

Webinar

How to setup your first Servo Project

01.12.2020

Agenda

Introduction

Basic Know-How

5 min.

How to choose the right motor

10 min.

Live Demo with Setup and Tuning

10 min.



Introduction

Marc Sußbauer:

Technical Expert Control and Drives
Master of Science – Mechanical Engineering
With Panasonic since 2018



Philipp Zebisch:

Product Manager Drives
Bachelor of Engineering – Industrial Engineering
With Panasonic since 2017



Basic Know-How

- Inertia
 - What is inertia and why is it important
- Speed-Torque Characteristics
 - Rated torque and speed
 - Derating curves
- What is a Servo
 - Exploded view of a motor

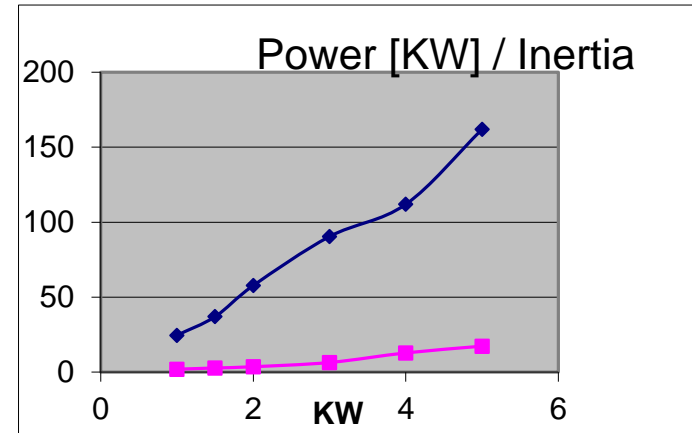
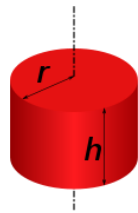
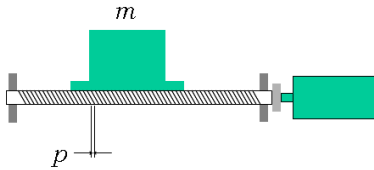


What is a inertia and why is it important

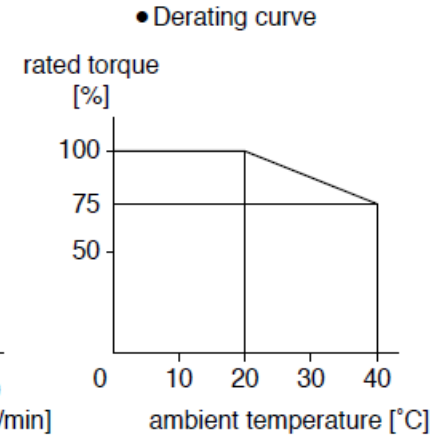
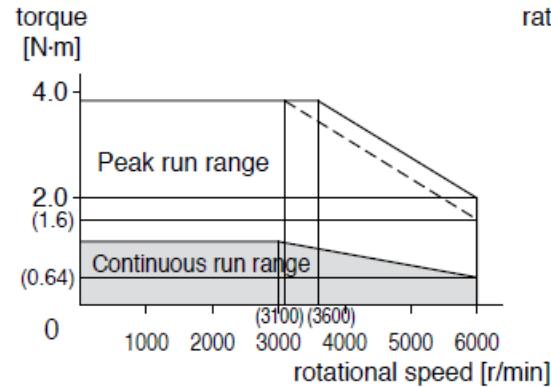
- Inertia-Ratio

