: It provides the space for drywall tape and plaster, if, by way of example, there is no provision for plastering over the membrane. (Optional with Novasonar Dynamic GK)

Safety, ensuring success – the Novasonar worry-free-concept

Everything on the building site runs smoothly...

Twenty solid arguments, which distinguishes us and make things easy for you

Factory-integration of Novasonar sound systems into original construction materials providing clarity and reliability in planning and on the building site

- A high degree of acceptance by architects, planners and contractors, since the loudspeaker's materials do not introduce alien material in the overall finish
- No changes in the material applied, continuously assemble and processing technology
- No mechanical installation errors, because the loudspeakers are already integrated in the factory
- Ensuring smooth co-operation between the specialists in interior finish and media technology
- The basis for perfect and durable creation of the surfaces by machine pre-fabrication
- No delays in building due to additional co-ordination between the specialists from different diciplines
- Simplification on costs calculations
- Cost savings through the most simple installation
- Predictable results with a constant high quality
- Milling down the material to its minimum thickness enusures neutrallity to the sound color

Novasonar Boxer technology – acoustic decoupled and vibration-free subwoofer systems

- No need for acoustic decoupling from drywall construction or furniture
- No noise interference through rattling drywall substructure
- No risk of cracking in drywall constructions
- No noise interference, for example, through noise from rattling doors or shelves in furniture installation
- No wobbling image on the projection surface in media furniture installation
- Two channels separated from each other for connection to a stereo amplifier
- The ultra-flat housing makes installation possible, for example, in furniture plinths or slim stud walls

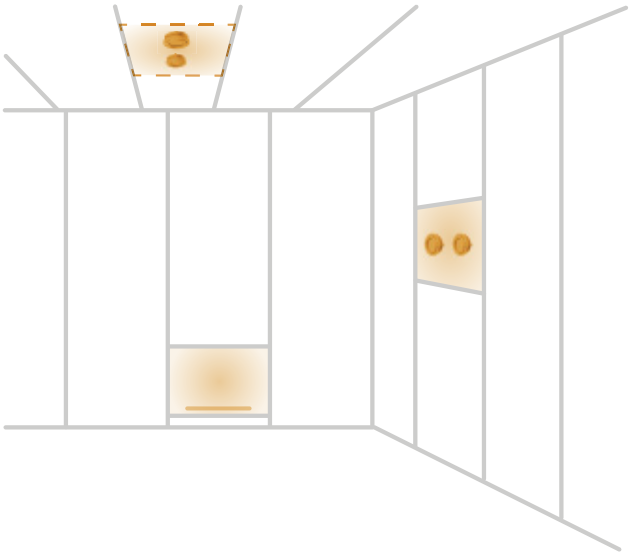
In a nutshell: The Novasonar worry-free-concept combines the various specialisations involved, the pre-fabrication guarantees that after being installed Novasonar loudspeakers really remain invisible, sounding as they should.

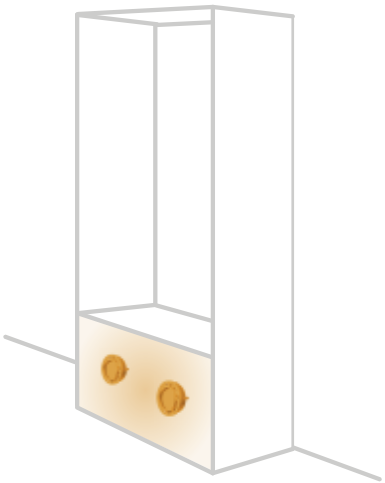
Typical application for Novasonar sound systems

- Multi-room
- Presentation
- Home cinemas / HiFi systems
- Background music
- Public address systems
- Sound masking (open-plan offices / discrete areas)
- Multimedia
- Clean rooms / Operating theatres
- Conference rooms
- Auditoriums / Lecture halls
- Electronic acoustic systems for adjusting the reverberation time to various requirements

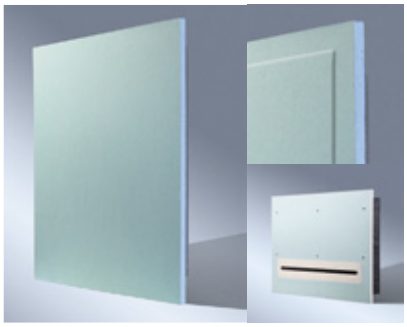
NOVASONAR™
INVISIBLE SOUNDSYSTEM

Installation solutions with





Drywall construction



Dynamic GK
optional with
flattened edge

- Flat-panel loudspeakers, integrated into conventional building materials
- No different assembly when standard building materials are used
- Trouble-free installation in drywall construction
- No additional assembly costs
- Low installation depth

