Application No. 665: Antigrav - Magnetic levitation train

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Magnetic levitation as energy source?

Our project levitation train

We are two curious and technology-interested 11th graders with a concentration in natural science at the Ensemble Saint Luc in Cambrai. As part of a coached project for the university-entrance diploma we were looking for an interesting and stunning topic. Soon, terms such as magnetism and levitation came to mind. Our topic selection boiled down to the following question: *"Magnetic levitation, a new energy source or pure utopia?"* To answer this question we built Antigrav, a model train with a magnetic power unit. This train is a simplification of the Japanese magnetic levitation train Maglev.

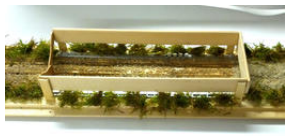
Materials used

We used a total of 100 magnets, which, based on our calculations, needed to have an adhesive force of at least 1,5 kg in order to make the train hover. We selected block magnets Q-10-05-03-N (www.supermagnete.de/eng/Q-10-05-03-N).

Assembly including tracks

Then we started to build the model: On an approx. 50 cm long wooden board we attached two iron clasps, on which we then placed the magnets. To keep the train on the tracks later on, we built barriers around them.

Decoration of the model

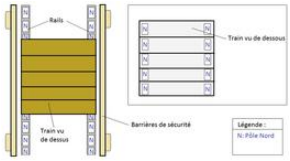


Because we were so into it, we added greenery to make the model prettier.

Building and use of the train

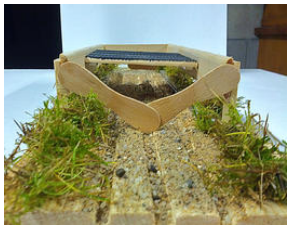
At the end we built the train. We glued 4 wooden slats next to each other and attached block magnets Q-10-05-03-N (www.supermagnete.de/eng/Q-10-05-03-N) underneath on both sides. Then came the big moment. We placed the train on the tracks. The result: The train hovered as anticipated over the magnets. We only had to push it a little bit to get it into motion.

Magnet arrangement



The adjacent plan shows how the magnets need to be arranged on the tracks and the train.

A successful project



You can say we surprised everyone with our levitating train: Our parents, our teachers and also our friends.

Note from the supermagnete team:
A very similar project is "levitating train" (www.supermagnete.de/eng/project235).

Articles used
100 x Q-10-05-03-N: Block magnet 10 x 5 x 3 mm (www.supermagnete.de/eng/Q-10-05-03-N)

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