

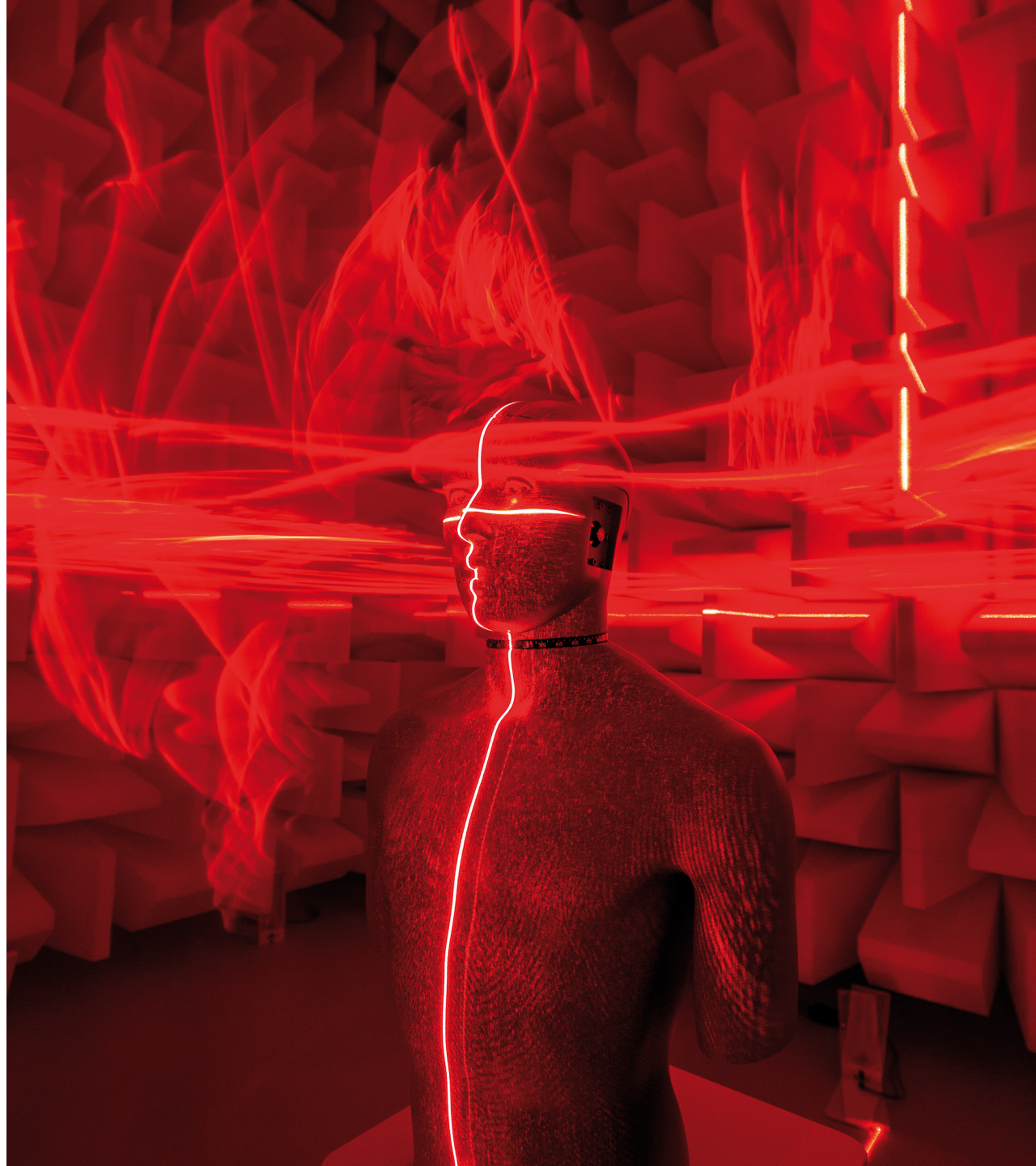
Snowsound System by Caimi Brevetti



- Caimi Brevetti公司成立於1949年，歐洲辦公室及家具家飾業中，以設計導向生產公司之一。

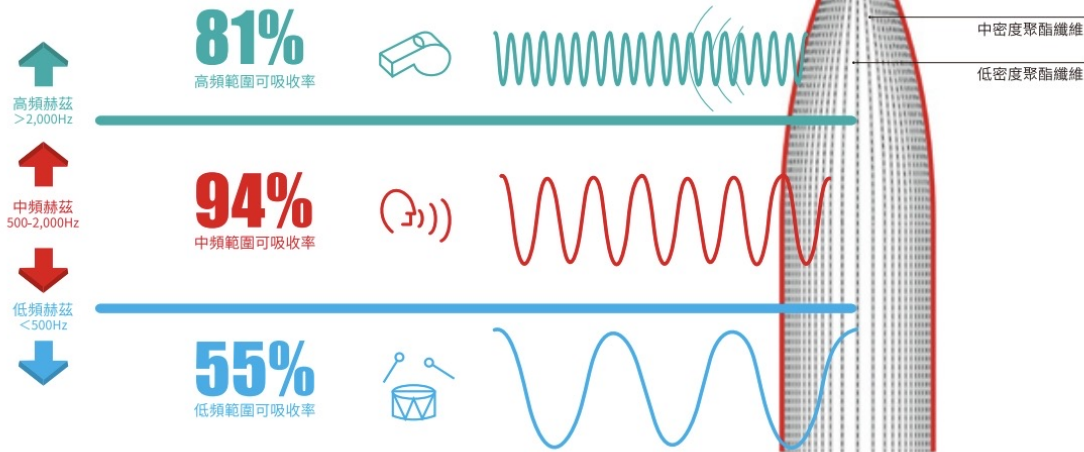


- Caimi Brevetti，對新材質以及新科技製造技術所做的實驗，想盡辦法降低對環境的影響，他們朝向造成低汙染的生產程序，使用可回收的材料。
- 近15年來，研發出SNOWSOUND®專利技術的合成設計。改善了許多空間迴音的困擾！



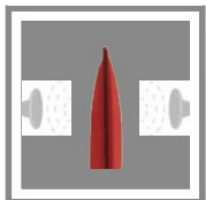
Snowsound 吸音板

聲音品質
選擇性音頻吸收率



- 聲音是由易於吸收能力有限的固體表面（例如混凝土、大理石或玻璃）反射的波形成的。
- 在用這種類型的材料製成的房間中，經常會產生非常煩人的迴聲和混響，從而難以舒適地傾聽和交談。
- 吸音材料是根據在這些環境中改善聲學效果的需要而製成的。
- 傳統產品的吸聲特性往往表現出較低的
 - 低頻吸收能力（低於 500Hz）
 - 中頻吸收能力逐漸提高（500 至 2,000 Hz 之間）
 - 高頻吸收能力更大（2,000 Hz 以上）。

advantages | 優勢



100% 吸音



耐用輕薄



認證

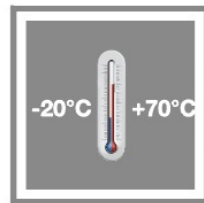
針對敏感個體 (如兒童和老人) 的安全因素，以及確保產品可以在學校和醫療機構等環境中使用。



環保可再回收利用



不含甲醛



極端天氣條件

18/5000

OPEN LAB



影片連結：https://youtu.be/_9qr4iLHHJM

OEPN LAB 實驗室環境介紹



Open Lab

- 專注於聲學研究
- 新材料實驗
- 設計原型
- 將成為Caimi未來整個戰略的控制室，是新思想的源泉，也是我們面向社會和市場的具體標誌。



聲學測試報告

國立臺灣大學
工程科學及海洋工程學系 聲學實驗室
Department of Engineering Science and Ocean engineering
National Taiwan University Acoustics Laboratory
試驗報告



報告

言
才

ISTITUTO
GIORDANO



ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

LAB N° 0021



Specimen photo

Normative References

The test was carried out in accordance with standard UNI EN ISO 354:2003 dated 01/12/2003 "Acustica - Misura dell'assorbimento acustico in camera riverberante" ("Acoustics. Measurement of sound absorption in a reverberation room").



