Limited liability company
R&D AKUSTIKA

PLANNING OF ROOM ACOUSTIC FINISHING, PREDICTION OF ROOM ACOUSTIC PARAMETER AND AURALIZATION.

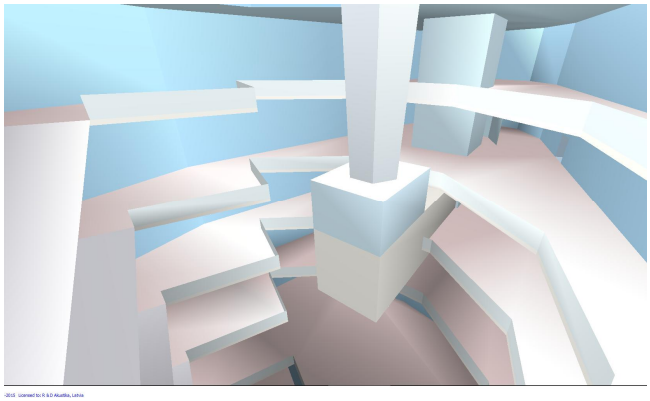
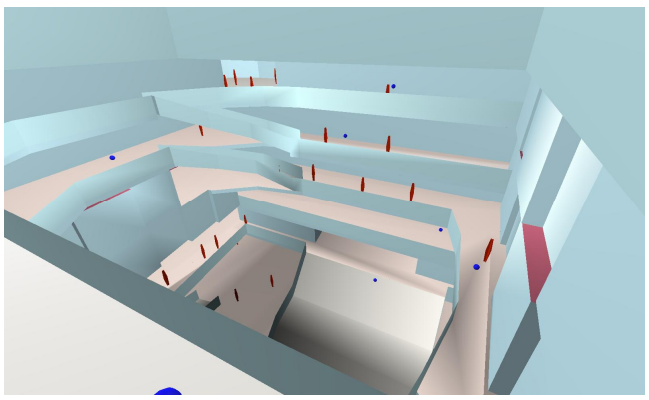
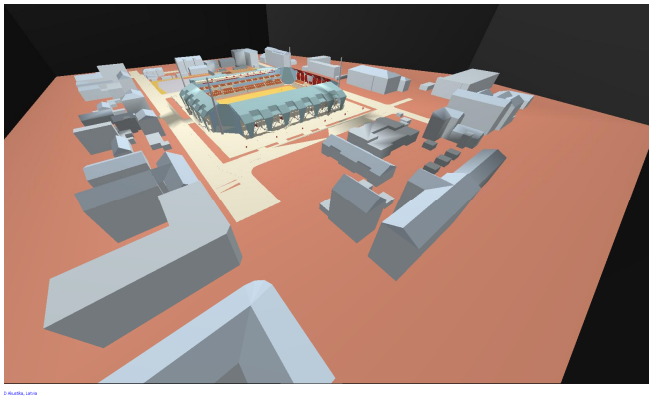
STANDARDS:
LVS EN ISO 3382-1:2022 "Acoustics. Measurement of room acoustic parameters",(ISO 3382-1:2009),
LVS EN ISO 3382-2: 2022 "Acoustics - Measurement of room acoustic parameters - Part 2: Reverberation time in ordinary rooms",(ISO 3382-2:2008)
LVS EN ISO 3382-3: 2022: "Acoustics - Measurement of room acoustic parameters - Part 3: Open plan offices (ISO 3382-3:2022)".

Calculable parameters (in octave bands from 63 to 8000 Hz):

- ***T*30** – reverberation time at 35dB attenuation, [sec]
- ***ETD*** – early reverberation time, [sec]
- ***C*80** – ratio between early (< **80 ms**) and late sound energy, [dB]
- ***D*50** – ratio between early (< **50 ms**) and late sound energy in observation point, [dB]
- ***LF, LFC*** – (up to **80 ms**) lateral sound energy factor, [%]

Construction standard LBN 016-15 "Building acoustics" limits multiple from measured parameters for rooms intended for various purposes. Thereby it is possible to prognosticate about the accordance of room (or the prospective object) with expected goals (concerts, theatre shows, conferences etc) by comparing calculation results with borderline values. Parameters are prognosticated by calculations, creating mathematical-geometrical model of the room and finishing acoustics, which is processed using acoustic parameter calculation software "Odeon" last actualisation.

