

Coupling of ironless linear motors

an effective method to increase the available force

Introduction

When your machine needs a power upgrade, or you need to expand an existing design, then consider the coupling of linear motors. Coupling two ironless linear motors is an effective method to increase the available force. It is relatively straightforward and gives impressive results. An advantage, and maybe surprising, is that you are not just limited to using identical motors. Various combinations can be made, as long as their force constants are the same.

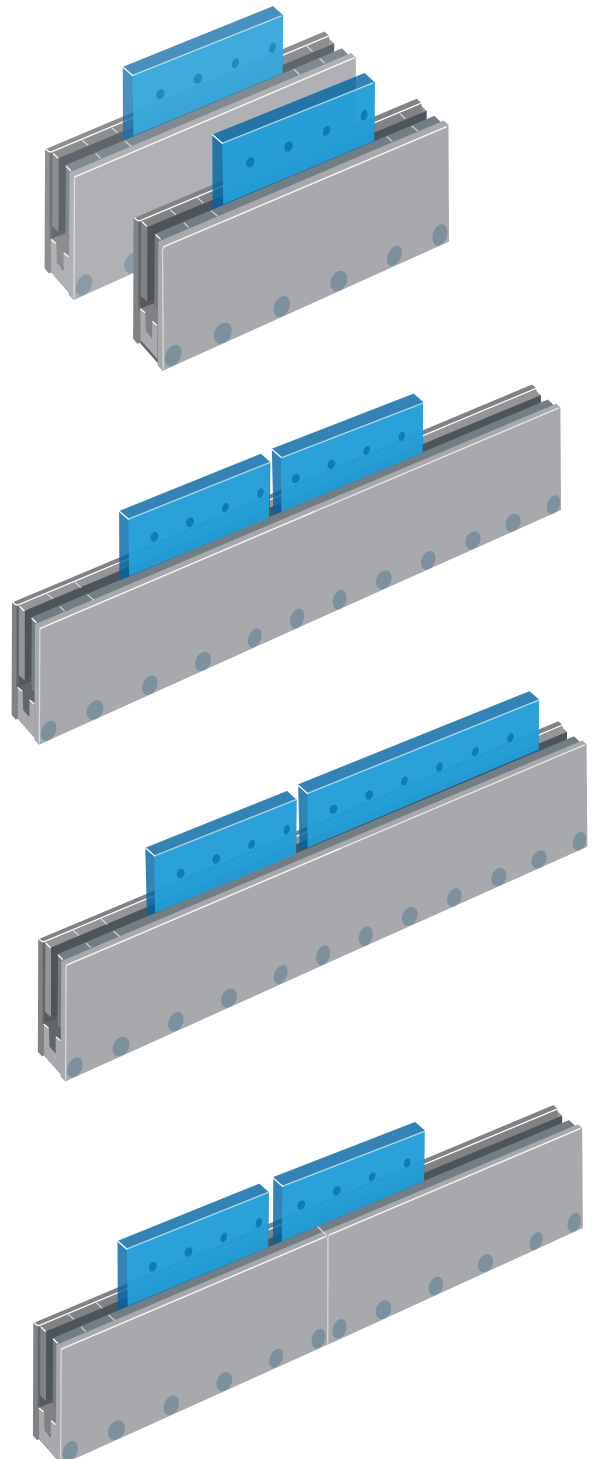
Coupling motors offers great flexibility and options for design and implementation in your application. This note provides some details of a 'coupled application'.

Configuration options

Individual ironless coil units can be coupled. This can be done using two separate magnet tracks for gantry-type applications or in a single magnet yoke to yield more force. This last option is especially interesting for cost reduction in long-stroke applications. By coupling two coils, a smaller series coil and magnet yoke can be used. This will reduce the magnet yoke cost.

Coupling of motors

Different types of motors within one series can be coupled as long as they have the same motor force constant. The forces of both coils can be added up. Motors must always be connected to the drive in parallel. Series coupling is not possible because of the voltage limitations of the cables.



Two methods

Mechanically the coupling can be performed in two different ways.

- The first method is parallel coupling, in which there are two (or more) rows of yokes with coil units. If the coil units face the same direction then they can simply be placed at the same position on each individual magnet yoke parallel to each other.
- The second method is in-line coupling, where several coil units are placed in the same row of magnet yokes. In this case, there are three orientations possible, with the cable sides pointing to each other, away from each other, or in the same direction. In the figure below you can see the coupling orientations.

Details about minimum mounting distances between both coils can be sent upon request.

[Advantages]

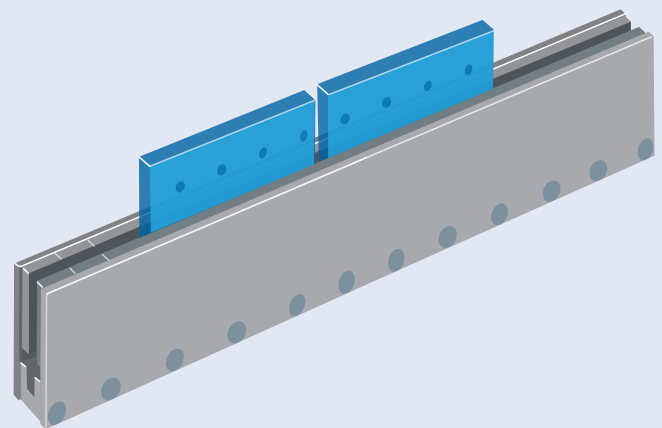
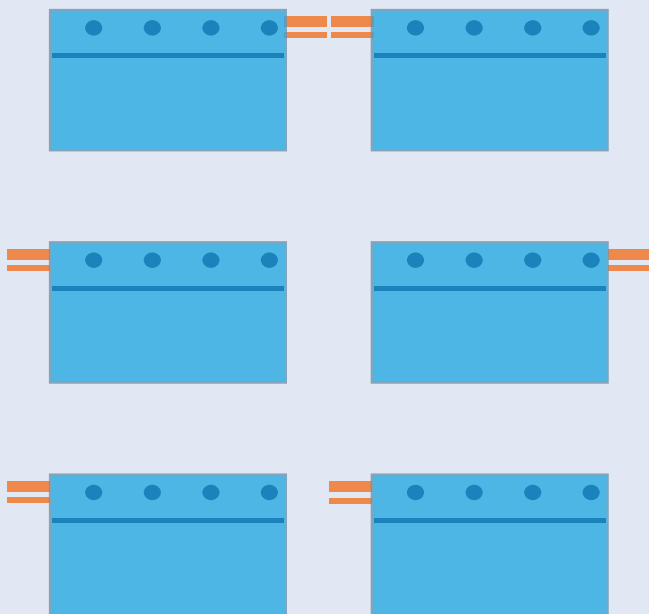
- Great flexibility within your machine design
- Cost effective (two coil units on one magnet yoke)
- Double the power on familiar hardware
- Scalable power for existing machinery

[End note]

Our [support team](#) of application engineers is on standby to provide you with help with your application challenges at +31 546 898 475.

If you want to know more about the coupling possibilities of *iron core* linear motors, then take a look into this topic:

[Coupling of linear motors](#)



In-line coupling, the three orientations for cables, when coupling two coil units in the same yoke

Conditions

When coupling motors, use only one of the temperature sensors. Make sure that the cables of the motors have the same length.

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