- Novasonar GK, Dynamic GK
  - Gypsum plaster boards smooth
  - Dynamic GK optional with flattened edge
- Novasonar GL
  - Gypsum plaster boards perforated
- Novasonar GF
  - Gypsum fibre boards
- Novasonar ZB
  - Cement boards
- Novasonar Boxer GK
  - Vibration-free subwoofer with drywall front panel

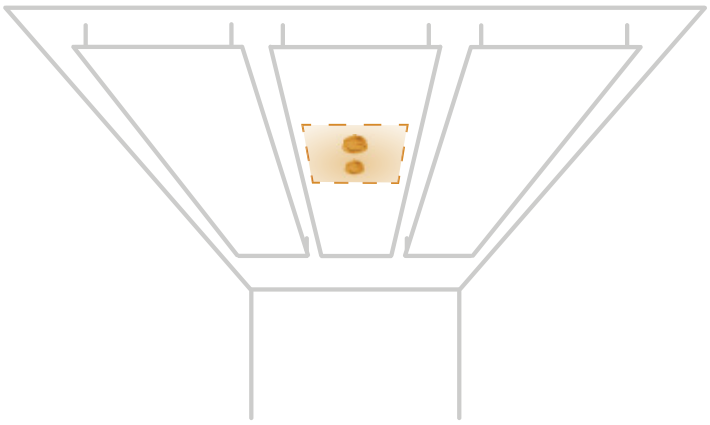
Furniture- and wood panelling

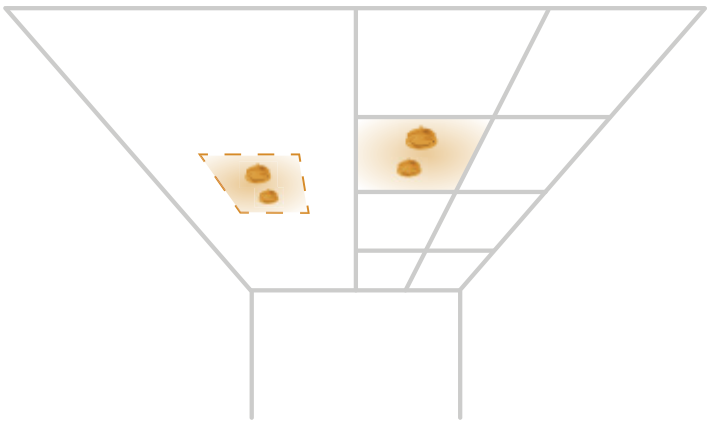
- Flat-panel loudspeakers, integrated into wooden boards
- Seamless installation in furniture or wood panelling
- Low installation depth

- Novasonar KIT, High Gain
  - Chip boards
  - MDF panels
  - Solid wooden boards painted, veneered, coated...
  - Glass
  - Thin-stone boards
  - Plexiglass
  - Sandwich boards
- Novasonar Boxer KIT
  - Vibration-free subwoofer with wooden front panel

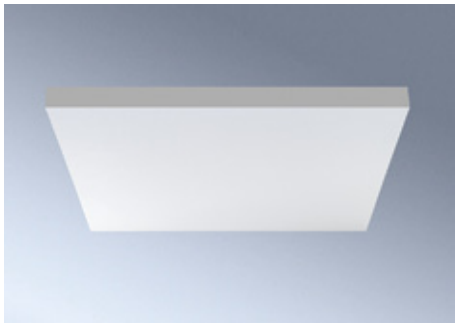
NOVAS

Novasonar flat-panel loudspeakers





Ceiling panels

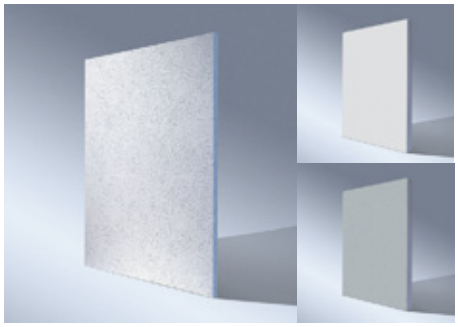


- Flat-panel loudspeakers, integrated into coventional ceiling panels

Novasonar DS

Ceiling panels in almost all original surface designs

Sound-absorbing grid ceilings and surfaces



- Flat-panel loudspeakers, integrated into conventional acoustic boards
- Flat-panel loudspeakers, integrated into conventional grid ceilings
- Available in almost all original surface designs of conventional grid ceilings
- We also install Novasonar flat-panel loudspeakers in your existing ceiling tiles