Examples of previously done acoustic finishing projects and calculations.

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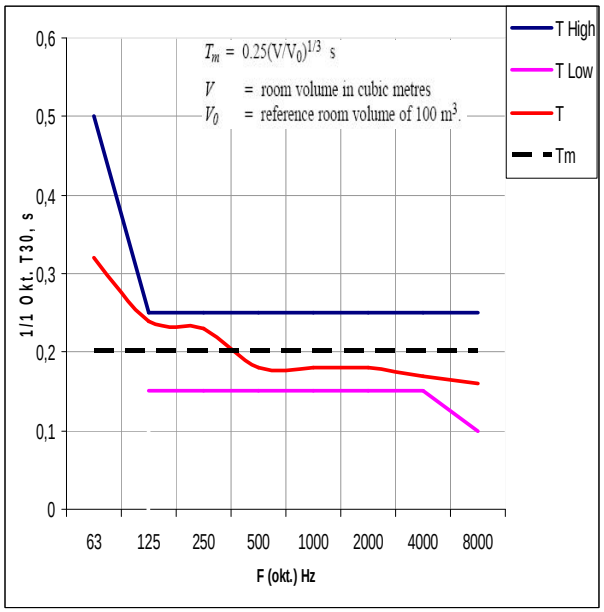
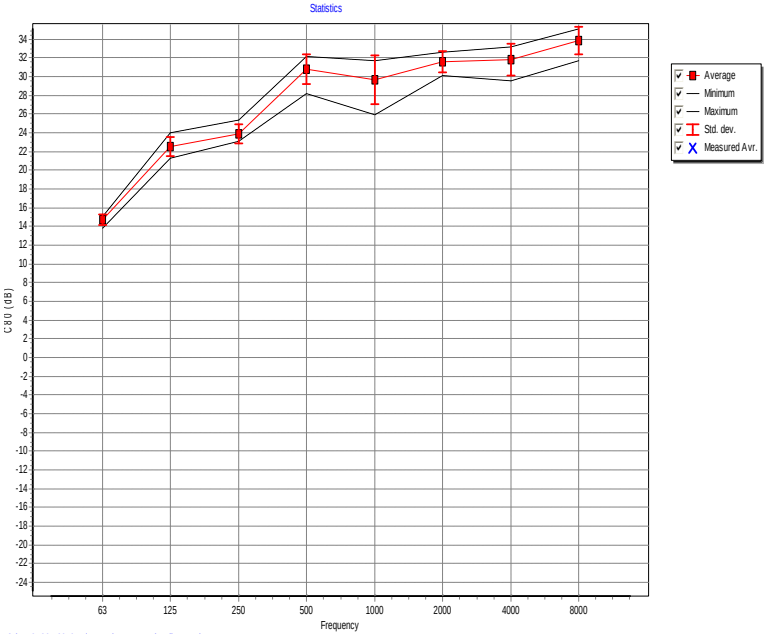
ROOM ACOUSTIC PARAMETER CALCULATIONS AND MEASUREMENTS RESULTS OF PROJECT.

Room acoustic parameter calculation

Average reverberation time in room: **T High –** highest recommended allowable limit, **T Low –** lowest allowable limit, **T** – prognosticated reverberation time, **Tm –** normative value





