JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH

Technology for Linear Motion - Tec4Lin

TECNOTION THE LINEAR MOTOR COMPANY

Linear Motor Elements

- **OEM linear motor elements for machine integration**
- **ironless and iron core technology**
- **peak force up to 6.750 N**
- **continuous force up to 3.000 N**

Linear motor technology for industrial applications!

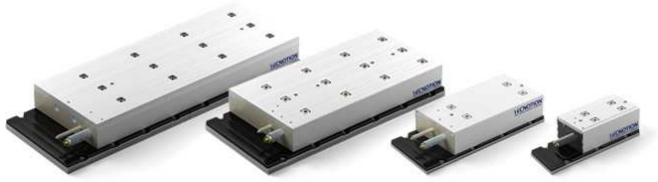
Tec4Lin Products

Tec4Lin stands for 'Technology for Linear Motion'.

Tec4Lin OEM motor elements are direct drives, available in flat iron core or U-shaped ironless variations. The linear motion is electromagnetically generated without any mechanical elements, like spindles, belts, gear boxes, etc...

The motor is made out of an active and a passive part. The active part contains the motor windings, while the passive part is fitted with NdFeB magnets.

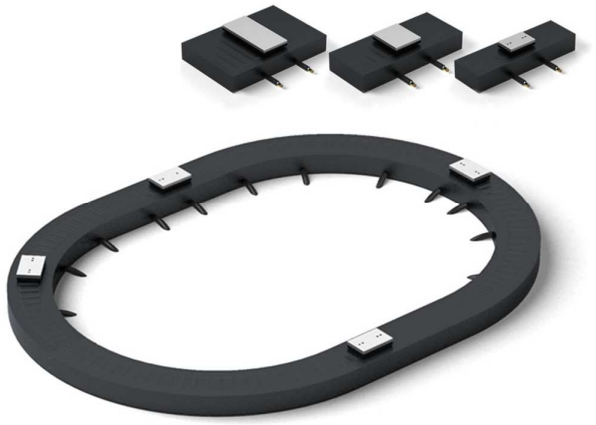
Generally, with all motor element types, any number of passive parts can be mounted together back-to-back, making strokes unlimited.



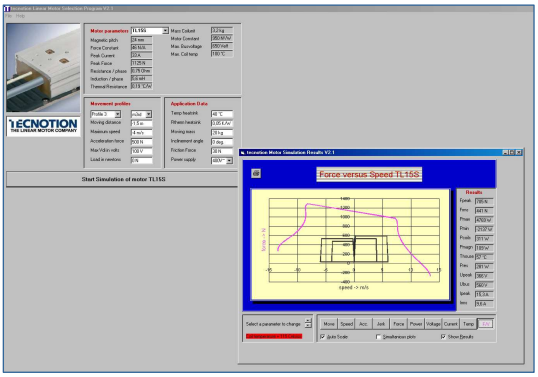
flat, iron core
motor elements

U-shaped ironless
motor elements

For ***ClosedGuide*** systems, the motor elements of the ***Tec4Lin*** series, with mountable straight and bent active parts, are designed as a construction kit. The active parts consist of mountable straight or bent motor elements, which have several integrated stator windings in a row. The bent form of the linear motor stator is revolutionary.
The passive part is designed as a short magnet plate, keeping the moving masses extremely low.
Almost any number of passive parts is operable in a ***ClosedGuide*** system, making this technology very flexible in various applications.



straight & bent iron core
motor elements



designer tool

The designer tool is a configuration tool for linear motions, which can simulate motions, as well as force processes.

The suitable ***Tec4Lin*** drive components are chosen in the integrated product data base. Applications can be analyzed within seconds and by various criteria, which eliminates the need to perform complex calculations manually.

