3D-ProSim

ROBOT PROGRAMMING AND PROCESS SIMULATION

GLAZING OF SANITARY CERAMICS

Glazing unfired sanitary ceramics is a complex technological process in which typically 7-axis robots are used. Programming these robotic systems, the teach-in process is generally used. Due to the high process dynamics and inadequate editing possibilities, this process is very time-intensive and can only be carried out when the production is at a standstill.

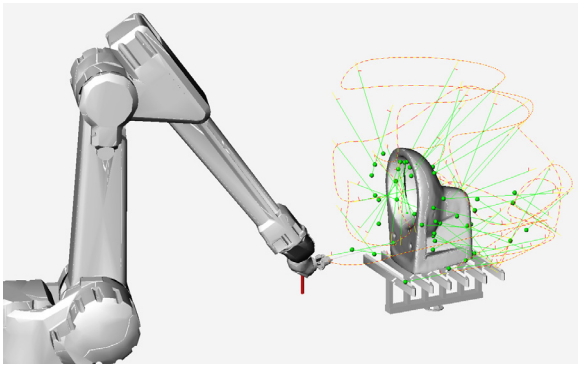
SOLUTION

3D-ProSim is a software system for **robot programming** and **process simulation**, which supports the robot-based glazing of unfired sanitary ceramics. Using specified process parameters it is able to generate and simulate a robot movement path (trajectory) for processing a workpiece outside the production (offline). The glazing result is visualized (e. g. layer thickness and glaze distribution).

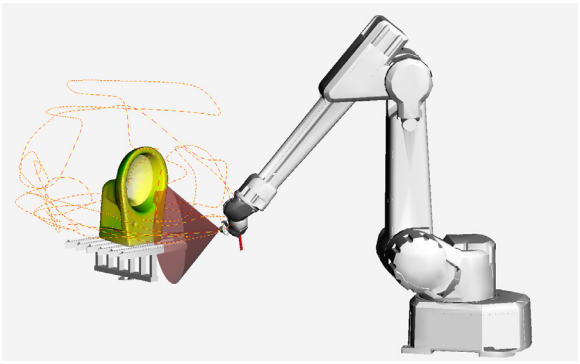
Based on technological specifications, **3D-ProSim** generates an optimized processing trajectory which can be stored in a workpiece related form (independent of the used robot type) or as a machine program (for a specific robot type). The processing trajectory is tested by using the integrated robot kinematics model for violation of the realization conditions (joint limits, speeds or acceleration of axes). An existing trajectory can also be transferred to another robot type without any problems.

TOOLS

Combined with **CeramDetect**, a solution for detecting the type and location of workpieces from GFaI, a tolerant and continuous production up to the integration of the production data into the customer's enterprise resource planning system is possible.



Automated generation of the trajectory



Result of the simulation as color representation

TECHNICAL SPECIFICATIONS

File format for 3D models	WRL (VRML2)
Origin of 3D models	From 3D scan or CAD
Supported robots	Kawasaki, KUKA, ABB, Motoman, more on request
Generation of trajectory	Fully automatic for 7 axes
Robot program generation	Fully automatic for robots specified above
End positions of axes	Adjustable with error message when limit is exceeded
Axis velocities and accelerations	Adjustable with error message when limit is exceeded
Predefinable glazing parameter sets	20
Simultaneously usable glazing parameter sets	Max. 8, depending on used glazing control
Interface languages	German, English or Polish, more on request

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