國立臺灣大學
工程科學及海洋工程學系 聲學實驗室
Department of Engineering Science and Ocean engineering
National Taiwan University Acoustics Laboratory
試驗報告

報告編號: N10905255201(1)

依據CNS9056規定，需以表格及圖形方式呈現吸音係數 α_s ，並參考CNS15218求得單一數值評定。
依據CNS15218規定，需宣告實際吸音係數 α_p ，及加權吸音係數 α_w 。

實驗資料平均值				
頻率 (Hz)	空迴響時間 (s)	置入試樣之 迴響時間(s)	吸音 係數 α_s	實際吸音係數 α_p
100	8.64	6.86	0.09	
125	8.60	6.08	0.14	0.15
160	7.78	5.01	0.21	
200	8.34	4.86	0.25	
250	7.17	3.62	0.40	0.40
315	7.17	3.14	0.52	
400	6.50	2.85	0.57	
500	6.15	2.33	0.77	0.75
630	5.58	2.06	0.89	
800	4.96	1.91	0.93	
1000	5.21	1.88	0.99	1.00
1250	5.27	1.85	1.01	
1600	5.03	1.83	1.01	
2000	4.64	1.81	0.98	1.00
2500	4.33	1.76	0.98	
3150	3.99	1.75	0.93	
4000	3.41	1.68	0.88	0.90
5000	2.91	1.53	0.90	

依據 CNS 15218 評定加權吸音係數

$$\alpha_w = 0.7(\text{MH})$$

(建議使用者同時合併參考完整之吸音係數曲線)

本實驗未蓋實驗室章印視為無效

ANNEX "A" TO TEST REPORT No. 300259

Place and date of issue: Bellaria-Igea Marina - Italy, 26/11/2012

Customer: CAIMI BREVETTI S.p.A. - Via Giacomo Brodolini, 25/27 - 20834 NOVA MILANESE (MB) - Italy

Purpose: calculation of the weighted sound absorption coefficient " α_w " in accordance with standard UNI EN ISO 11654:1998 "Acustica - Assorbitori acustici per l'edilizia - Valutazione dell'assorbimento acustico" ("Acoustics - Sound absorbers for use in buildings - Rating of sound absorption")

Frequency [Hz]	α in $\frac{1}{3}$ octaves	α_p^* in octave bands (approximate value at 0,05 with maximum value of 1,00)	Reference curve
100	0,12		
125	0,16	0,20	
160	0,36		
200	0,36		
250	0,60	0,60	0,70
315	0,84		
400	0,94		
500	1,08	1,00	0,90
630	1,05		
800	1,04		
1000	1,05	1,00	0,90
1250	1,16		
1600	1,16		
2000	1,21	1,00	0,90
2500	1,21		
3150	1,18		
4000	1,20	1,00	0,80
5000	1,16		

$$(*) \alpha_{pi} = \frac{\alpha_{i1} + \alpha_{i2} + \alpha_{i3}}{3}$$



LAB N° 0021

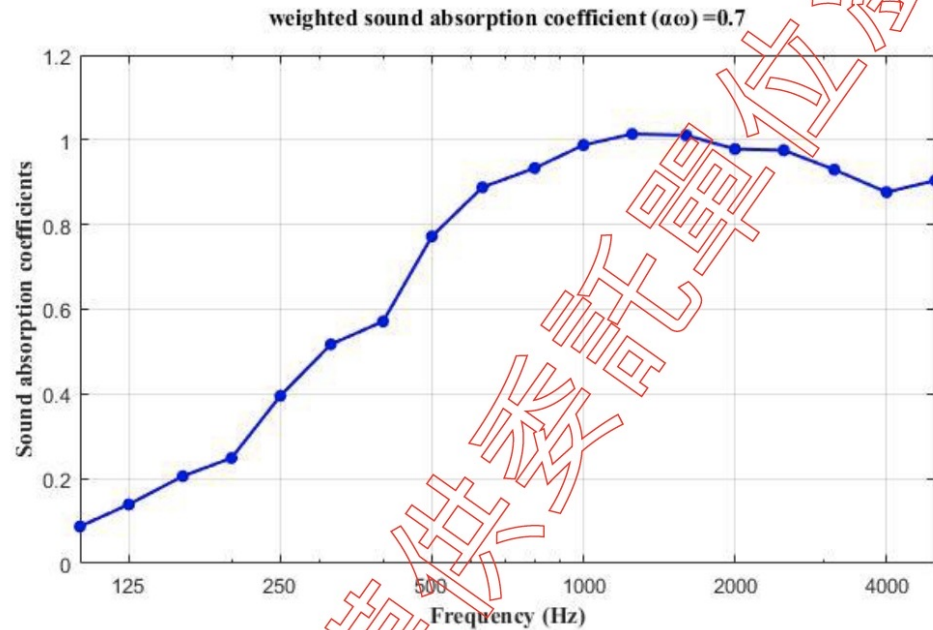
This annex consists of 2 sheets

Sheet
1 of 2



國立臺灣大學
工程科學及海洋工程學系 聲學實驗室
Department of Engineering Science and Ocean engineering
National Taiwan University Acoustics Laboratory
試驗報告