Novasonar AK

Acoustic boards, for example, made of

- expanded glass graulate
- mineral wool
- glass wool
- wood wool
- particle wood

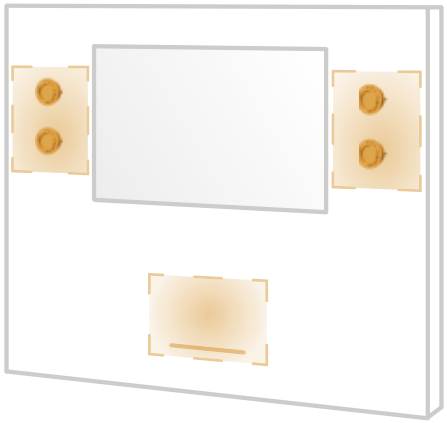
Novasonar RA

Ceiling tiles for all conventional grid ceilings made of mineral materials in almost all original surface designs.

Other materials, such as, for example, metal, on request. We`ll be pleased to advice.

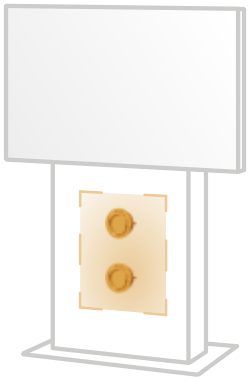
NOVASONAR™
INVISIBLE SOUNDSYSTEM

Installation solutions with



Media furniture, conference rooms, shop interior decoration, exhibition stand construction

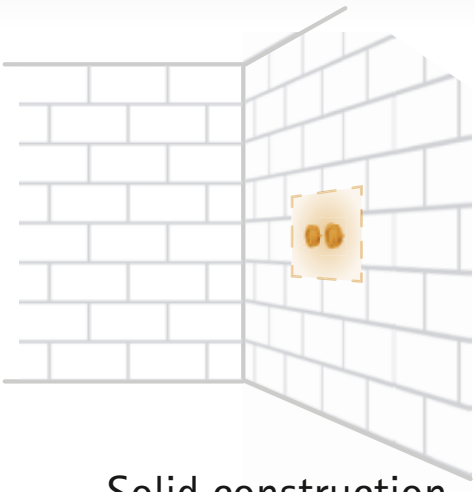
- Equipment in media furniture
  - Seamless installation
  - Small installation depth
  - Perfect combination of sound and image
  - Compatible with almost all amplifiers
  - Compatible with all conventional conference and presentation systems
- Novasonar KIT, High Gain
- Novasonar Boxer KIT



Presentation elements

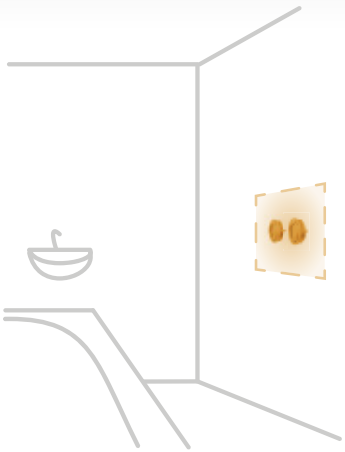
- Integration in stele- and advertising surfaces
  - Seamless installation
  - Low installation depth
  - The front of the presentation surface itself turns into a loudspeaker
  - Perfectly combining sound and image
  - Compatible with all conventional presentation systems
- Novasonar KIT, High Gain

Further **Novasonar** solutions



Solid construction

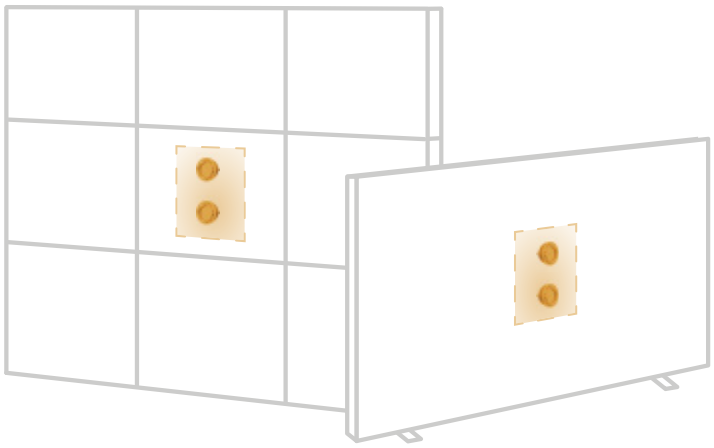
We offer special prepared loudspeaker systems for invisible installation in solid walls and ceilings, such as, masonry and concrete. We`ll be pleased to provide advice.



