

포스트텐션 공동주택 중량충격음 예측 및 실측에 관한 연구

A Study on the Simulation and Field Measurement for Heavy-weight Floor Impact Noise in Apartment Housing with Post-tension Structure.

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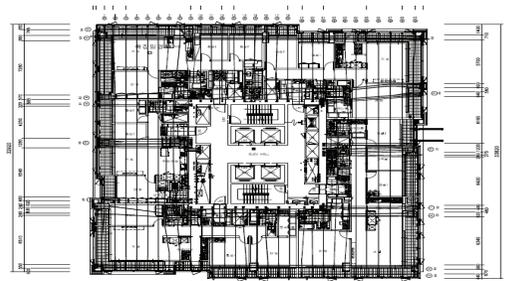


Fig. 1 Floor plan with post-tensioned tendons

1.

가, 가

180 mm

L.Cremer M.Heckl

$$SPL = Lv + 10\log i + 10\log(4S/A)$$

, SPL : (dB),

Lv : 20log(Vrms/Vo)

i : (0~1)

A : , S :

2.

2.1

2 6

(2)

3 가 4

15.2 mm

261 kN

8.8 m

Figure 1

Figure 4

Figure 3

65m²

2.2

(1)

Table 1

50 dB

† ;
 E-mail : 90water@poscoenc.com
 Tel : 032-200-2214, Fax : 032-200-2253

35 MPa 가 230
 mm : 220
 mm 가 47 MPa

* ~*** () ,

**** R&D , ,

35 MPa 230mm

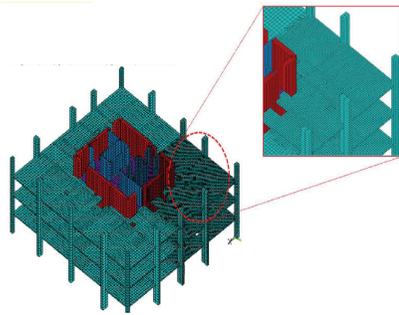


Figure 2 Structure of basic floor

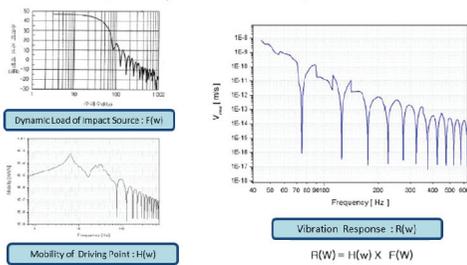


Figure 3 Response of structure

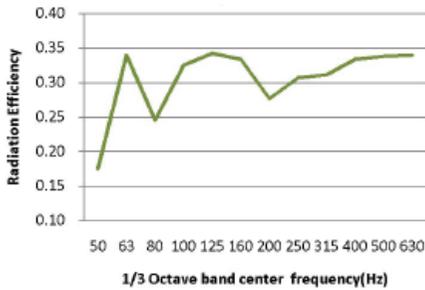


Figure 4 Sound radiation efficiency

Table 1 Simulation result of impact sound insulation of floors by floor slab thickness & concrete compression strength

Hz	63	125	250	500	Rating
210 mm, 35 MPa	81.7	61.9	49.2	40.0	51
220 mm, 35 MPa	81.2	62.5	48.6	39.0	51
230 mm, 35 MPa	80.5	61.2	48.9	39.2	50
240 mm, 35 MPa	79.4	61.2	47.8	38.6	49
250 mm, 35 MPa	78.5	61.1	47.3	38.2	48
210 mm, 40 MPa	81.3	61.6	49.0	40.1	51
210 mm, 47 MPa	81.1	61.0	47.3	38.2	51
220 mm, 40 MPa	81.1	61.6	46.9	35.7	51
220 mm, 47 MPa	80.7	60.8	46.7	37.6	50

2.3

(1) 가

“KS F 2810-2: - 2 :

(2001)”

“KS F 2863-2:

가 - 2 :

(2007)”

가

가

Table 2

Table 2 Result of field measurement of impact sound insulation of floors

Hz	63	125	250	500	Rating
Impact Sound Insulation of Floors(dB)	76.6	62.6	47.1	40.1	48

(2)

0.9~3.9

dB 가 ,

가

가 2

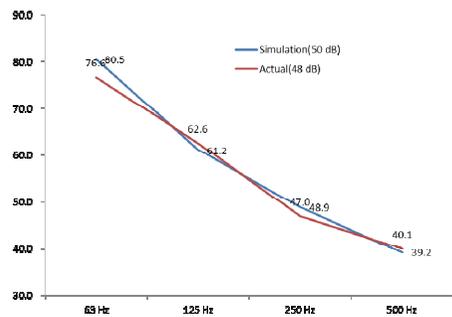


Figure 5 Comparison of Simulation and Measurement

3.

L.Cremer

M.Heckl

0.9~3.9 dB
가 2 dB

가

가

가