COGNIBOTICS

ELHA
MASCHINENBAU

PARALLEL KINEMATIC MODULE **PKM**

Innovative Kinematic-Technology

PKM-*st*
(telescopic swivel head)

A-axis: +/- 50°
B-axis: +/- 50°

Spindle power for both variants up to 20kW.

PKM-*hv*
(2 axis milling head)
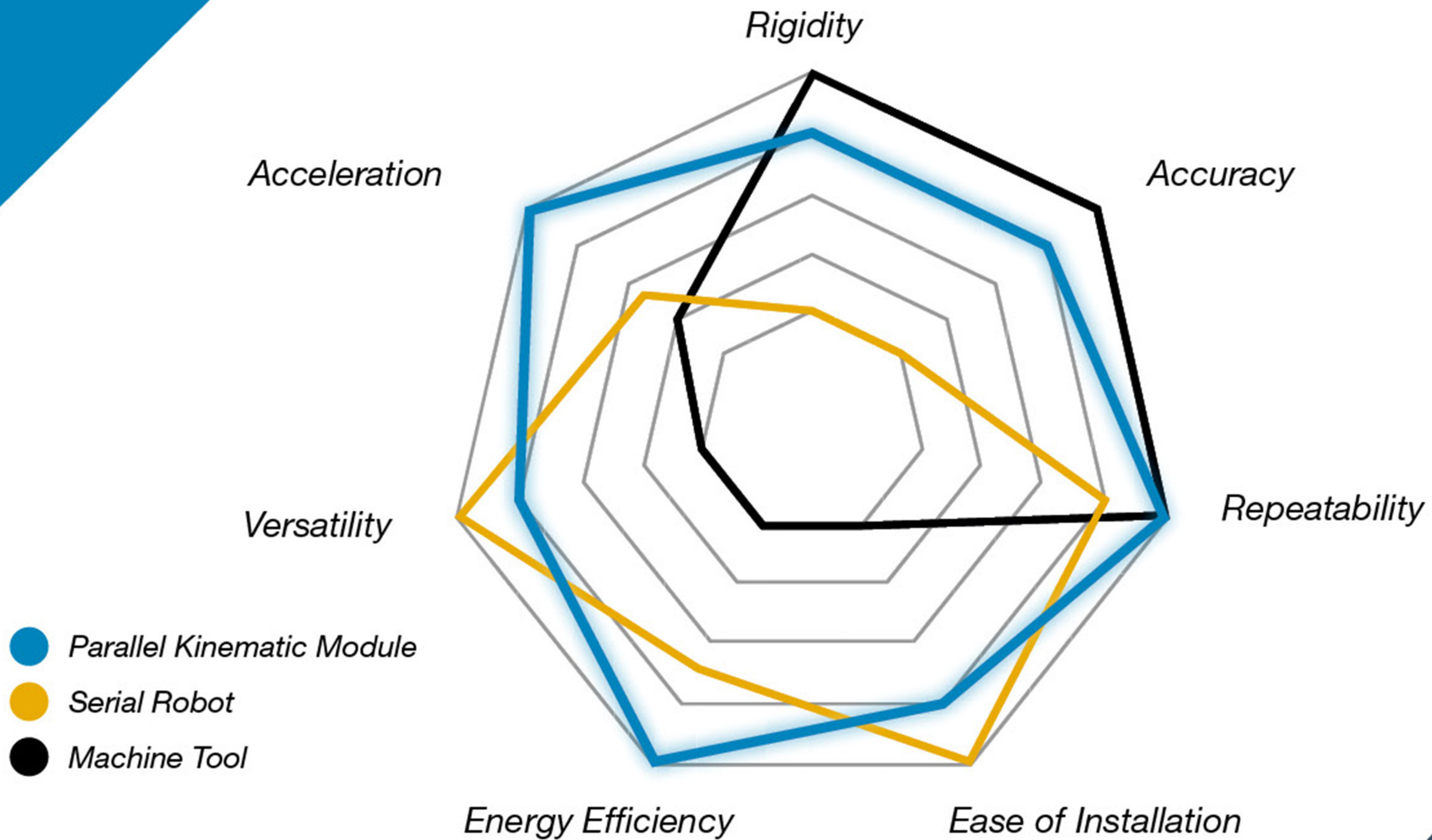
A-axis: +/- 120°
C-axis: +/- 360°

Structure & Functionality

The application carrier is connected to the three carriages via carbon rods and backlash-free cardan joints. The master-slave coupled drives of the carriages are also backlash-free and are equipped with direct encoders if required. 5-axis simultaneous CNC-Machining is standard on both variants.

Comparison of the Systems

Rigidity

Accuracy

Acceleration

Repeatability

Versatility

Ease of Installation

Energy Efficiency

● Parallel Kinematic Module
● Serial Robot
● Machine Tool

Classic Machine Tools	PKM		Calibrated Serial Robot		Standard Serial Robot
0	0,02	0,04	0,1	0,4	<1,0

Global Accuracy in mm

Energy Efficient Dynamics

A weight-optimized construction driven by a unique kinematic enables not only high dynamic movements (170m/min, 2.5g), but also a more energy sustainable process.