Damp rooms

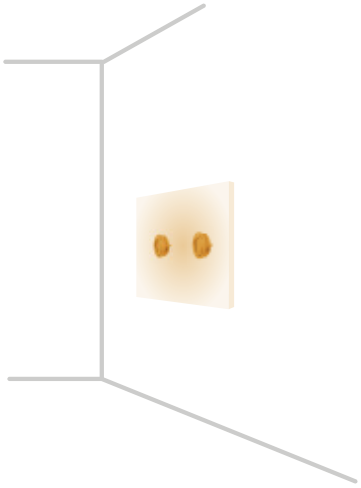
We offer especially prepared loudspeaker systems for installation in damp rooms. We`ll be pleased to provide advice.

Novasonar flat-panel loudspeakers



Mobile exhibition wall systems
Mobile partitions

- Integration of the equipment in exhibition wall systems and partitioning walls
  - Seamless installation
  - Low installation depth
- Novasonar KIT, High Gain



Custom made
configurable elements

- Elements with digital printing
- Elements with surface coating
- Elements for self-coating
- Round, oval, angular...
- Novasonar Kreativ

Custom-made design as you require.
We would like to advice.

Novasonar sound systems are also suitable for the following applications due to their special room filling characteristics such as homogeniously spread sound waves, low weight and extremely flat installation dimensions:

- Ships / Yachts
- Vehicles / Campers
- Railway Cars
- Aircrafts

Please get in touch with us.

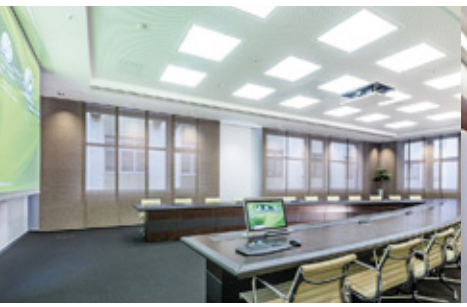
Our **service** – we will find just the right customised solution for your project

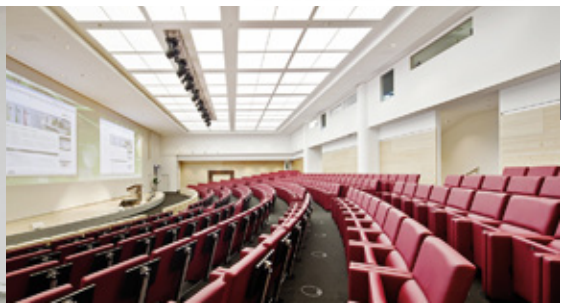
- No matter what your expectations are - we`ll be only too pleased to provide advice and find for you the ideal solution
- Electro-acoustic simulations
- Individual consultation in all stages of planning and realisation
- Special design and sample construction in the material you require
- Individualised development
- More than 20 years experience in loudspeaker manufacturing
- Made in Germany
- We`ll be happy to act as intermediary in order to select a partner from our extensive network nationally and abroad

Novasonar flat-panel loudspeakers come in a wide variation of levels of performance. You will find all the information about the technical data on our product data sheets, which are to be found on **www.novasonar.de**.

CONFERENCE Conference Centre – Herzogenaurach

SCHAEFFLER

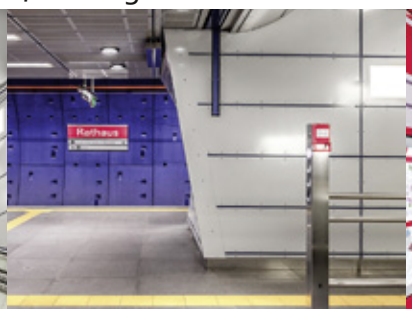




The approximately 6000 square meter of the decentralised audio ceiling system for conference use and voice alarm was realised with invisible Novasonar flat-panel loudspeakers mounted in the smooth and perforated gypsum plaster ceilings. In order to ensure correct functioning of the voice alarm systems, the flatpanels are equipped per se with two separate loudspeaker circuits ensuring speech intelligibility at all times, should one loudspeaker circuit fail. The presentation sound also comes from Novasonar flat-panel loudspeakers.

