



Plan

- 0. AW introduces – what to expect from today – Both motors are JVL Integrated motors, which means that all electronics are built-in (driver+indexer=controller + built-in encoder), which is the critical part that will manage the entire move – 2 minutes
- 1. Explain both motor types with focus on applications Kenneth with Stepper and Palle with Servo – 1 minute each
- 2. AW presents applications where KRP and PS sells in their motor type
- Questions: Temperature – duty cycle – Adaption to different inertia – torque/need of gear – ability to stand still –
- 3. When MUST it be a stepper or a Servo
- 4. Summery – The winners are – The most important part is the controller, the basic motor is basically simple.
- Place motors on podiums for each application



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Servo vs Stepper

Pros and cons presented in this epic motor type battle!



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Today

What is an
Integrated
Motor?

Servo:
MAC motor®

Stepper:
ServoStep™

Battle!

Summary

Verdict



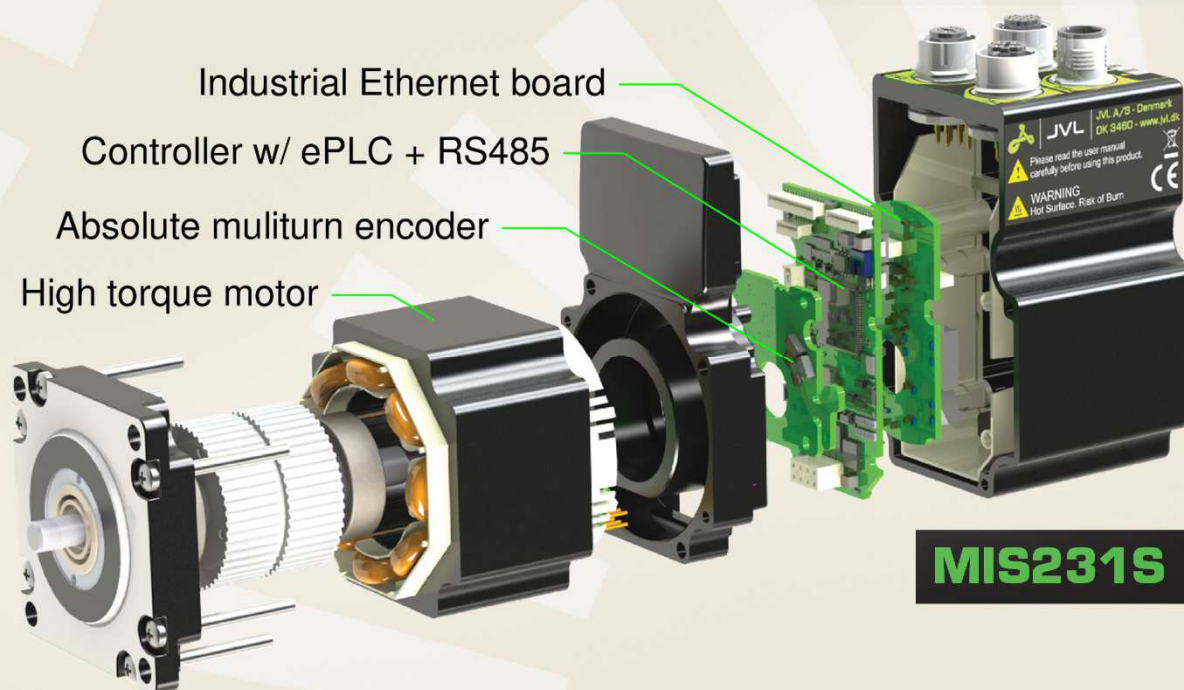
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What is an Integrated Motor?

