

WESTGROVE OFFICE

Document No.: CP-DRA-2023-000 REVISION A

REVERBERATION TIME CALCULATION REPORT

A detailed analysis of the absorption levels and reverberation time (RT60) of a certain room/space with and without the ARCHISONIC® products.

PREPARED FOR:

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I. PROJECT INFORMATION

Project name: WESTGROVE OFFICE
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II. INTRODUCTION

A. IMPACT ACOUSTIC

IMPACT ACOUSTIC is a Swiss company, specialized in providing high-performance acoustic solutions made from recycled PET bottles. Our products offer high-quality acoustic treatments to various spaces ensuring a comfortable and aesthetically pleasing design.

B. ARCHISONIC

ARCHISONIC® is the flagship lineup of product solutions we sell in the market. Dematerialization, upcycling, and life cycle management are the foundation in the product development of our high-performance acoustic absorbers. Instead of relying on extracting new material, the product relies on the upcycling of single-used plastics with a positive carbon footprint. Our ARCHISONIC® acoustic absorbers are a direct response to ecological sustainability and environmental quality requirements facing contemporary interior design and fit out. The complete ARCHISONIC® product range has been LEED accredited and Cradle to Cradle Certified™. Due to its flexibility in application, it offers the design community limitless possibilities to address acoustical challenges.

C. CONTACT DETAILS

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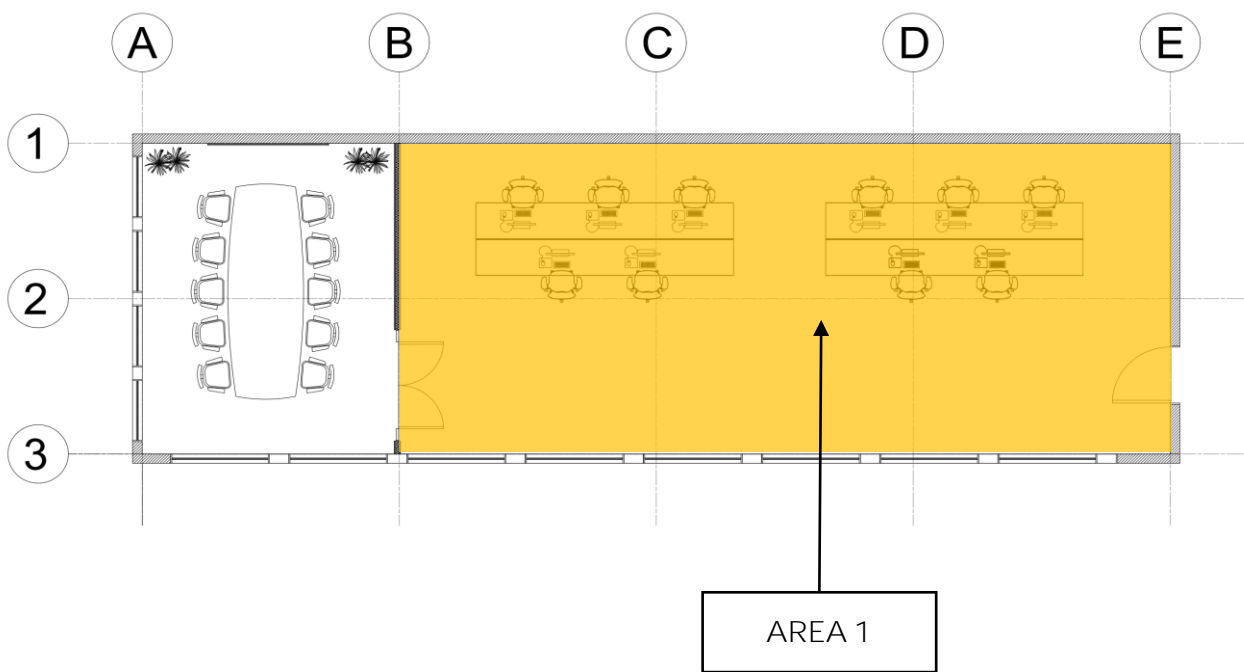
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III. ROOM AREA, VOLUME, AND RT60 REQUIREMENTS

This contains the spatial measurements of the room that will be subjected to reverberation time calculations. A general requirement of reverberation time levels is also provided on this section.

Figure 3.1 Project Floor Plan



The floor plan shows that the space of WESTGROVE OFFICE is made up of rectangular area.

