COGNIBOTICS

Productivity by Accuracy

Robot utilization in manufacturing processes

In order to meet the needs of future production, it is essential to have manufacturing equipment that is both cost-effective and flexible. The answer lies in utilizing highly accurate robots as multi-process machines. Cognibotics superior accuracy solutions hold the key to solving this challenge.

System Accuracy as foundation

The affordability of robots, in contrast to specialized machines, presents a strong motivation for processes that require a flexible and extensive workspace. However, the overall accuracy of the robot system, which includes positioners and linear tracks, is commonly impeded by the mechanical structure and its lack of stiffness, thus acting as a significant constraint.

To utilize robots for cost-effective and flexible production, even for small batch sizes, it is critical to attain the required level of accuracy.

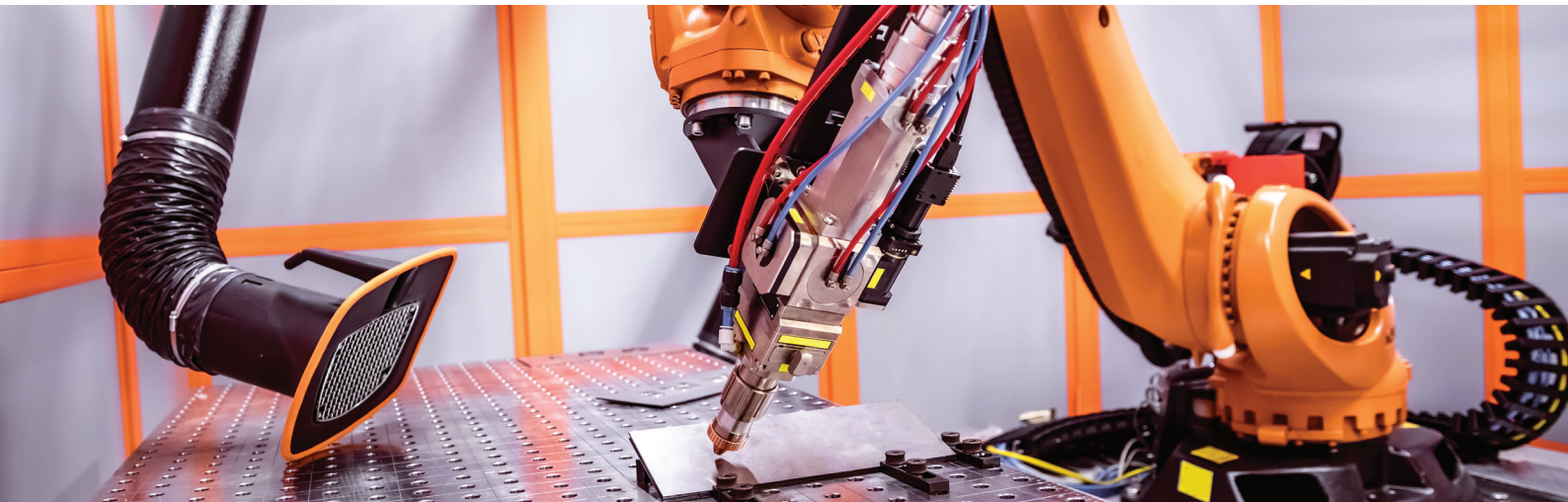
Cost efficient manufacturing

Process path accuracy

Flexible and extensive workspace

Future-proofed production investments

Identifying and compensating for mechanical imperfections in the system, and elasticities throughout the robot structure is crucial.



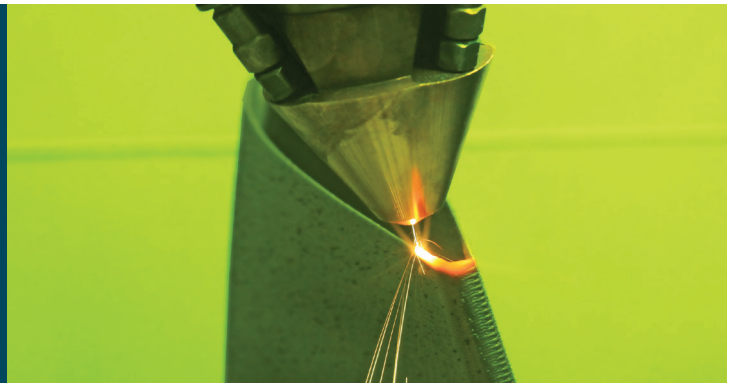
Cognibotics Robot Accuracy Addon for all major robot brands

Upgrade the accuracy of robots from major brands effortlessly with Cognibotics accuracy addon. With built-in elasticity compensation and support for external axes, Cognibotics unlocks the full potential of your robot mechanics. Revolutionize your operational capabilities today by using accurate robots to take your lightweight material processing and contactless applications to the next level.