It is a Servo or Stepper Motor where all these parts are built-in into one compact unit:



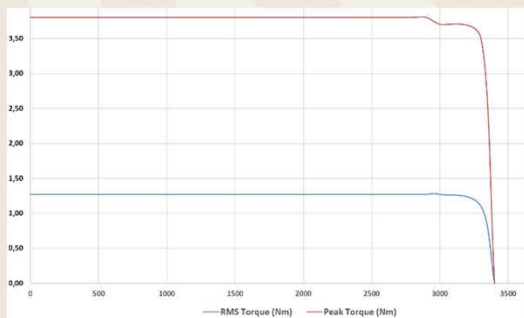


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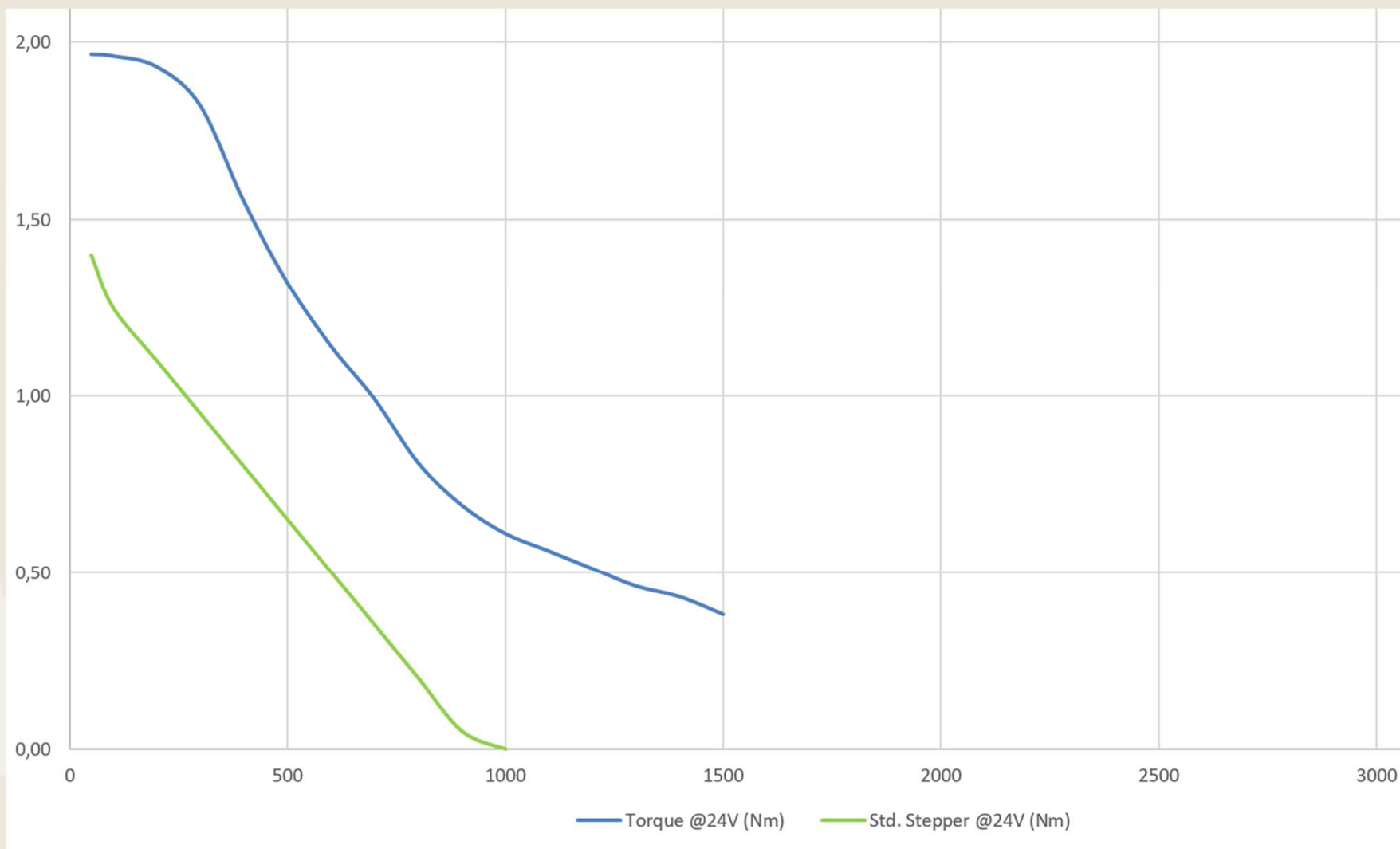
Servo: MAC motor®

