



## 1 Benefits

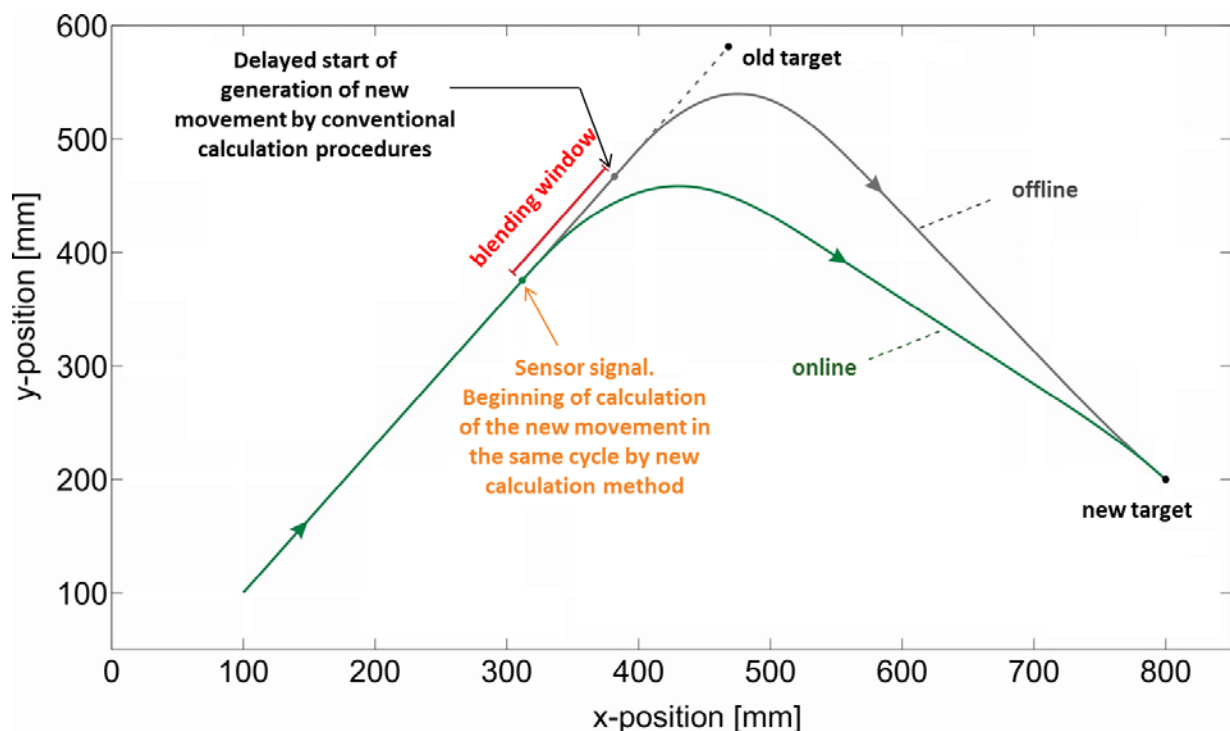
- PLC Open part 1, 4 compliant
- Instantaneous reaction on events
- Online trajectory generation within one control cycle
- Jerk limited movements using spline interpolation
- Interface to simulation tool V-REP).

## 2 Application

- Linear single axis for drilling and pressing
- Synchronized, coordinated multi axis movements e.g. milling, welding and bending

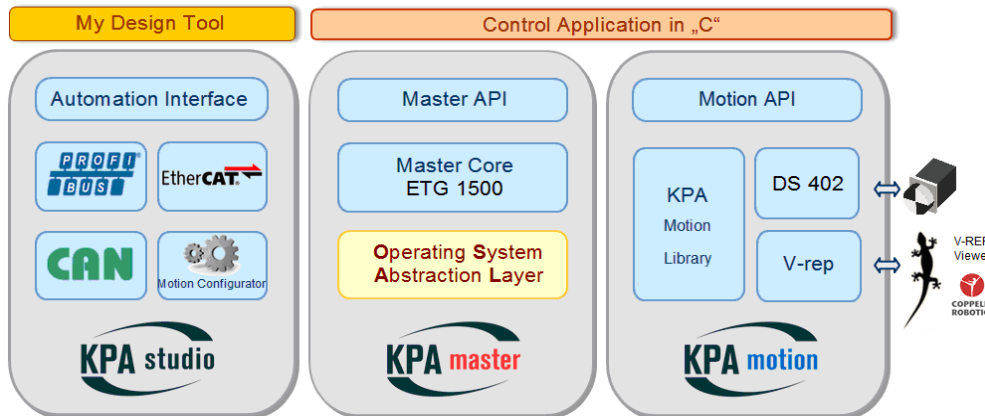
## 3 Reaction on event

Picture below shows a comparison between conventional calculation methods and the online trajectory generation concept implemented in KPA Motion.



Both axis start to reach the old target position until an event in causing a change of the target position. A blending window is necessary in case of standard approach according to PLC Open Part 4 (grey line). KPA Motion calculates the multi-axis motion trajectories and starts the new movement starting in the cycle of the event (green line).

KPA Motion library for EtherCAT controls drives through “C” API. It operates by the way of connection to KPA EtherCAT Master and is available for different operating systems.



#### 4 Linear Motion (LiM) / PLC Open part 1

Application examples: single axis drive control, pressing, drilling:

- Linear Movement of single axis
- Program Coordinate System (PCS)

#### 5 Coordinated Motion (CoM) / PLC Open part 4

Application examples: bending, welding, drilling, milling.

- For 2D and 3D applications
- Coordinate system transformations
- Coordinated motion in cylinder and polar coordinates
- All LiM functionalities

#### 6 Features

- Position, velocity and torque control with feed forward functionality
- Single- and multi- axes movement with defined velocity, acceleration and jerk at each trajectory segment
- Time-optimal trajectory generation on the fly within one control cycle
- Support CiA402 and SERCOS drive profiles and easy adaptation to any custom drive profile
- Unlimited command sequence to blend
- Wide OS support (QNX 6.5/6.6, INtime 6, Linux, Xenomai, Windows) provided by easy extendable OSAL (Operation System Abstraction Layer)
- Scalable to multi-core CPUs and optimized for low end CPUs
- Low cycle times and instantaneous reactions on events

**HongKe**



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