Floor Area: 59.9 m²
Room Volume: 179.7 m³

Table 3.1 Reverberation Time Level (RT60) Requirement

Area		RT60
Seminar Room		0.60

IV. ROOM RT60 DATA (UNTREATED)

The list of material composition inside the untreated room and its specifications is shown on Table 4.1. The current room absorption levels are outlined on the tabular computation below on Table 4.2. This shows the initial room situation and performance and therefore, the ARCHISONIC® absorptive treatments are not yet considered on this section.

Table 4.1 Material Composition Surface Area/Unit and Absorption Coefficients (α)

Composition		FREQUENCY (Hz)					
		125	250	500	1000	2000	4000
Material	Area/Unit	α	α	α	α	α	α
Concrete Ceiling	59.9	0.01	0.01	0.01	0.02	0.02	0.02
Carpeted Flooring	59.9	0.10	0.15	0.25	0.30	0.30	0.30
Concrete Wall	74.88	0.01	0.01	0.01	0.02	0.02	0.02
Drywall	9.63	0.03	0.03	0.02	0.03	0.04	0.05
Glass Wall/Window/Door	19.37	0.10	0.06	0.04	0.03	0.02	0.02
Solid timber door	1.89	0.14	0.10	0.06	0.08	0.10	0.10
Tables	9.2	0.50	0.40	0.45	0.45	0.60	0.70
Adults per person seated	10	0.33	0.40	0.44	0.45	0.45	0.45

Table 4.2 Material Composition Absorption Units (A, Sabins)

Composition		FREQUENCY (Hz)					
		125	250	500	1000	2000	4000
Material		A	A	A	A	A	A
Concrete Ceiling		0.60	0.60	0.60	1.20	1.20	1.20
Carpeted Flooring		5.99	8.99	14.98	17.97	17.97	17.97
Concrete Wall		0.75	0.75	0.75	1.50	1.50	1.50
Drywall		0.29	0.29	0.19	0.29	0.39	0.48
Glass Wall/Window/Door		1.94	1.16	0.77	0.58	0.39	0.39
Solid timber door		0.26	0.19	0.11	0.15	0.19	0.19
Tables		4.60	3.68	4.14	4.14	5.52	6.44
Adults per person seated		3.30	4.00	4.40	4.50	4.50	4.50

Untreated Room Absorption (Original)	17.73	19.65	25.94	30.33	31.65	32.66
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VI. CALCULATION OF RESULTS & COMPARISON

Table 6.1 Total Absorptions

Absorption	FREQUENCY (Hz)					
	125	250	500	1000	2000	4000
Original Absorption	17.73	19.65	25.94	30.33	31.65	32.66
Adjusted Absorption	23.99	36.57	55.25	78.28	92.99	96.67