The heart of automation & robotics

- ▶ Highest Power density
- ▶ Highest Dynamics
- ▶ Widest Power range – MAC motor up to 4.5 kW (separate servos several MegaWatt)



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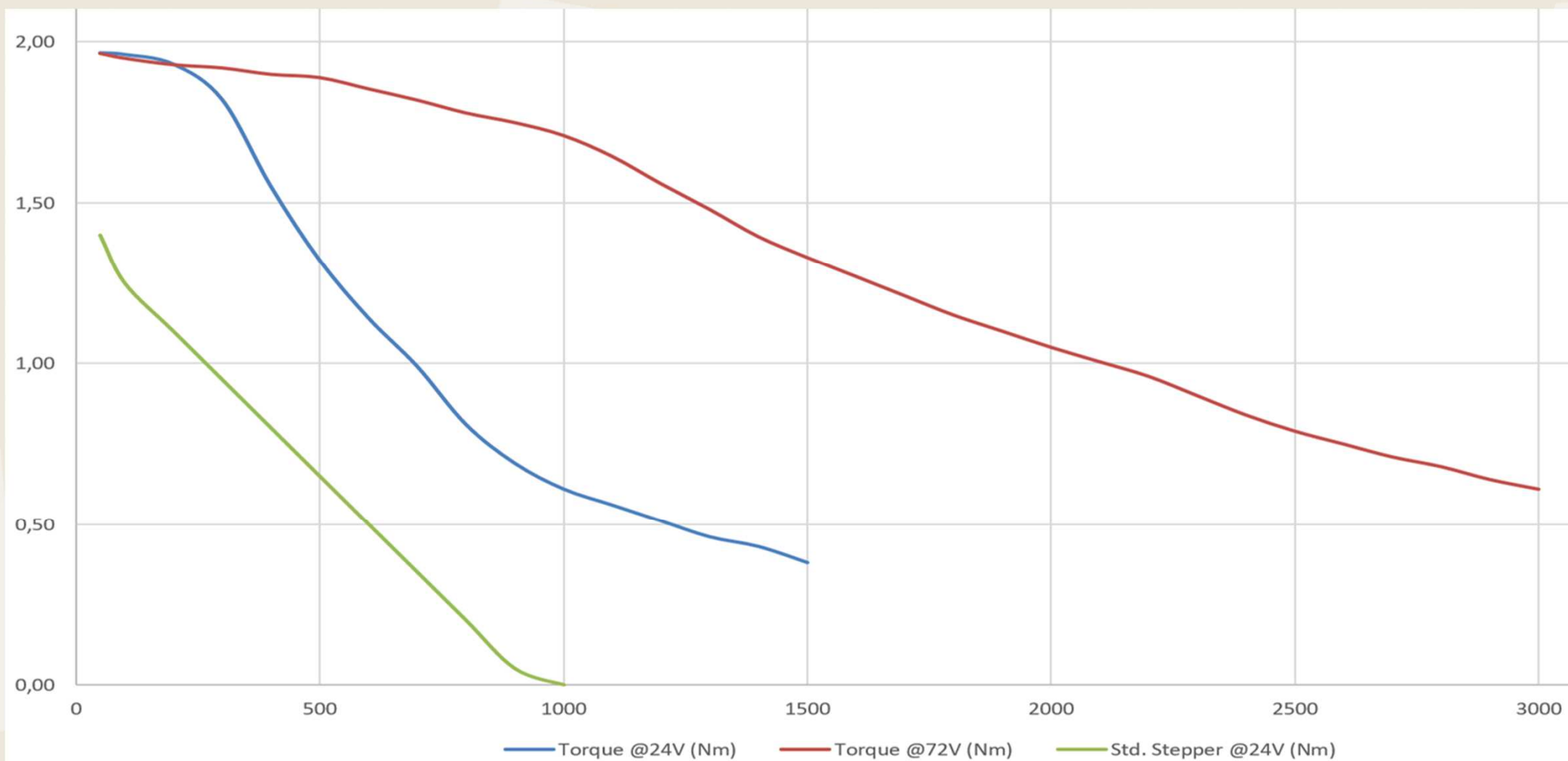
ServoStep™

The best of both worlds.... with a few limits

The advantages of a step motors + the controllability of a servo.