Work with any of the following processes?

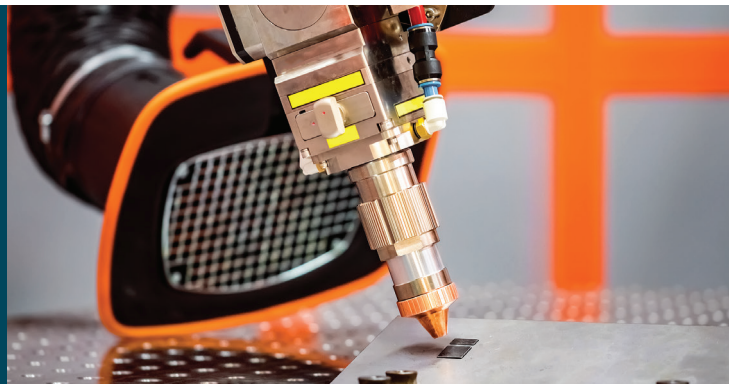
Additive processes

benefit from geometry correctness, and the possibility to do post-processing with the same machine.



Subtractive processes

such as cutting, milling, and drilling can reach relevant tolerances with highly accurate robots.



Welding processes

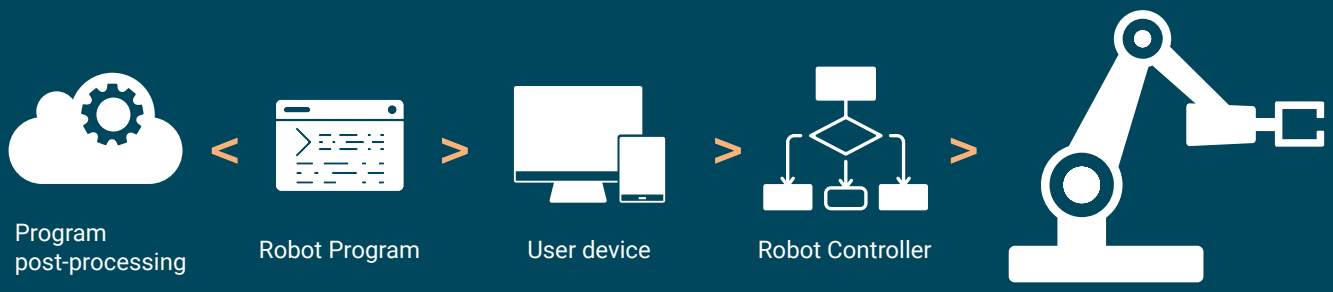
might involve sensing, mainly to detect deviations in the workpiece. Accurate sensing poses strongly improve the information quality derived.

If so, you can boost your competitiveness with Cognibotics robot accuracy addons.

Options for optimal usability

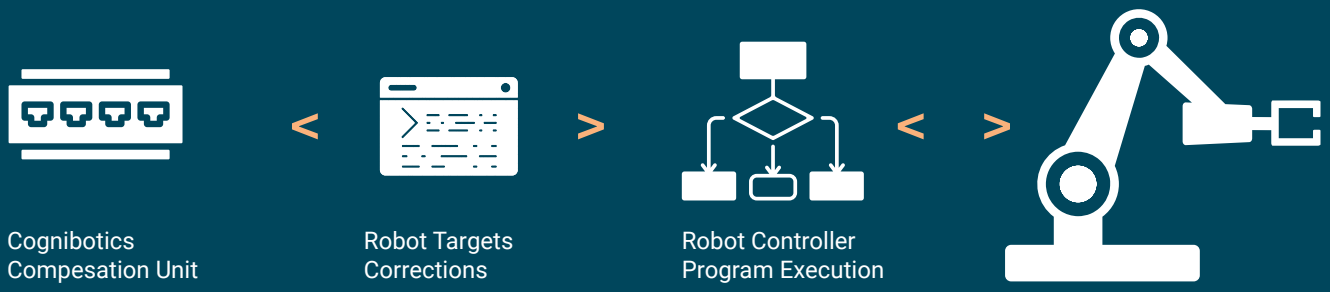
Program post-processing

Our cloud service makes predefined robot program targets accurate.