Tec4Lin Applications

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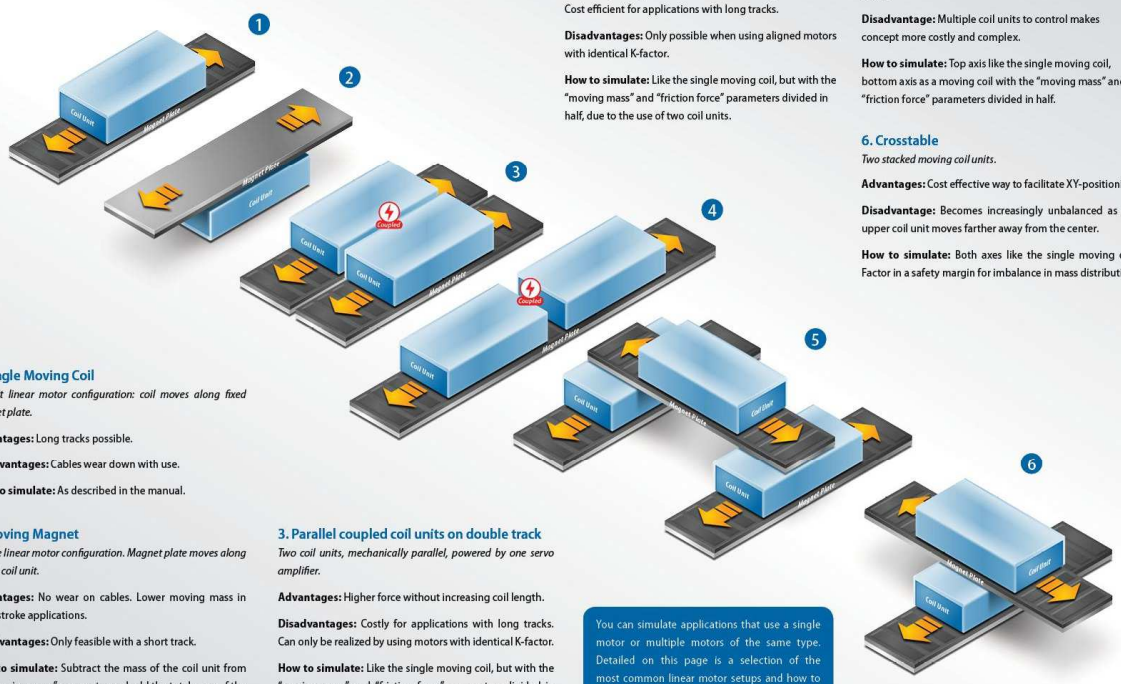
APPLICATION EXAMPLES



1. Single Moving Coil

Default linear motor configuration: coil moves along fixed magnet plate.

Advantages: Long tracks possible.

Disadvantages: Cables wear down with use.

How to simulate: As described in the manual.

2. Moving Magnet

Inverse linear motor configuration. Magnet plate moves along a fixed coil unit.

Advantages: No wear on cables. Lower moving mass in short stroke applications.

Disadvantages: Only feasible with a short track.

How to simulate: Subtract the mass of the coil unit from the "moving mass" parameter and add the total mass of the magnet plates.

3. Parallel coupled coil units on double track

Two coil units, mechanically parallel, powered by one servo amplifier.

Advantages: Higher force without increasing coil length.

Disadvantages: Costly for applications with long tracks. Can only be realized by using motors with identical K-factor.

How to simulate: Like the single moving coil, but with the "moving mass" and "friction force" parameters divided in half, due to the use of two coil units.

4. In-line coupled coil units on single track

Two coil units, mechanically in-line, powered by one servo amplifier.

Advantages: Higher force without increasing coil width. Cost efficient for applications with long tracks.

Disadvantages: Only possible when using aligned motors with identical K-factor.

How to simulate: Like the single moving coil, but with the "moving mass" and "friction force" parameters divided in half, due to the use of two coil units.

5. Gantry / Portal

Three coil units, one of which is stacked on top of the others.

Advantage: Stable construction along entire movement range.

Disadvantage: Multiple coil units to control makes concept more costly and complex.

How to simulate: Top axis like the single moving coil, bottom axis as a moving coil with the "moving mass" and "friction force" parameters divided in half.

6. Crosstable

Two stacked moving coil units.

Advantages: Cost effective way to facilitate XY-positioning.

Disadvantage: Becomes increasingly unbalanced as the upper coil unit moves farther away from the center.

How to simulate: Both axes like the single moving coil. Factor in a safety margin for imbalance in mass distribution.

You can simulate applications that use a single motor or multiple motors of the same type. Detailed on this page is a selection of the most common linear motor setups and how to simulate them.