- ▶ Highest torque density
- ▶ Complete stand still
- ▶ Price advantage





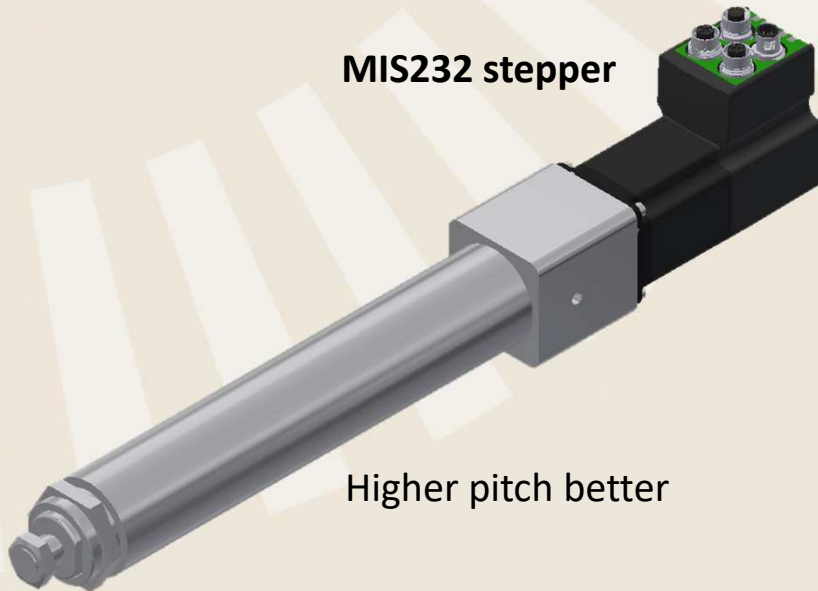


Application 1 – Ball screw

Ball screw = combined transition to linear and gear reduction.

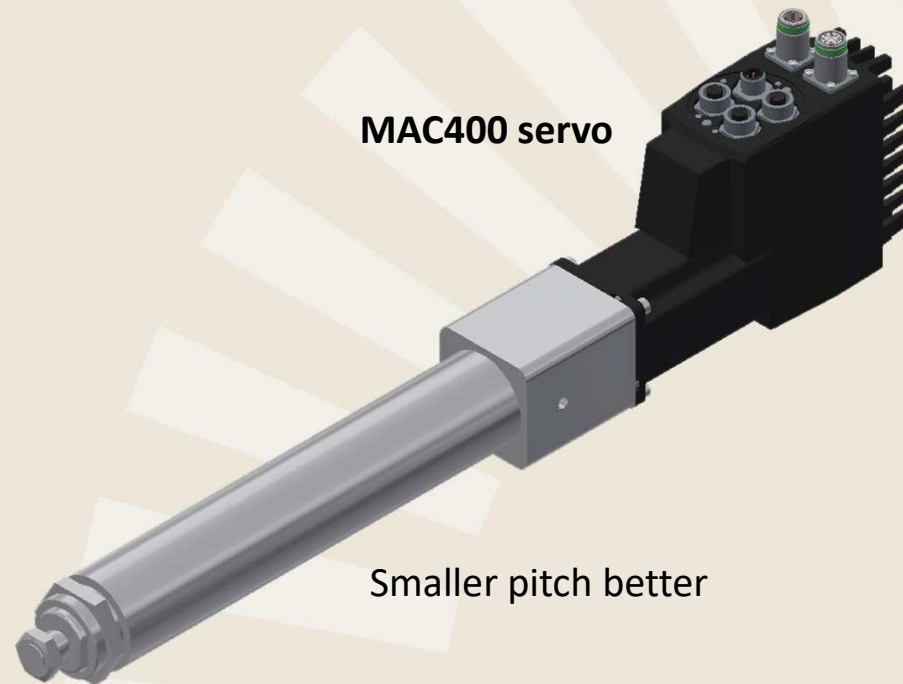
- ▶ Has limited input speed depending on nut type