報告編號: N10905255201(1)



(Annex "A" to Test report No. 300259 dated 26/11/2012)

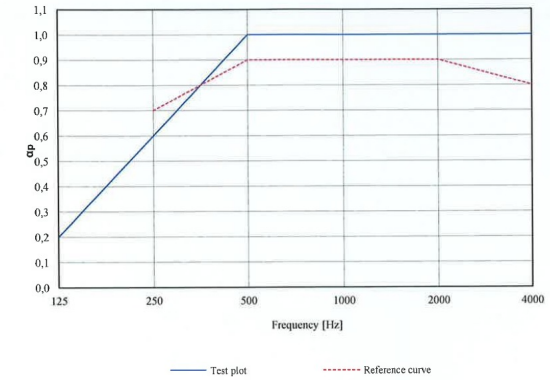
sheet 2 of 2 follows

ISTITUTO
GIORDANO



ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

LAB N° 0021



Weighted sound absorption coefficient " α_w " Value of the reference curve at 500 Hz rounded in steps of 0,05	0,90
Uncertainty of measurement " $U(\alpha_w)$ "	0,06
Shape indicator* Frequency range in which the " α_w " curve exceeds the shifted reference curve by 0,25 or more	//
Sound absorption class**	A

(*) L = Low;
M = Medium;
H = High.

(**) A: $\alpha_w = 0,90, 0,95$ or $1,00$;
B: $\alpha_w = 0,80$ or $0,85$;
C: $\alpha_w = 0,60, 0,65, 0,70$ or $0,75$;
D: $\alpha_w = 0,30, 0,35, 0,40, 0,45, 0,50$ or $0,55$;
E: $\alpha_w = 0,15, 0,20$ or $0,25$;
Not Classified: $\alpha_w = 0,00, 0,05$ or $0,10$.

Notes: evaluation based on laboratory measurement results obtained by an engineering method; for classification criteria please see heading "Uncertainty of measurement".

Test Technician
(Geom. Omar Gianni)
Head of Acoustics and Vibrations
Laboratory
(Dott. Ing. Roberto Baruffa)
BELLARIA - ITALY

Managing Director
L'AMMINISTRATORE DELEGATO
Dott. Ing. Vincenzo Iommi



Meeting Room

工地測試案例





吸音板 - 空間材料諮詢

麻煩填寫完整後，將此文件 email 至 info@vork.com.tw 或傳真至 (+886) 3 4906341



公司名稱 _____
地址 _____
聯絡人 _____ 日期 _____
E-MAIL _____ PHONE _____ FAX _____

INDICATE THE DIMENSIONS AND THE TYPE OF USAGE OF THE ROOM 請標示空間的坪數及類別

Volume of the room (m³) : _____ 坪數 ☐ Office 辦公室 ☐ Conference room 會 ☐ Cafeteria 咖啡廳
Height of the ceiling (m) : _____ ☐ Meeting room ☐ 議室 ☐ Restaurant 餐廳
天花板高度 ☐ Call Center 客服 ☐ Classroom 教室

FLOORING 地板材質 **m²**

Concrete 水泥 : _____
Wood 木板 : _____
Linoleum : _____
Marble 大理石 : _____
Melaminic/Laminate : _____
Long-hair fitted carpet on foam layer, thickness 15 mm 長毛地毯 : _____
Medium-hair fitted carpet on foam layer, thickness 10 mm 中毛地毯 : _____
Short-hair fitted carpet on foam layer, thickness 6 mm 短毛地毯 : _____
Tiles 瓷磚 : _____
Rubber tiles : _____

