« Construction Equipment in an Agile World »

Session 2 „ Innovation in products design"
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“Robotic technologies for “symbiotic” collaboration between machines and humans in construction sites”

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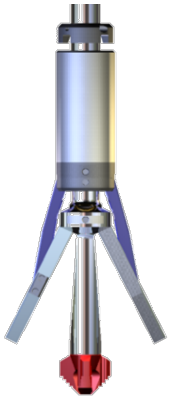

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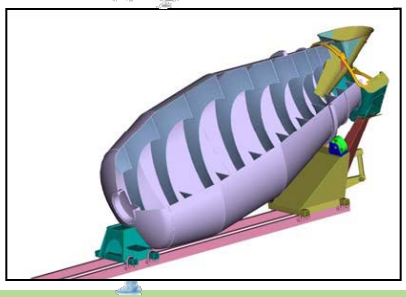


Only those who have gone far away know the importance of not travel alone.
Let´s travel together.

Industrialization of Construction

Drastically reduction of on-site activities in construction to improve efficiency and security by means of: planification (BIM), modularity (standarization, prefabrication) , **automation of on-site processes.** [Björnfot et al]

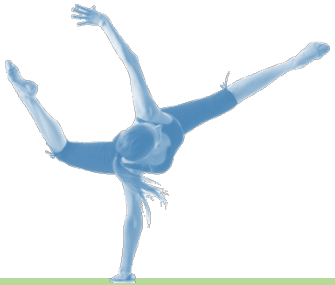
Automatic on-site processes: assembly, tunneling and climbing system

Construction Sites as Factories of the Future

What can we learn from the manufacturing industry?

EFFRA
EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

Collaboration between end manufacturers, machine manufacturers and research centers.
Process is the guide



CIM system

BIM, M2M comm. and smart platforms.

Mass Production vs Mass Customization

Human- Robot "symbiotic" collaboration

“Symbiotic” machines in construction sites

A few nowadays examples…

Semi Automated Masonry System

Anti roll-over smart system for Concrete Pump

Semi-automatic device to change cutting discs in TBM

Concrete Recycling Robot

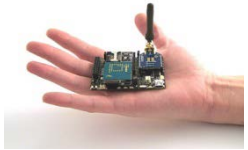
Main robotic technologies…

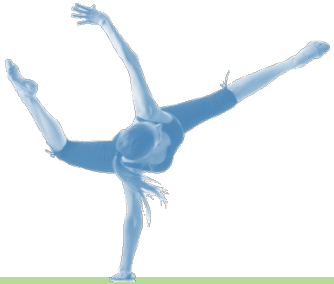






GAZEBO



ROS industrial

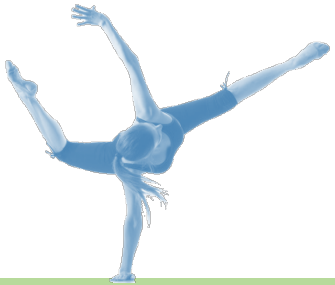
MoveIt!

From problem to solution:

Design & Integration

Main advantages of “symbiotic” concept

Safety: Safer&Healthier work environment
Productivity: Up to 30% in most known processes
Flexibility: Fast adaptation to changing tasks
Return of Inversion: Semi Automated means less inversion but also, adaptation to process

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