MIS232 stepper



Higher pitch better

MAC400 servo



Smaller pitch better

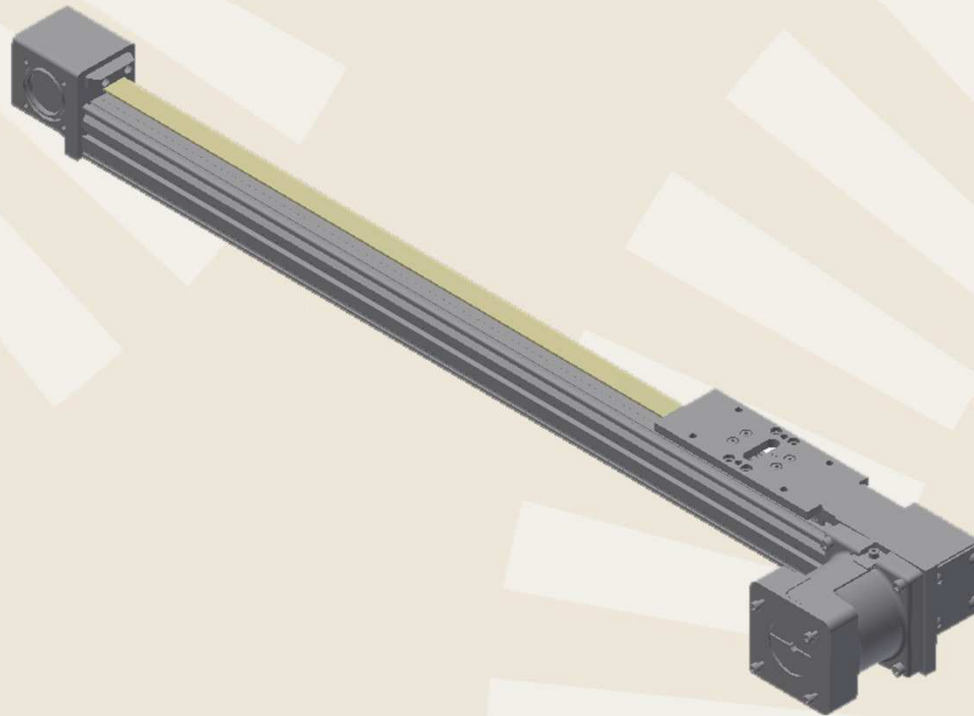


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Application 2 – Belt

Very high speed

- ▶ The chosen guide is the limiter

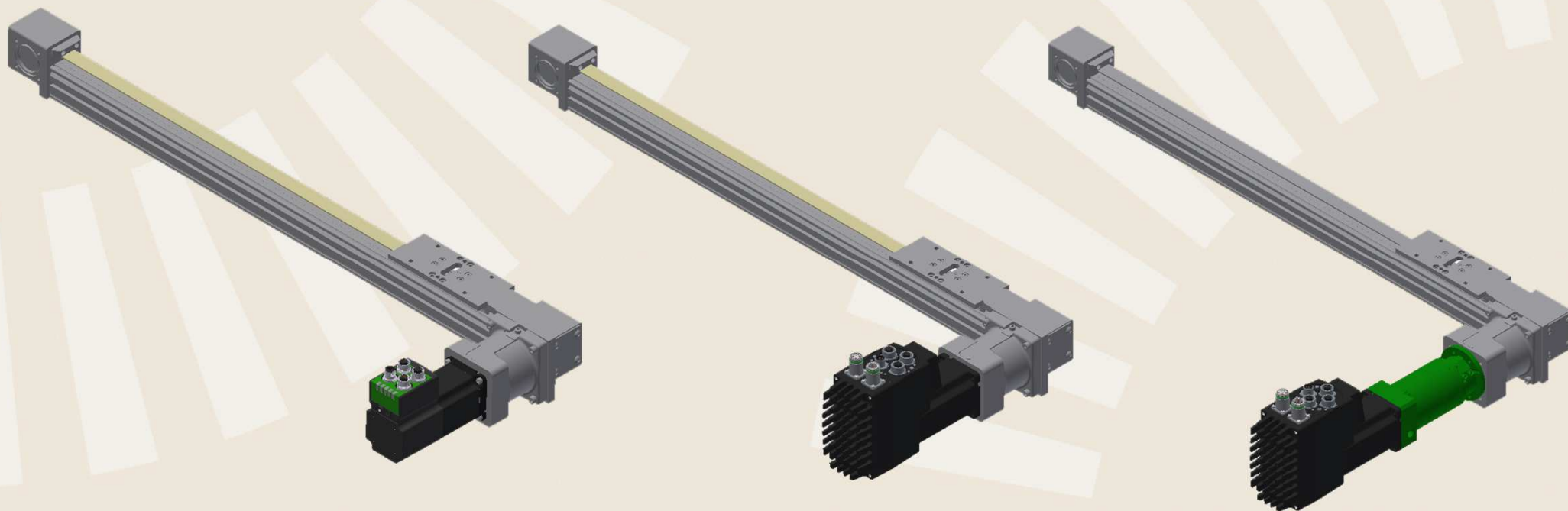




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3 possible solutions

Limitations are maximum speeds and input torque



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Application 3 – Turn-Table

It is a Servo or Stepper Motor where all these parts are built-in into one compact unit:

- ▶ Poteums for each application



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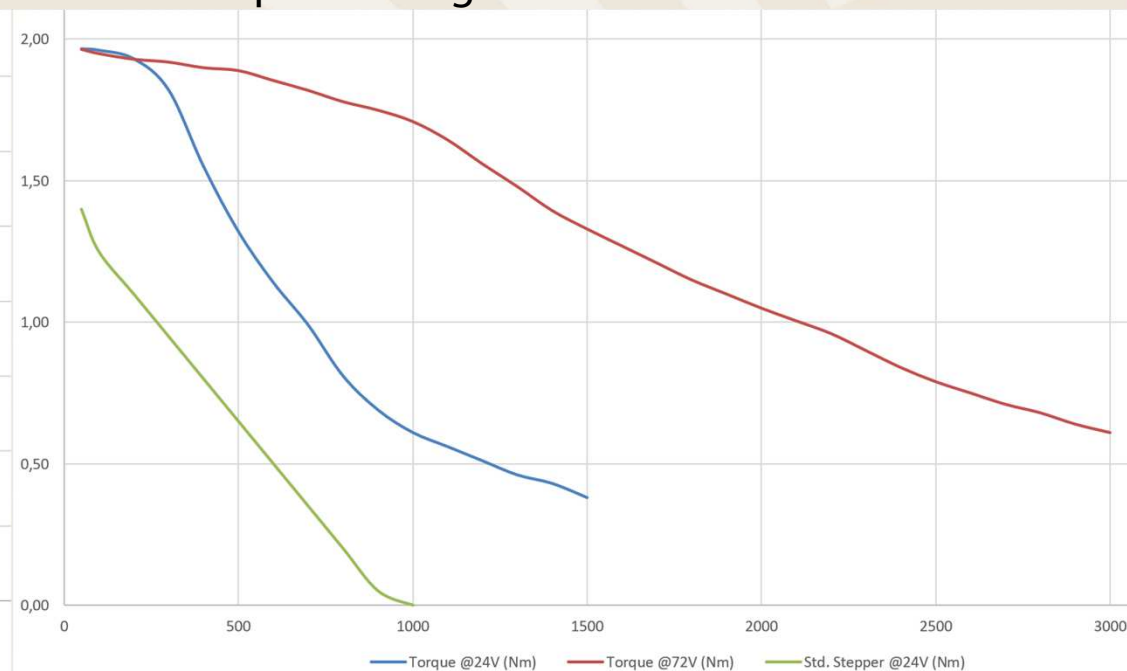
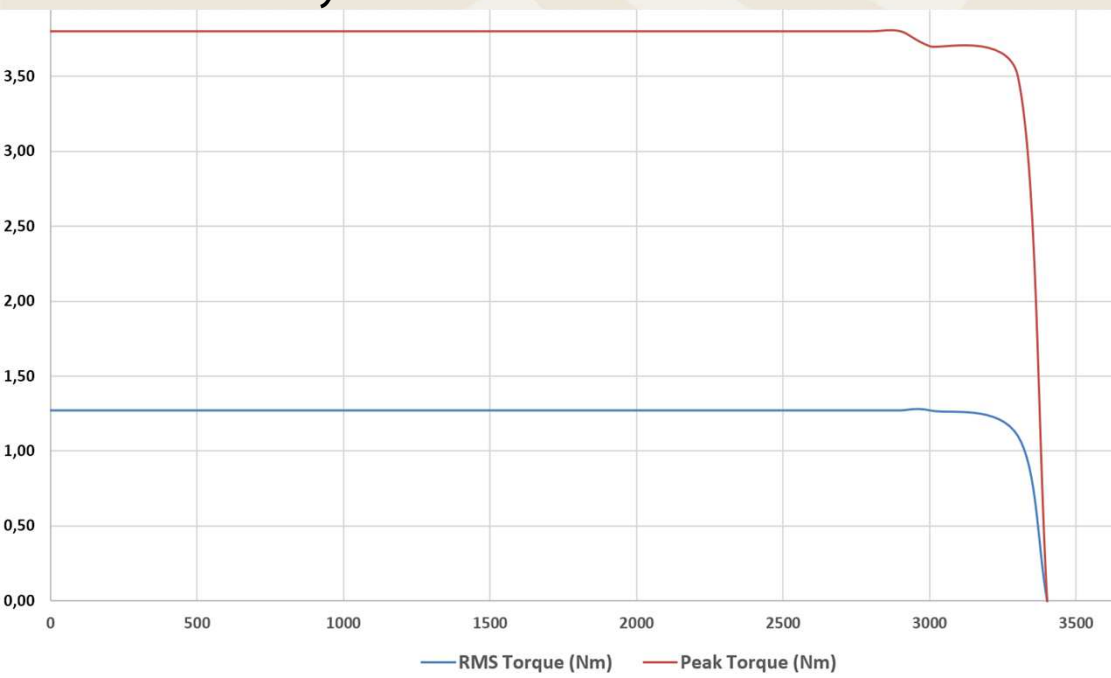
Summary

JVL Servo: MAC motor®

- ▶ Higher possible effect - Peak effect 300%
- ▶ Often needs gear
- ▶ Higher possible duty cycle at high speed
- ▶ Best for dynamic movements

JVL ServoStep™

- ▶ Effect is limited to approx. 350 watt
- ▶ Higher torque – often used without gear
- ▶ Limited duty cycle when used for high speed
- ▶ Best for positioning – 100% standstill





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Summery

Common for both JVL integrated Servo and Step motors

- ▶ Works at high speed – at least 3000 RPM for most sizes
- ▶ Handles extremely big inertia ratios well
- ▶ Always in control – no stalling or loosing position
- ▶ All electronics embedded
- ▶ Extremely efficient and compact

Both are servo motors



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Application 1 – Ball Screw

Winner = stepper up to 350W



Application 2 – Tooth Belt

Winner = ServoStep up to 350 W

Winner = Servo
(widest use and speed)





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