Figure 6.1 Original Absorption and RT60 Levels

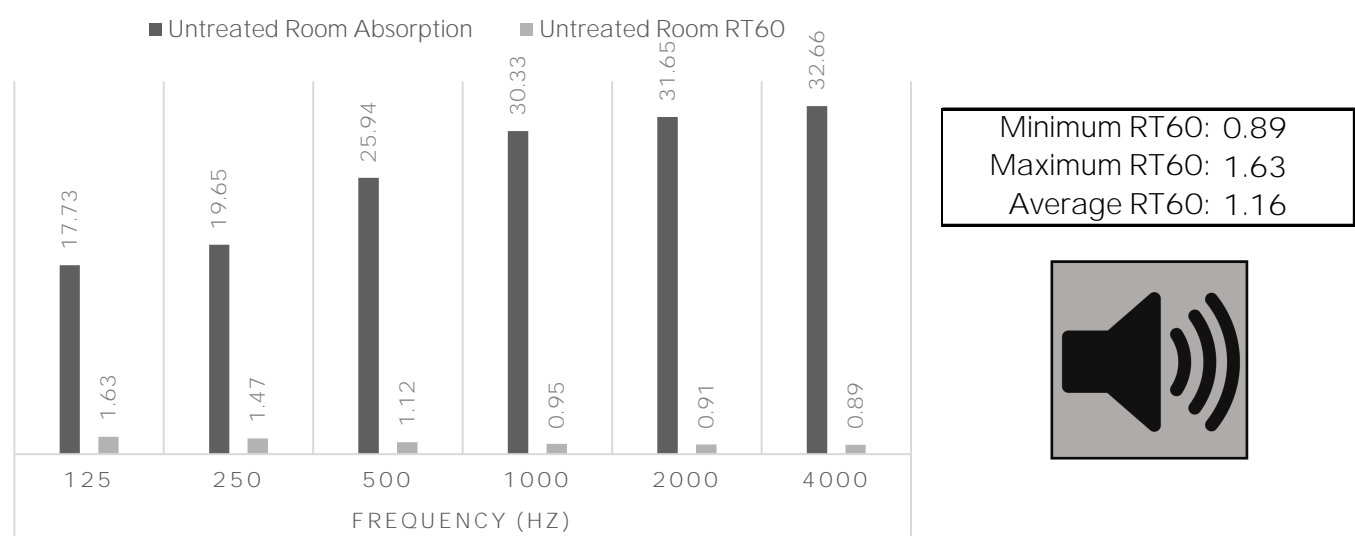
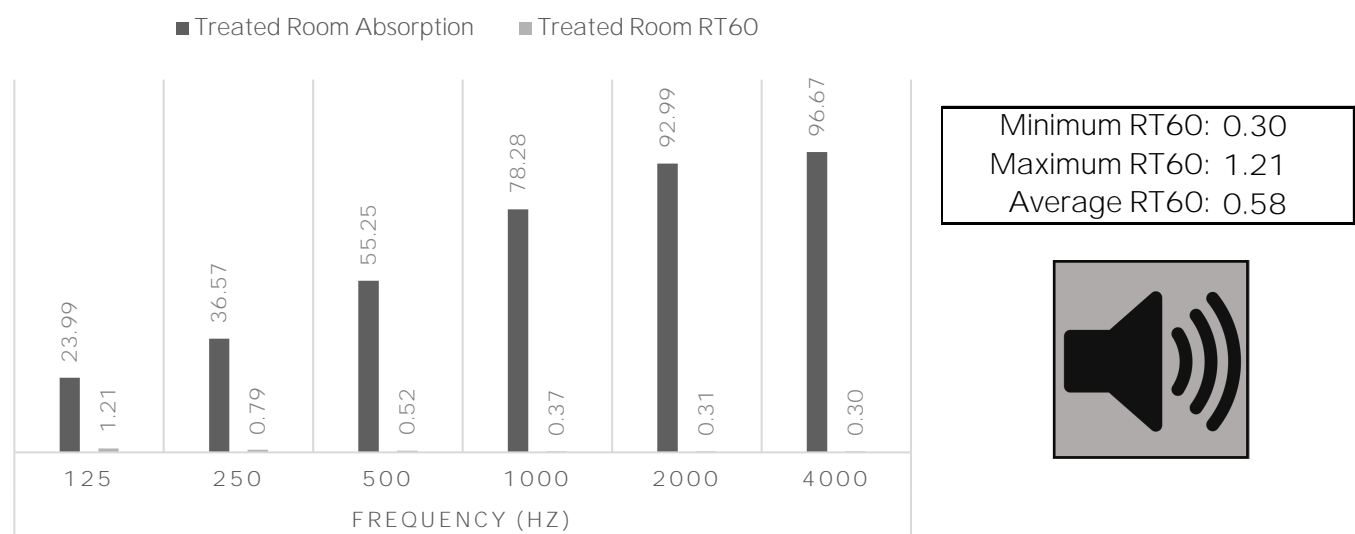


Figure 6.2 Adjusted Absorption and RT60 Levels



Note: Audio file can only be played on PDF readers such as Adobe PDF Reader, Foxit Reader, etc.

VII. CONCLUSIONS

A tranquil, comfortable, and well-sounded space is what we are trying to achieve, and for us to meet this standard requirements, different ARCHISONIC® products are hereby recommended to be installed. This will significantly improve the acoustic performance as it is evident in Section VI.

Reverberation Time Calculation were considered in the whole WESTGROVE OFFICE. The measured RT60 on the untreated room ranged from (0.89 seconds – 1.63 seconds) with an average of (1.16 seconds). This was used as basis for the room treatment.