TRAFFIC North-South City Subway Cologne, underground stations

KVB



In the underground stations of the North-South City Subway in Cologne, focus was on the architecture. The invisible public address system for paging ensuring full area coverage and intelligeble speech alarm in case of emergencies has been realised utilysing Novasonar flat-panel loudspeakers, the loudspeakers are integrated into the ceiling and wall panelling. The architecture remains untouched. Each loudspeaker is equipped with two separate loudspeaker circuits offering redundancy ensuirng speech intelligibility at all times should one loudspeaker circuit fail.

HOME Exclusive home in North-Rhine-Westphalia

In this exclusive home a multi-room sound reproduction system has been realized, with full room coverage in the sectors: living, sleeping, kitchen, bathroom, wellness and swimming pool. To this end, Novasonar flat-panel loudspeakers have been integrated into the acoustic ceilings, smooth gypsum plaster ceilings and walls, furniture and special moist room boards applied for swimming pools.

CLINIC / CLEAN ROOM Operating theatres

for example, in the Cadolto Fertiggebäude GmbH & Co. KG buildings

The strict standards and requirememts in force to meet hygiene regulations were easily met when applying Novasonar flat-panel loudspeakers.

References

Hotel

In World-renowned luxury hotels in London, Paris, Milan

Invisible Novasonar flat-panel loudspeakers ensure discreet background music in the lobbies.

Culture / Theatre

Llanelli Theatre / Wales **State Theatre Brunswick** **Music Theatre / Gelsenkirchen**
State Theatre Darmstadt

Invisible Novasonar flat-panel loudspeakers, installed in walls and (balcony) ceilings. They are perfectly suitable for generation and projection of simulated reflections by the electronic acoustical enhancement systems. Whereby room acoustics are adapted to different acoustical requirements at the press of a button. Acoustically the hall gets adjusted to optimize the perfomance of for instance a chamber orchestra, a symphony orchestra and drama (speech). In the Llanelli Theatre in the city of Llanelli / Wales, Novasonar flat-panel loudspeakers are additionally used to create sound effects as well.

Shop

Flagship stores of well-known fashion brands in Hong-Kong, Shanghai, London, Paris, Milan

A good many examples of invisible sound systems integrated in premium stores have been realised with Novasonar flat-panel loudspeakers and subwoofers throughout the world.

Clinic / Clean Room

Surgery Centre of Ludwig-Maximilians University (LMU) Munich

In here, 32 operating theatres have been equipped with Novasonar flat-panel loudspeakers because strict hygiene regulations had to be observed. They are implemented, for example, for live surgery communication.

Fairs / Exhibtions

Fair stands Mercedes-Benz, BMW, Porsche

Invisible Novasonar flat-panel loudspeakers have been integrated into complex exhibition stands of prestigious car manufacturers, for example, the IAA Frankfurt, Automobilsalon Geneva and Detroit Motor Show (NAIAS).

Education / University

Friedrich-Alexander-University Erlangen-Nuremberg

In the new building for mathematics and informatics, the invisible public address system was realised with Novasonar flat-panel loudspeakers in three lecture halls, various seminar and computer rooms and in the dean`s offices. Novasonar flat-panel loudspeakers offer outstanding speech intelligibility at any listening position.

Monument protection

New City Hall Hanover - Hodlersaal

In the Hodlersaal, part of the new City Hall of Hanover, invisible Novasonar flat-panel loudspeakers have been integrated into the front panel of individual seats, which are arranged in a circle. The loudspeakers transmit speech to the opposite seats.

Skyline

The Shard London

In luxury apartments in The Shard in London, invisibly integrated Novasonar Dynamic 60 GK and Boxer 100-2 GK Subwoofers make for perfect surround sound in exceptional architecture.

Green Towers Frankfurt am Main

Novasonar flat-panel loudspeakers have been integrated into the metal ceilings in the boarding rooms and in the cafetaria of the Deutsche Bank in Frankfurt. In the conference rooms, installation has been accomplished in the acoustic cooling ceilings and drywalls.

Taunusturm Frankfurt am Main

In the entrance hall of the Taunusturm, the voice alarm system has been equipped with Novasonar flat-panel loudspeakers in the 12 metre high ceiling. The loudspeakers for the voice alarm system in the escalator area have been invisibly integrated into diverse light-weight thin-stone boards from the GRAMA BLEND GmbH. There is no visual difference between the thin-stone boards and the rest of the frontage.

This brochure is intended to provide advice to the best of our knowledge. However, its content is not legally binding.
We reserve the right to make technical alterations at any time without advance notice.

NOVASONAR™
INVISIBLE SOUNDSYSTEM

NOVASONAR

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