Accurate online targets with compensation in runtime

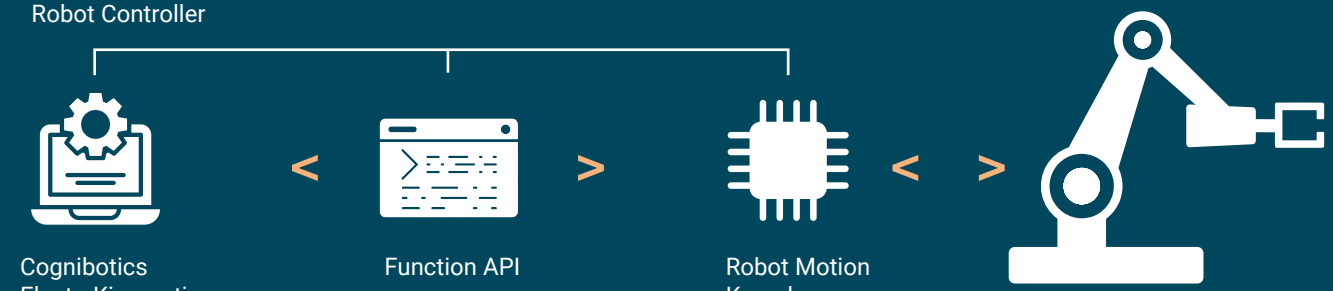
Calculation on the fly with **Cognibotics compensation unit** connected to the robot controller.



Best path accuracy with accurate trajectories

Knowing robot manufacturers or platform providers

Cognibotics Elasto-Kinematic module embeds directly into the motion kernel for **use in real-time cycles**.



Elasto Kinematic modeling as core

Articulated robots are typically inaccurate due to mechanical imperfections combined with a structure where small errors add up, and a control system using a very simplified model of a robot as default.

The unique competence of Cognibotics lies in the ability to create superior mathematical models to describe the imperfections and deflections in robot mechanics.

Those models are a much better representation of the real robot and are usable within the real-time cycles of a robot controller.

Combined with Cognibotics patented methods to identify the necessary model parameters, this creates a baseline enabling world-class robot accuracy.

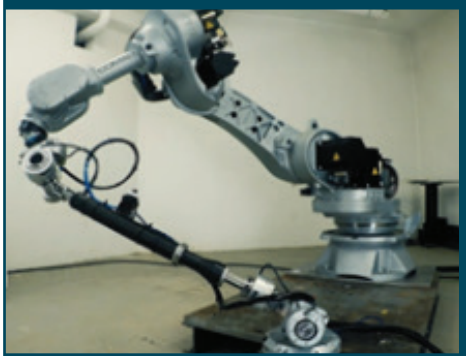
Elastic characteristics are a natural part of Cognibotics robot models. Accounting for elasticities means accuracy improvements by taking into account how the robot bends under various loads.

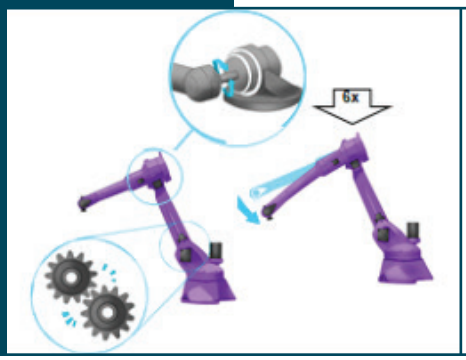
The result is load-independent accuracy even in stretched robot configurations.

By including potential servo-controlled external axes such as track motions or positioners in the modeling and motion compensation, one can enjoy the benefits of absolute accuracy also for the combined motion.

Robot Calibration as Enabler

At installation





For all robot motions

Robot Calibration → Gives parametes to → **System Models** → Used by → **Motion Compensation**

To initiate and maintain the **connection between digital representation and the physical world**, the robot, and additional **servo-controlled axes must be calibrated**. **Cognibotics calibration package** includes equipment and software to efficiently measure and identify robot parameters to capture characteristics of physical robot individuals.

Use the **sensor system of your choice**, most commonly used third-party systems are supported.

For calibration of the robot itself, we also provide cost-efficient in-house solutions. Based on provided nominal information and a short initialization cycle, **Cognibotics measurement and identification unit takes care of both the generation and execution of the measurement sequence** as well as the data collection both from the robot and the sensor.

Cognibotics identification routines automatically calculate the unique parameters for your setup.

Prepared for Cognibotics calibration equipment as well as commonly used laser trackers and optical CMM

Creaform C-track

Nikon / Krypton k600

Leica

Faro

COGNIBOTICS

Cognibotics AB
Scheelevägen 15
SE-22370 Lund
Sweden

+46-46-286 59 90
info@cognibotics.com
www.cognibotics.com