WALLS **m²**

Concrete 水泥 : _____
Plasterboard 石膏板 : _____
Plaster on bricks wall : _____
Wood 木材 : _____
Marble 大理石 : _____
Bricks wall 砌磚 : _____
Melaminic/Laminate : _____
Tiles 瓷磚 : _____
Glass 玻璃 : _____
Open bookshelf with books (without doors) 開放式書櫃 : _____

CEILING **m²**

Concrete 水泥 : _____
Plasterboard 石膏板 : _____
Wood 木材 : _____
Metal 金屬 : _____
Lightweight plaster tiles 輕重量塑膠瓷磚 : _____

WINDOWS / DOORS **m²**

Iron doors (antipanic) 鐵門 : _____
Wooden doors 木門 : _____
Glass doors / windows 玻 : _____
璃門/窗戶

PEOPLE / CHAIRS IN THE ROOM 人數/椅子數量 **MIN** **MAX**

Standing people 站 : _____
Upholstered chair - not in use (ex. theatre seatings) 軟墊座椅不使用中 電影座位 : _____
Upholstered chair - in use (ex. theatre seatings) 軟墊座椅，使用中 如電影座位 : _____
Lightly upholstered chair/wooden chair - not in use (ex. office chair) 木椅 : _____
upholstered chair/wooden chair - in use (ex. office chair) Plastic, mesh or metal : _____
chair - not in use 塑膠椅，鐵椅 - 不使用中 : _____
Plastic, mesh or metal chair - in use 塑膠椅，鐵椅 - 使用中 : _____

Acoustic Analysis

User **ID31190**

N° **2101488**

Software Release **2.2**

Characteristics of the space



Total volume	124 m ³
Surface of the floor	31 m ²
Height of the room	4 m



Intended use	Meeting Room
---------------------	--------------

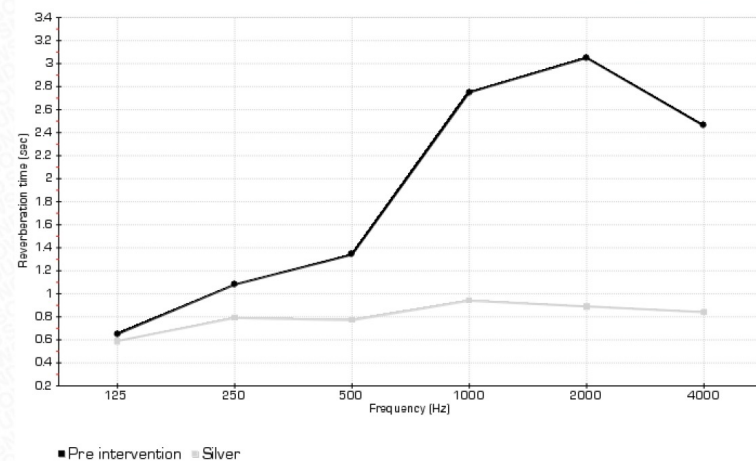


Gathered data	
Floors: Cement	31 m ²
Ceilings: Continuous metal	31 m ²
Walls: Drywall	64 m ²
Doors / Windows: Glass (around 4mm)	24 m ²
People and chairs: Iron/plastic chair (unoccupied)	20

Acoustic Analysis

User ID31190
N° 2101488
Software Release 2.2

Silver Curve

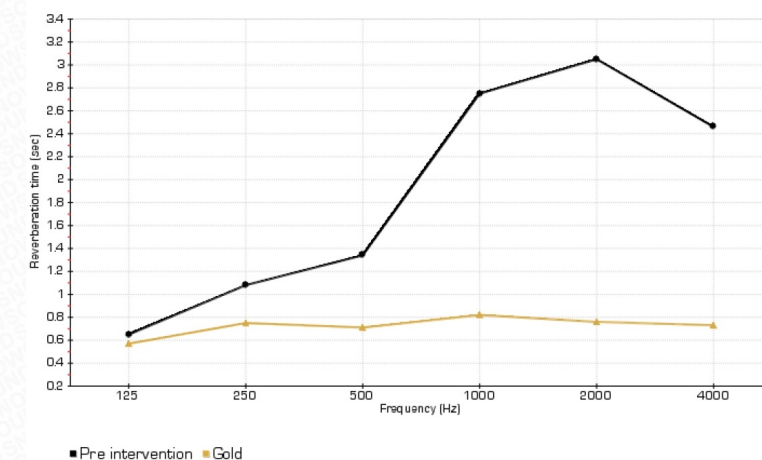


Starting from the pre-intervention reverberation curve, after having chosen the Snowsound® products and the type of installation, the software estimates the necessary quantity to reach the SILVER acoustic comfort level.
The SILVER curve allows you to perform an analysis of the post-intervention reverberation time expressed in octave bands.