- Important for tuning and performance

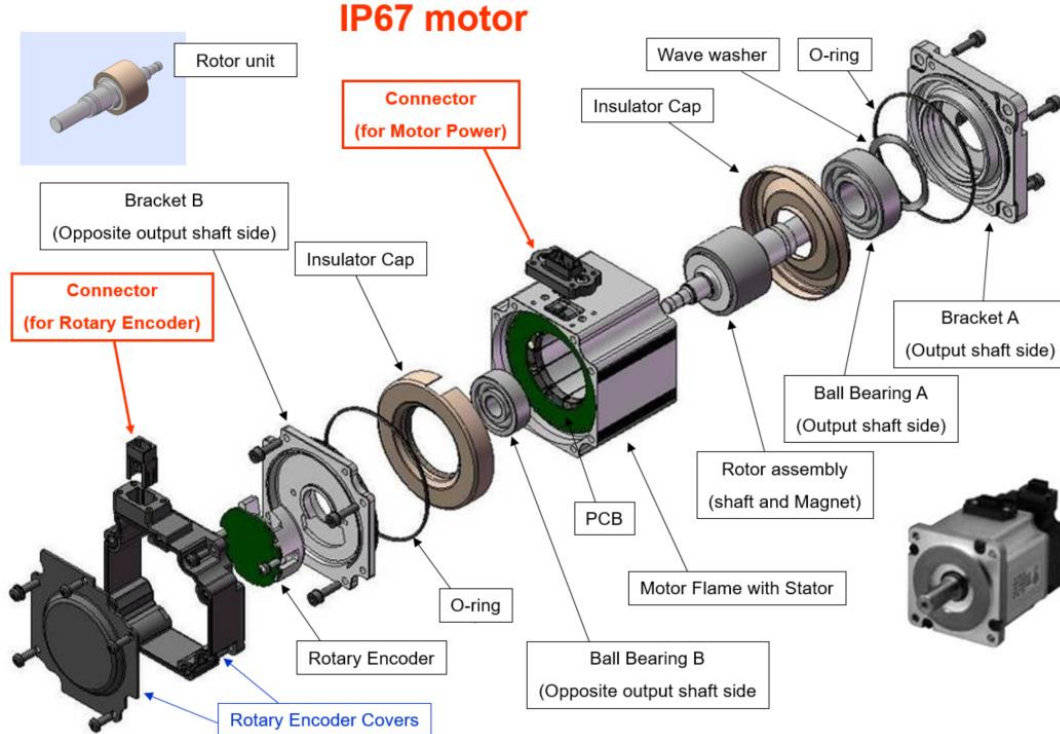
$$\frac{J_{load}}{J_{rotor}} \leq 30$$



- Constant torque over rpm range until rated speed
- Even higher speeds possible with torque derating



Exploded view of a servo motor



How to choose the right motor

Mechanical design



Electrical design

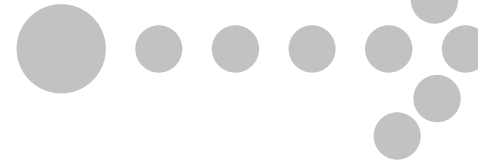


Convenience level




Panasonic

Selection of series



- Power conversion
 - Rest of the mechanical design
 - Mechanical sizes of a motor
 - Gearbox
- Belt, Rack-pinion, Ballscrew
 - Values for the calculation
 - Physical Values, Encoder, connector
 - Yes, No ?

Element to be selected

	<input type="checkbox"/> Coupling	<input checked="" type="checkbox"/> Ball screw Horizontal	<input type="checkbox"/> Simple linear motion load
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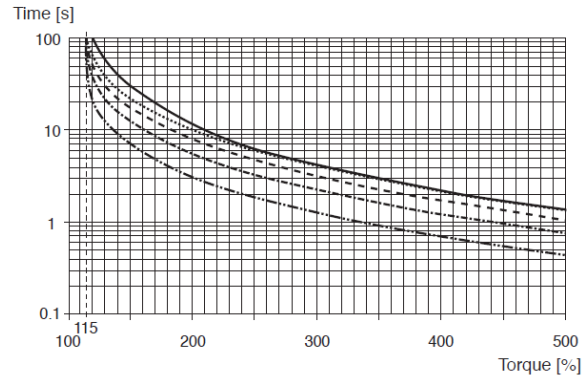
Parameter	Value	Unit
	Ball screw, horizontal	
Ball screw density	7,9	g/cm ³
Lead of the ball screw	10	mm
Diameter of the ball screw	10	mm
Length of the ball screw	500	mm
Mass of the table	10	kg
Transmission efficiency	0,9	
Coefficient of friction	0,1	
Remarks		
Ball screw inertia	0,0388	kg-cm ²



- Application details
 - Inertia-Ratio
 - Speed-Torque Characteristics
 - Environment
- Running Pattern
 - Should be <30
 - Rated torque and speed, overload
 - Derating

