

BRECON Vibrationstechnik GmbH, Cologne, Germany

Innovative synchronous vibrators convincing in first practical use

A newly developed synchronous running vibration system (SL vibrator) from Brecon Vibrationstechnik GmbH, from Cologne, Germany, has successfully mastered its premiere at a precast concrete element plant. The Dressler concrete plant in Stockstadt, Germany was the first user for this innovative tech-

nology for homogenous compaction using the synchronous running technique. Initial experience with the unit in operation showed a noticeable improvement in compaction combined with reduced energy consumption and a measurably reduced noise level.

When Dressler ordered three new tilting tables from Nuspl, Germany, at the end of 2003, the form work manufacturer worked closely with the vibration specialists from Cologne from the very beginning. Both the traditional 200 hertz asynchronous vibrators and the new 100 hertz SL technology were installed on three identical formwork units. One model with four vibrators for comparison gave the precast concrete element producers the opportunity to see how convincing the new technology really is.

For Bernd Reitenbach, Director of the Central Section Machine Technology and Logistics at Dressler, the use of the new technology means a steady step forwards in implementing the traditionally high quality demands made by his company: "We invested

in the latest technology 14 years ago with the Bosch-HF vibrator of type 18220 because it suited our needs exactly. And after our experiences in our plant, I am convinced that another technical quantum leap forward has taken place with the new synchronous vibration system."

A model with two SL vibrators showed that none of the previously typical long wave interference arises. The speed of the synchronous operation of the SL vibrator could be demonstrated perfectly with a stroboscope.

The preceding concrete casting tests, including a 2 meter standing column, impressed the precast concrete element maker. "The enormous energy output can really be felt," said Plant Director Robert Freund, "and the system is also much quieter than traditional systems. We will demonstrate this subjective feeling in tests soon, but we assume the reduction in noise levels is between four and six deci-



The SL synchronous vibrator from Brecon

bel." The workers in the precast concrete element plant also thought that the mono-frequency noise of the synchronous vibrator was a pleasant surprise compared to the up and down of the broad, long wave shifting frequency bands of the asynchronous vibrator. Moreover, the constant frequency not only spares the ears of the



View of the production area at Dressler



A solution that points the way to the future resulted from the close cooperation between the form work manufacturer and the vibration specialists

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Noise-reduced SL vibrator

Example for two standard HF vibrators with slightly different speeds:

vibration amplitude of **standard** vibrator

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Effect of the frequencies on the vibration overlap

Different frequencies of the vibrator on a tilting table

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Noise-reduced SL vibrator

Example:

Vibrating table with 11 **standard** HF external vibrators

5688	5669	5680	5705	5677	5693
5701	5674	5698	5685	5665	

Each vibrator has a different speed

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workers, but is also easier on the steel structure of the formwork, especially the welding seams. The formwork retains dimensional accuracy longer and thus has a longer service life.

Above all, the system means noticeable improvement in the quality of the concrete during compaction. "One of our production focuses is on high quality facades. The setting of the vibrators was always very complex and associated with a lot of detail work because with fine finish surfaces, every little uneven spot is immediately noticeable. Even after our first tests with the synchronous vibrators, I am convinced that we certainly vibrate better than ever before."

The identical vibration frequency affects every point of the formwork which can thus be exactly adjusted to the requirements of a homogenous concrete mixture. Because of the exact speed of operation of the vibrator, the frequency regulation for the optimal point for compaction of each individual concrete mixture can be determined. According to the manufacturer, this accuracy remains constant over the entire service life of the SL vibrator.

The concentration on a definite frequency reduces the sound radiation from the steel structure since individual components no longer generate any noise. In addition, the complete adjustability of the frequency makes it possible to avoid resonances which typically result from the complexity of the formwork.

The new technology also looks good when the economic aspects are considered. Although the purchase costs are around 10 percent higher than for

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Noise-reduced SL vibrator

Example:

Vibrating table with 11 **standard** HF Brecon external vibrators

6000	6000	6000	6000	6000	6000
6000	6000	6000	6000	6000	

All vibrators have the same speed

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Synchronous running SL vibrator on a tilting table

traditional technology, the frequency converter technology only uses half the energy so that costs are saved in the long run. Another advantage of the new technology is the process control: since the speed of each vibrator is identical and is exactly equal to the frequency displayed on the control panel, the vibration period and frequency can be reproduced precisely for every concrete casting process.

As part of the modernization program, Brecon updated the PLC and radio remote control system, which were installed 14 years ago, in all three wings of the

hall. In the next step, the concrete casting personnel will be trained in the correct handling of the vibration equipment so that the new technology can be used to its fullest extent for the quality of the pre-cast concrete element production.

Bernd Reitenbach is already indicating that a modernization of all vibration tables could soon take place: "Should our experiences in the near future confirm

the positive impression we have received to date, then we will certainly change over completely to the synchronous vibrators."

BRECON Vibrationstechnik GmbH
Noise-reduced SL vibrator

Example:

Vibration amplitude **synchronous** vibrator

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The harmonious vibrations of the synchronous vibrator

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