Acoustic Analysis

User ID31190
N° 2101488
Software Release 2.2

Gold Curve

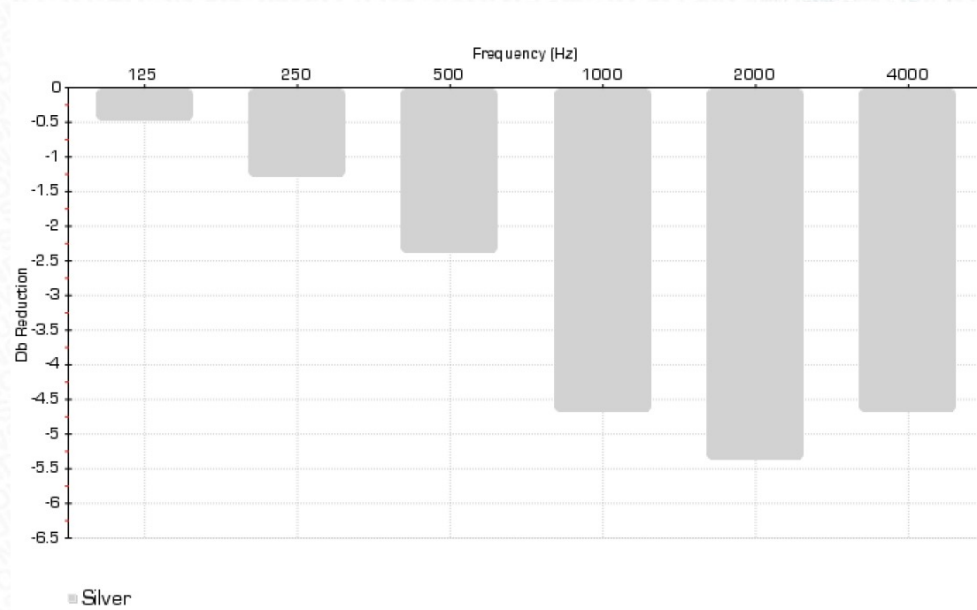


Starting from the pre-intervention reverberation curve, after having chosen the Snowsound® products and the type of installation, the software estimates the necessary quantity to reach the GOLD acoustic comfort level.
The GOLD curve allows you to perform an analysis of the post-intervention reverberation time expressed in octave bands.