Powerful

Despite the lightweight structure, the available process load is comparable to machine tools (<=10kN radial / axial).

Modular & Configurable

Workspace size and base frame orientation are configurable according to project-specific requirements (Y-axis max. 3m, Z-axis max. 2m, X-axis unlimited).

Flexible Applications

The application carrier can be configured for additive or subtractive manufacturing processes, as well as for metrology applications.

Precise & Accurate

Through unique calibration and compensation methods a repeatability <=5μm and an average path accuracy <=40μm without process forces can be achieved in the entire workspace. TCP stiffness values up to 10 N/μm in average.

Ease of Use

Market proven CNC control with seamless integration in CAM environments. No special robot knowledge is required.

Agile Machine Calibration and Compensation

With help of a laser measurement system the machine automatically generates a point cloud in the workspace. By implementing machine learning methodologies, the kinematic algorithm determines the machine geometry and compensates for orientational deviations. As a result a repeatability of 5µm and path deviation of less than 40 µm in the entire workspace volume will be achieved.

Application Examples

Possibilities of Application:

- Metal machining
- Milling / Drilling
- CFRP machining / laying
- Laser cutting / welding
- Laser deposition welding
- Deburring
- and more to come

Media Downloads

About Us

We established a partnership between ELHA and Cognibotics to offer unique innovative manufacturing solutions.

ELHA as a settled machine tool builder and Cognibotics as an expert for robot engineering, combine their competence fields to breakthrough conventional trends.

Our philosophy is to develop together with our customers process solutions for the manufacturing environment of the future.

> **energy efficient – modular – configurable**
> **precise – dynamic – flexible applications**

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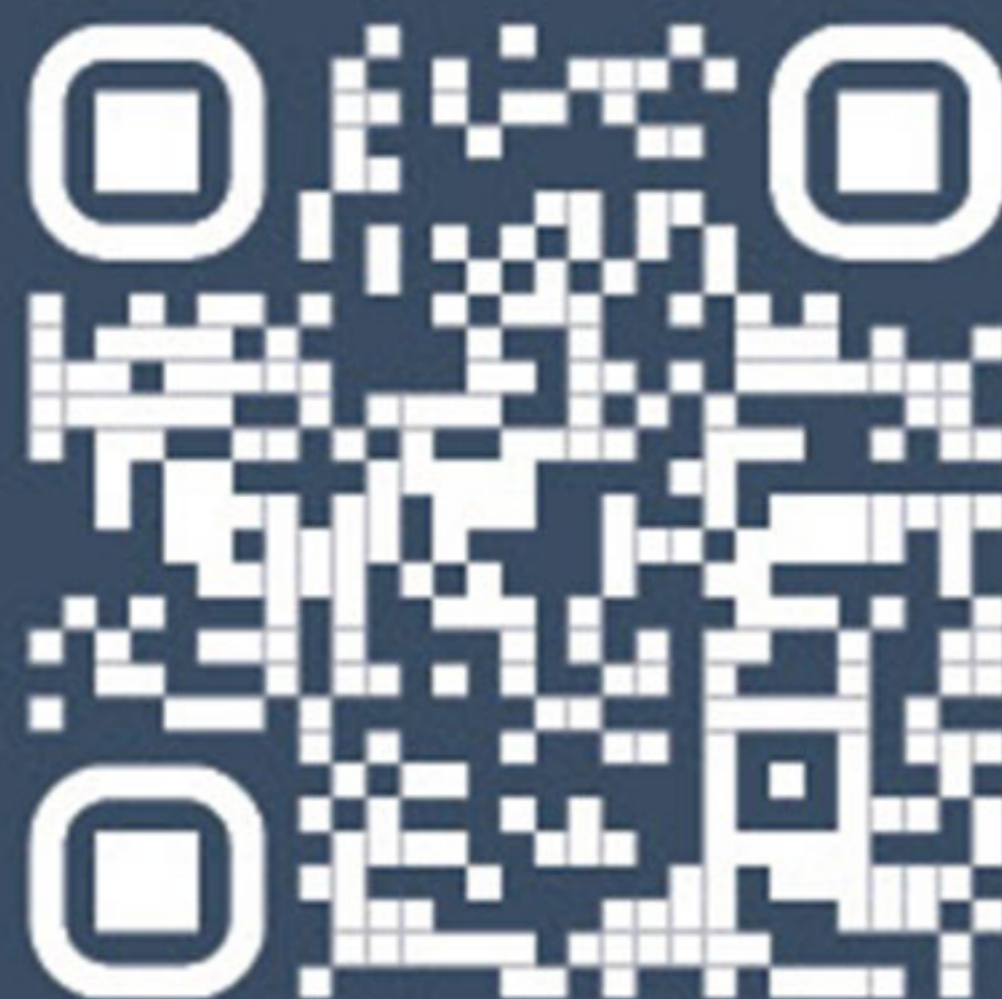
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