

Private residence

Client	Private residence
Architects	Jaroslav Wrubel Architects
Natural frequency	2.3Hz

In brief

CMS Vibration Solutions has specified and installed the Kinetics Spring Lift Slab Floor Isolation System, Model LSM, at a new build residential extension in Kent. It formed part of a highly specialised and bespoke architectural design to prevent low level sound from causing severe disturbance to a long term sufferer of low frequency hearing.

Project scope

Low frequency hearing, or 'The Hum', is a rare medical condition which causes sufferers to hear sounds which are not normally audible to humans. These sounds cause constant disturbance during the day and disrupt sleep at night. Having experienced low frequency hearing for over six years, Mrs Champney consulted a medical acoustician to try and identify a solution that would alleviate the pains and frustrations.

Low frequency noises are generally ground borne and created by factors such as water flowing through underground pipes. Therefore, a completely isolated bedroom was identified as the best solution for ensuring peace at night. A local architect, Jaroslav Wrubel, was brought in to design an extension to the existing house and source an isolation solution that could attenuate frequencies as low as 7Hz.

Achieving such low frequencies required a highly precise and very specialised isolation solution. There are a number of systems on the market, which were considered. However, the Kinetics Spring Lift Slab Floor Isolation System, Model LSM, was the only system with technical data to prove it could achieve the extremely low frequencies specified. "With the low frequency hearing condition being so sensitive, we had to ensure the isolation system selected could meet the exact frequency requirements. CMS Vibrations worked hard to provide the technical data we needed" explained Jaroslav Wrubel.

The Kinetics Spring Lift Slab Floor Isolation System consists of fabricated, non-cast isolator housings that can accommodate any slab thickness, air cavity or loads. The system is constructed by first adhering perimeter isolation board to the perimeter of the floating floor area and laying a bond breaker. The LSM isolator mounts are then positioned according to system design and concrete poured on top to create the slab. Once the concrete is cured, the spring assemblies are installed within the housings and 'jacked-up' to lift the concrete slab to the specified height.



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In this extension build, the challenge was to lift the concrete slab to a carefully specified height, so that it met with the finely tuned requirements of the medical acoustician. The aim was to lift the concrete slab to create a 'room within a room', a completely isolated bedroom that would prevent low frequency sound from penetrating the space. Jaroslaw continues: "We had to achieve a lift of 50mm to meet the specified frequency for the room, which meant turning each spring just a quarter of a turn at a time. It required a precision installation to protect the performance of the specification – which CMS Vibrations was able to deliver."

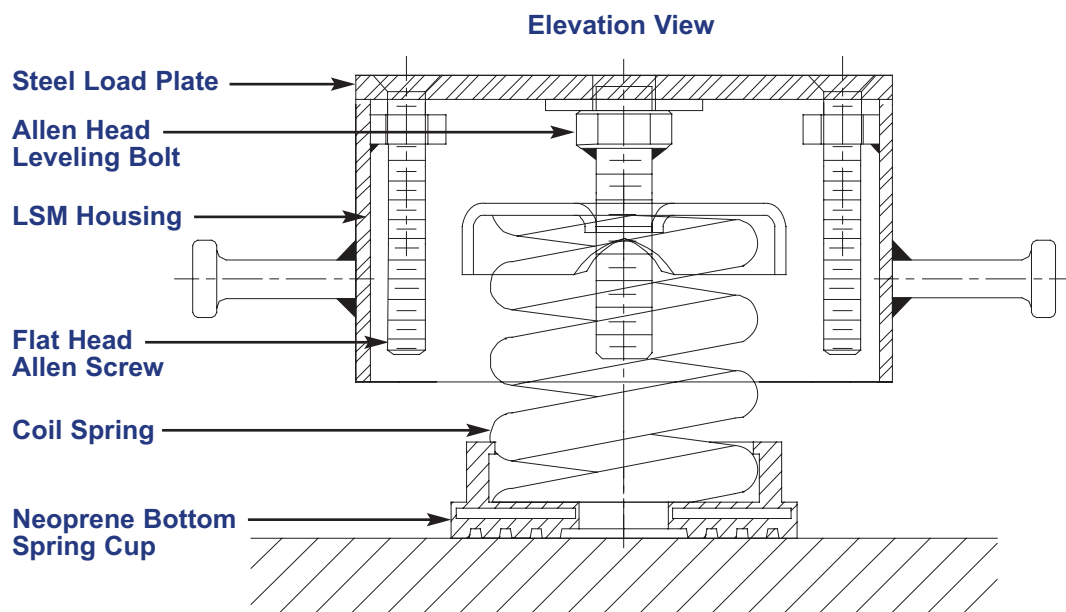
Results

The specification of Kinetics Model LSM for this specialist application and the professional installation of the system enabled precise lifting. It has played a critical role in achieving a completely isolated structure and also, therefore, meeting the required frequency reduction levels as specified by the medical acoustician.

Since moving into the isolated extension, Mrs Champney has had respite from the sleepless nights that have plagued her for so long and has been given a new lease of life: "It has been absolutely wonderful. I used to get less than two hours' sleep at a time whereas now I sleep right through – I almost can't wait to get to bed! The architect was excellent at finding the right solution and the CMS Vibrations team were very professional. I can honestly say the spring system has changed my life and for the first time in a long while, I can get away from a condition that I normally find inescapable."

Benefits

- Precision installation
- Tailored to meet exact architect requirements
- Flexible system design
- Market-leading performance
- Proven effective for vibration isolation
- Expert support available



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