Analysis

User **ID31190**
N° **2101488**
Software Release **2.2**

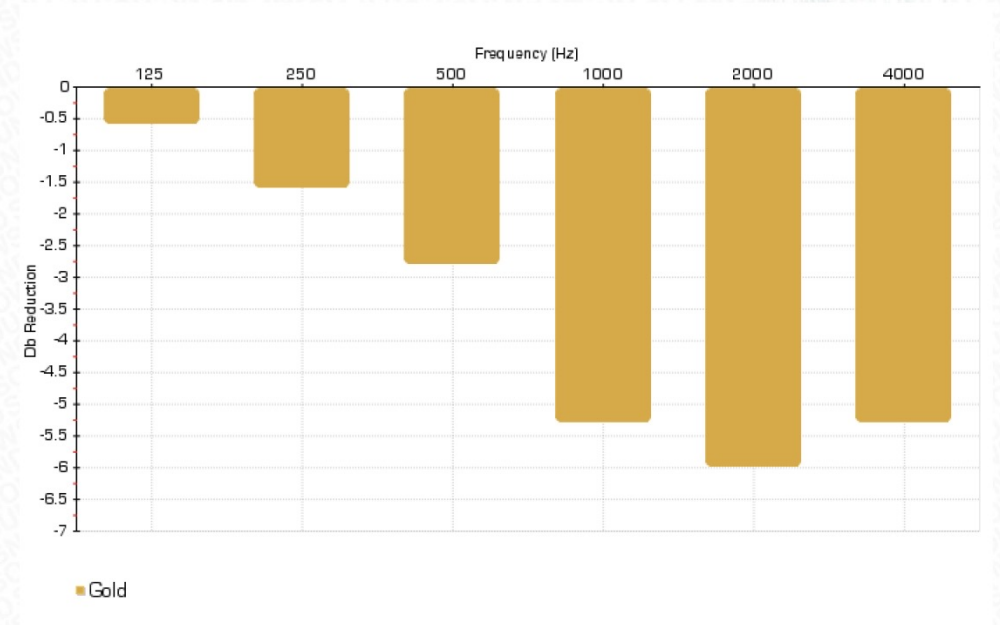
Decibel reduction: SILVER solution



With reference to the SILVER acoustic solution, the chart depicts the estimated reduction in sound pressure (dB) represented at the various frequencies of octave bands. Reduction in sound pressure (dB) is calculated starting with the increase in absorption units using a formula derived from Sabine studies for large spaces.



User **ID31190**
N° **2101488**
Software Release **2.2**

Decibel reduction: GOLD solution





With reference to the GOLD acoustic solution, the chart depicts the estimated reduction in sound pressure (dB) represented at the various frequencies of octave bands. Reduction in sound pressure (dB) is calculated starting with the increase in absorption units using a formula derived from Sabine studies for large spaces.

Products estimated for the **Silver** solution

Collection	Technology	Product	Size	Installation	Quantity
	Snowsound	Baffle 59	159 x 59cm	Baffle	6
	Snowsound	Snowfix	159 x 59cm	Wall	5

Products estimated for the **Gold** solution

Collection	Technology	Product	Size	Installation	Quantity
	Snowsound	Baffle 59	159 x 59cm	Baffle	8
	Snowsound	Snowfix	159 x 59cm	Wall	5

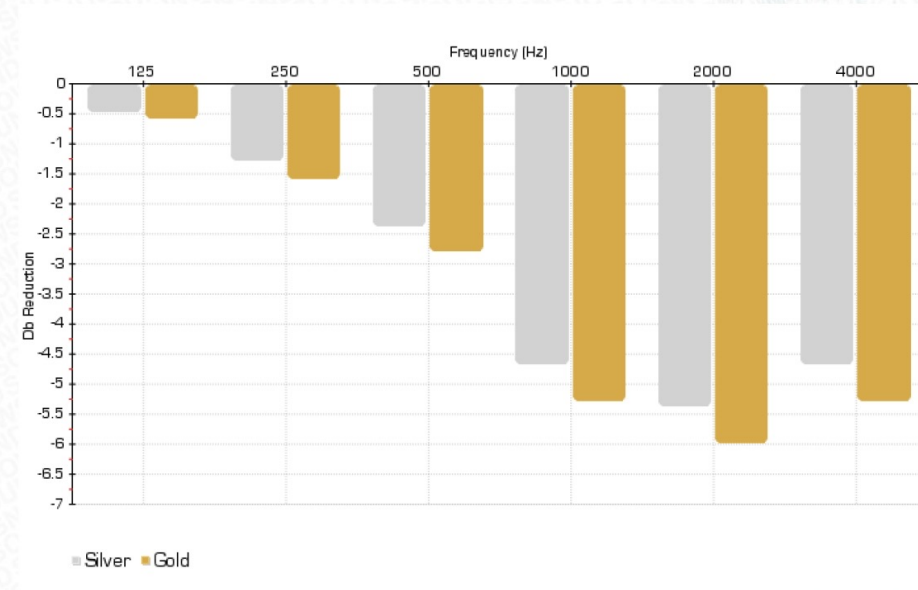
Acoustic Analysis

User **ID31190**

N° **2101488**

Software Release **2.2**

Decibel reduction summary



The chart depicts the estimated reduction in sound pressure (dB) represented at the various frequencies of octave bands.

Reduction in sound pressure (dB) is calculated starting with the increase in absorption units using a formula derived from Sabine studies for large spaces.





艾區博室內 | Radio Media Service | Giotto Wall



艾區博室內 | Harmony
| Giotto Wall



艾區博室內 | Harmony
| Giotto Wall



影片連結 <https://youtu.be/8KeKwOFKYKc>

吸音板安裝前與安裝後的差異表現