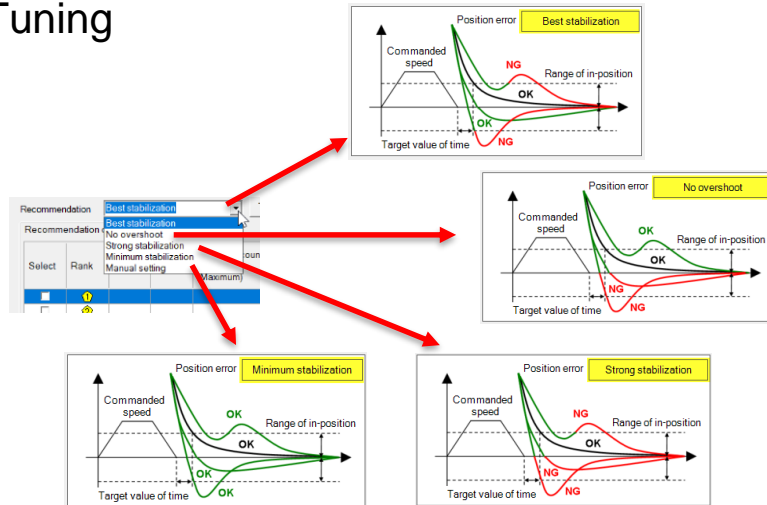
Motor Type: M * ME

MSME 50W
MSME 100W(100V)
MSME 100W(200V)
MSME 200W
MSME 400W
MSME 750W(200V)
MSME 750W(400V),
1.0kW to 5.0kW
MDME 400W(400V),
600W(400V),
1.0kW to 15.0kW
MFME 1.5kW to 4.5kW
MHME 1.0kW to 7.5kW
MGME 0.9kW to 6.0kW



- Network
- Safety
- Encoder technology
- Tuning

- EtherCAT – RTEXT – Modbus - Pulsetrain
- Integrated
- Batteryless absolute encoder
- FitGain and Realtime auto-tuning





Live-Demo

- Parameters are not properly set
 - Axis makes horrible noises
- Use Fit-Gain to Auto Tune your Drives
 - Within 5 minutes the parameters are set good enough
- Use manual tuning for a optimized solution
 - Damping Filters, Notch Filter, Real-Time Auto-Tune



Application examples

Application examples



Plastic processing



Textile industry



Food processing



Packaging



Chip and semi-conductor production



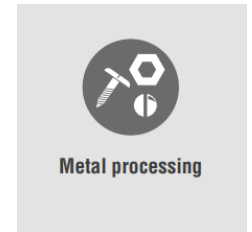
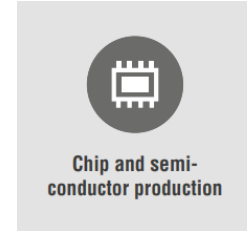
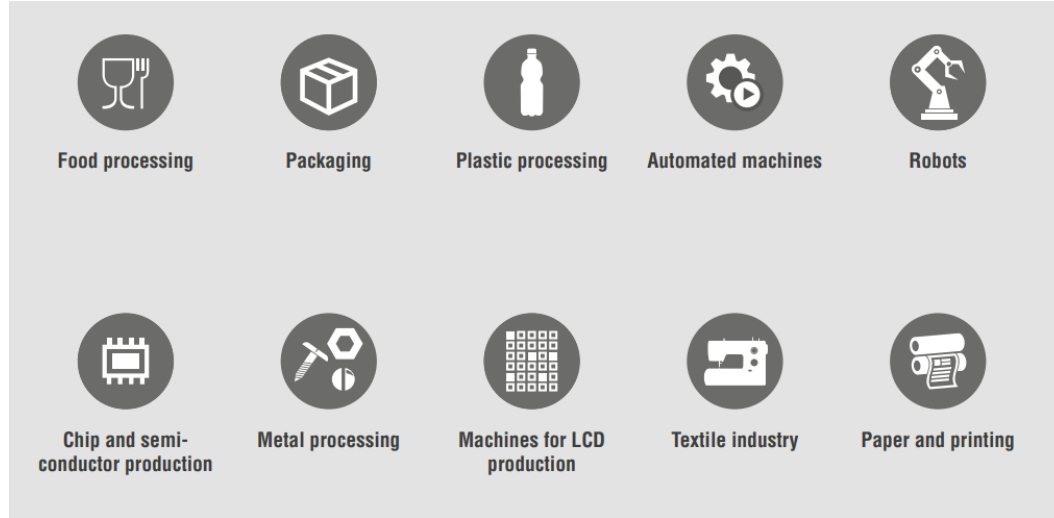
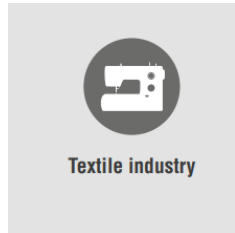
Paper and printing



Metal processing

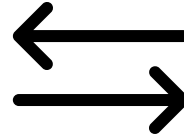
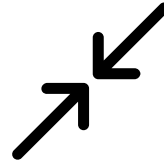


Application examples



4 simple questions

- Motion pattern optimized ?
 - [Contact Panasonic](#)
- Mechanical construction suitable ?
 - [Use M-Select](#)
- Setup of the machine ready to Tune ?
 - [Use Panaterm](#)
- First test Done ?
 - [Get some samples](#)



Questions

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