The ARCHISONIC® material used are the following:

Table 7.1 ARCHISONIC® Products

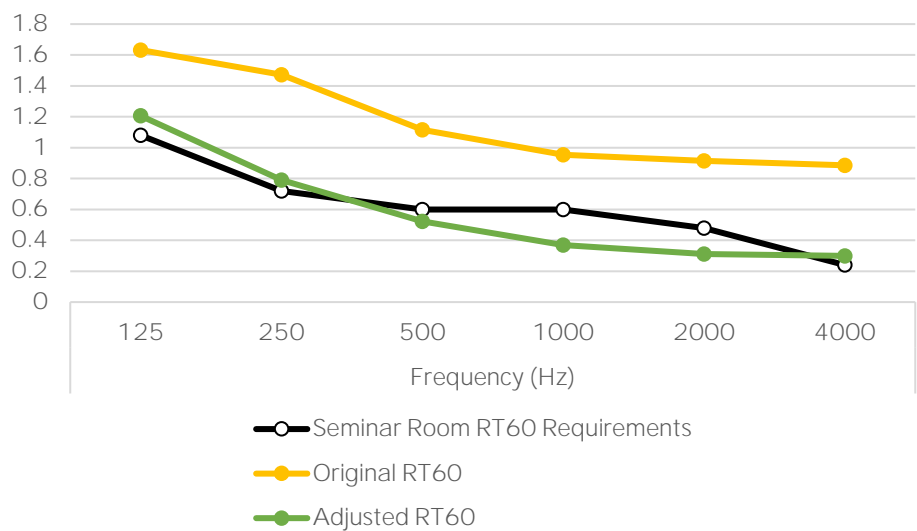
24mm Ceiling Baffle, 250mm straight baffle at 300mm spacing, 36m² of total ceiling area
24mm Wall Panel, 2400mm x 1800mm, at least 17.28m² of area

Analysis indicates that when these materials are installed on the room, the RT60 significantly decreases to acceptable levels. The treated room RT60 levels ranged from (0.30 seconds – 1.21 seconds) with an average of (0.58 seconds).

This completes the reverberation time analysis report.

Thank you!

Figure 7.1 RT60 Comparison



VIII. DEMARCATION LAYOUT PLAN

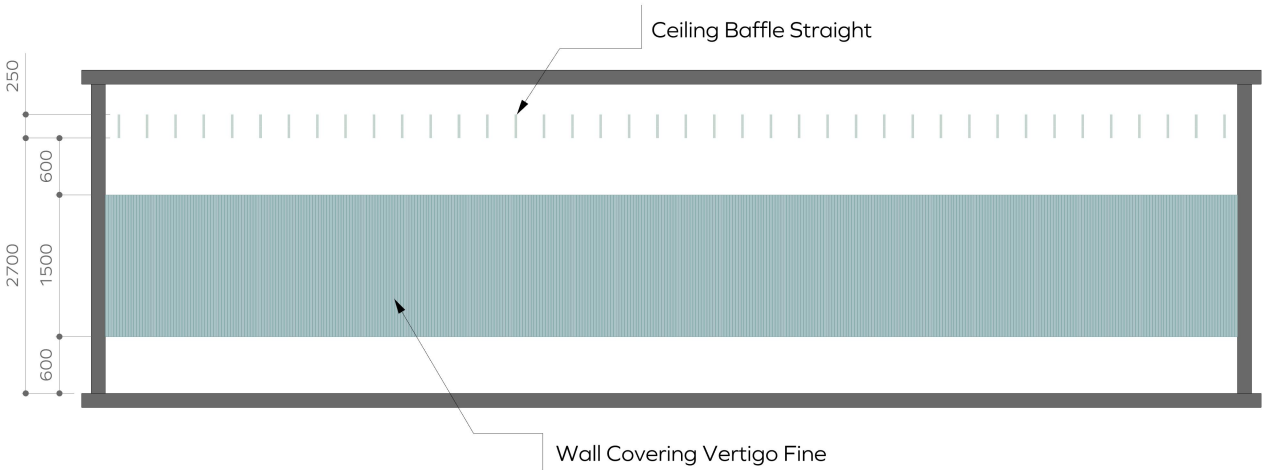
Westgrove Office

TOP VIEW:



- Ceiling Baffle Straight
- Wallcovering Vertigo Fine

FRONT VIEW:



Note: This demarcation layout plan is the initial design provision for better visualization of the acoustic treatments in the room/space. Design may change depending on client preference, onsite condition and restrictions, and/or progressive revisions throughout the course of project engagement.

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