Measurement result example

	f	63	125	250	500	1000	2000	4000	8000	16000	[Hz]
Mikrof. vietas Nr./ Mērījuma Nr. (skat.Pielik.1) →	1./1 mērp.	9,94	16,07	21,21	23,98	20,27	17,51	18,18	17,76	19,54	
	1./2 mērp.	9,92	16,38	20,55	19,59	15,03	13,15	13,99	13,59	15,94	
	1./3 mērp.	9,87	15,86	20,73	19,89	17,67	16,42	16,19	16,07	17,86	
	2./1 mērp.	10,41	11,28	16,99	24,85	18,5	16,49	16,4	18,94	19,73	
	3./1 mērp.	13,41	11,16	15,18	25,01	19,37	17,12	17,76	19,67	20,79	
	4./1 mērp.	14,92	13,75	21,01	24,14	18,34	18,06	16,98	18,54	18,17	
Klausāmās telpas, akustiskā apdares un telpas iekārtojums pabeigts..	5./1 mērp.	12,21	14,5	18,06	20,52	17,37	16,17	16,22	17,55	18,98	
	6./1 mērp.	11,12	13,02	19,35	22,97	16,47	16,17	15,96	18,53	21,87	
	7./1 mērp.	9,7	15,73	19,68	22,8	17,46	16,03	14,94	16,19	17,56	
	8./1 mērp.	11,75	17,66	19,24	22,19	18,87	15,19	16,27	19,12	22,26	
	±Stdev	1,76	2,20	1,95	2,01	1,49	1,36	1,22	1,84	1,99	
	C 80 vid. [dB]	11,325	14,541	19,2	22,594	17,935	16,231	16,289	17,596	19,27	

Pasūtītājs: :

Parauga iden.Nr.:

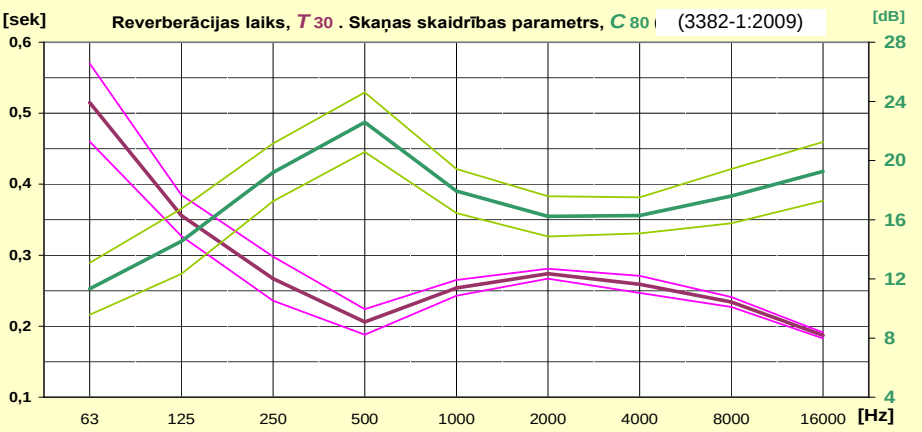
Objekta parametri:
V=105 m³ ;
(sk.šī pārskata Tabulu 1 un Pielikumu 1)

T [C°]	22±0,5
R [%]	50±4
P [mbar]	1012±0,7

Paraksts:

/

Datums:
2010.13.Jūlijs



		63	125	250	500	1000	2000	4000	8000	16000	[Hz]
Mikrof. vietas Nr./ Mērījuma Nr. (skat.Pielik.1) →	1./1 mērp.	0,54	0,326	0,242	0,179	0,254	0,285	0,25	0,232	0,189	
	1./2 mērp.	0,55	0,327	0,242	0,19	0,246	0,273	0,24	0,227	0,187	
	1./3 mērp.	0,558	0,323	0,246	0,191	0,243	0,271	0,249	0,228	0,186	
	2./1 mērp.	0,561	0,394	0,304	0,206	0,258	0,277	0,258	0,233	0,194	
	3./1 mērp.	0,545	0,351	0,29	0,204	0,266	0,263	0,268	0,238	0,192	
	4./1 mērp.	0,526	0,344	0,225	0,207	0,262	0,276	0,264	0,226	0,177	
Klausāmās telpas, akustiskā apdares un telpas iekārtojums pabeigts..	5./1 mērp.	0,385	0,392	0,28	0,2	0,241	0,28	0,272	0,238	0,188	
	6./1 mērp.	0,511	0,34	0,247	0,213	0,263	0,271	0,256	0,237	0,187	
	7./1 mērp.	0,518	0,372	0,28	0,223	0,266	0,263	0,255	0,232	0,186	
	8./1 mērp.	0,459	0,389	0,316	0,243	0,236	0,281	0,28	0,248	0,185	
	±Stdev	0,055	0,029	0,031	0,018	0,011	0,007	0,012	0,007	0,004	
	T 30 vid. [sek]	0,515	0,356	0,267	0,206	0,254	0,274	0,259	0,234	0,187	