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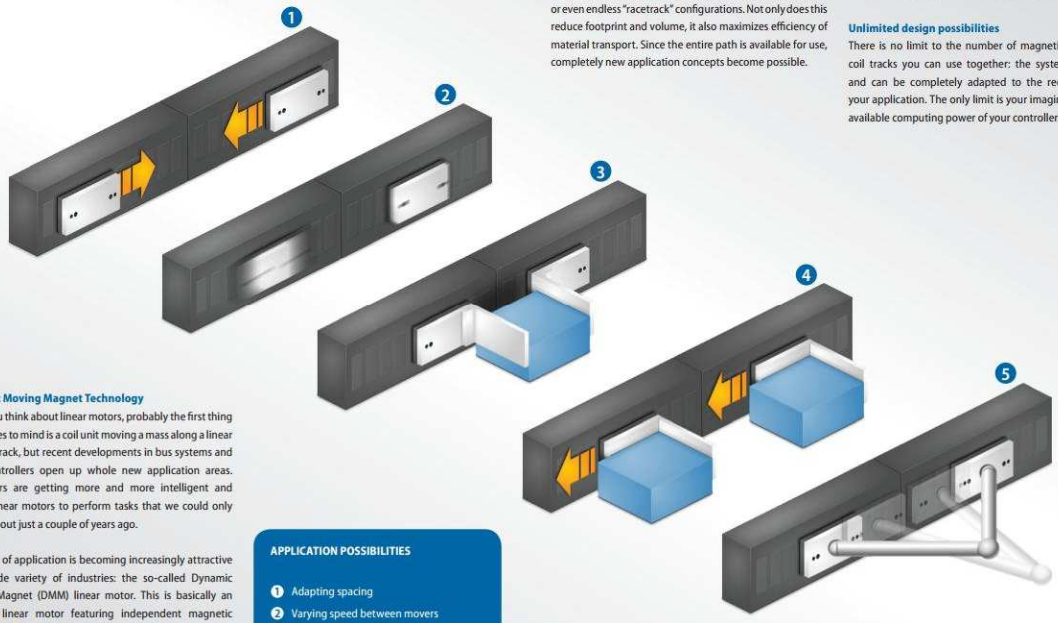
MM-SERIES BASIC CONCEPTS



Curved and endless tracks

DMM systems are no longer limited to movement in a straight line. The magnetic movers can be positioned along a curved track, with absolutely no loss in performance. Applications can be designed using straight tracks, S-tracks or even endless "racetrack" configurations. Not only does this reduce footprint and volume, it also maximizes efficiency of material transport. Since the entire path is available for use, completely new application concepts become possible.

Independent movers

Each magnetic mover that runs along the track can be controlled independently by powering coils individually or in groups. The design of the MM-series provides you with maximum flexibility in the way you control each mover.

Unlimited design possibilities

There is no limit to the number of magnetic movers and coil tracks you can use together: the system is modular and can be completely adapted to the requirements of your application. The only limit is your imagination and the available computing power of your controller.

Dynamic Moving Magnet Technology

When you think about linear motors, probably the first thing that comes to mind is a coil unit moving a mass along a linear magnet track, but recent developments in bus systems and logic controllers open up whole new application areas. Controllers are getting more and more intelligent and enable linear motors to perform tasks that we could only dream about just a couple of years ago.

One type of application is becoming increasingly attractive for a wide variety of industries: the so-called Dynamic Moving Magnet (DMM) linear motor. This is basically an inverted linear motor featuring independent magnetic movers that move along a modular coil track.

Combined with position sensors and a controller, DMM technology opens up whole new fields of application with incredible functionality.

APPLICATION POSSIBILITIES

1. Adapting spacing
2. Varying speed between movers
3. Exerting clamping forces
4. Pushing materials
5. Using kinematics to manipulate materials

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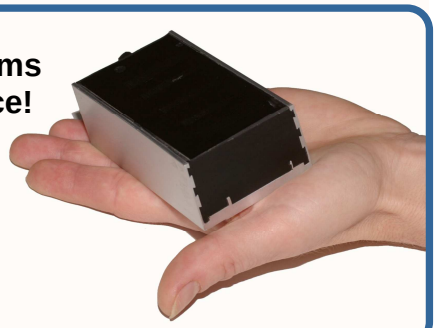
We are one of Germany's leading suppliers of linear direct drive technologies!

Linear motor systems from a single source!



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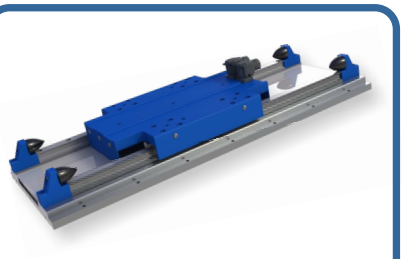

Machine integration

Position Sensors

Cables

Positioning Controllers

Linear motor systems from a single source!