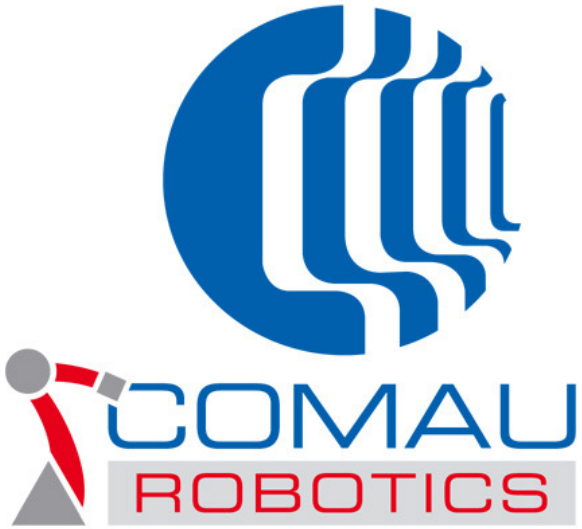


comau.com/robotics

Echord Eu project INFO

G.P. Gerio Sep 2009

Echord - Steps

Step done for Echord proposal:

- Definition of the Hw-Sw proposal: **reviewed in July 09**
- Send the proposal to the Echord staff: **done end of July 09**
- **Contact** University, Research Center, SME to inform about Echord opportunity
- Find little core number of proposal to be presented at the first call in Sept

(Note: Comau will not directly participate as experimental proposal at first call)

PROPERTY OF COMAU S.p.A. DUPLICATION PROHIBITED

Comau Robotics – Products offered HW-SW platform

SMART SiX

6 Kg

SMART NS

12 to **16** Kg

SMART NM

16 to **45** Kg

SMART NJ

110 to **130** Kg

SMART NH

SMART NH4

130 to **220** Kg

NH4 "Hollow Wrist"

Shelf & Press

Automation

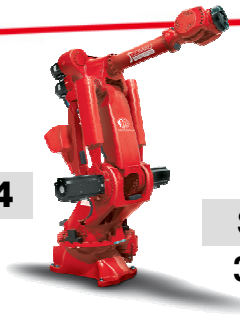
Versions

NEW

SMART NJ4

Up to 175 Kg

"Hollow Wrist"



SMART NJ

370 to **500** Kg

SMART NX

600 to **800** Kg

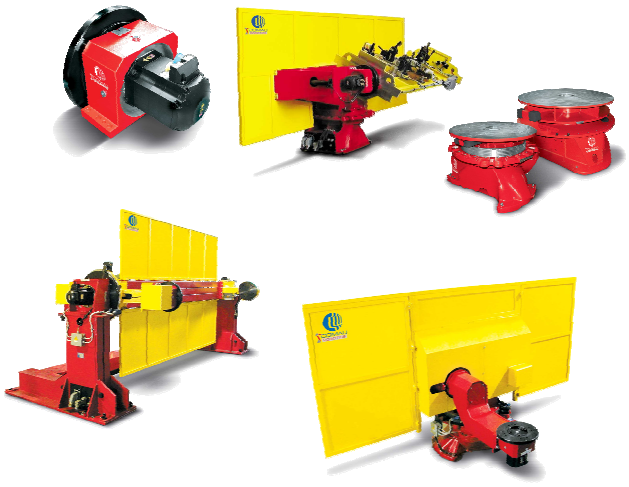
C4G

Control Unit

WiTP

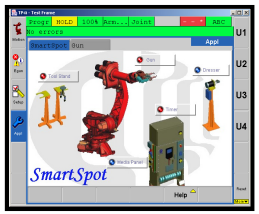
Wireless Teach Pendant

SMART APPLICATION TOOLS

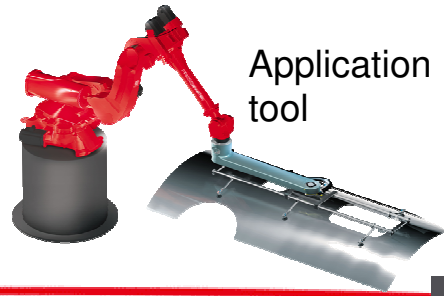


Application Equipment

Robot Dressing



Application SW



Application tool

PROPERTY OF COMAU S.p.A. DUPLICATION PROHIBITED

Control Unit - C4G

- **High processing power** thanks to two powerful processors
- Synchronized management of **up to 40 axes**
- **600 V motors** with full digital servo amplifiers
- **“21bit” Encoders**: top precision and accuracy of motion control
- **High resolution** position transducers
- **Available interfaces**: DeviceNet, Profibus-DP, Interbus-S wire, Interbus-S optic fibre, Ethernet TCP/IP, USB, RS422
- **Remote Access** through internet, e-mail & SMS.
- Management of synchronized and cooperative motion in **multi-arm configuration**.

- **Off-line programming**: with the 3D software it is possible to simulate the application performed by the robot with precision and realism on the PC, translating it into an executable program for the Control Unit.
- **WinC4G** package for high level programming, configuration & supervision **in PC environment**.
- **Fast and flexible programming** thanks to **PDL2** as robot programming language & to the simple and intuitive **WiTP** Teach Pendant user interface.
- **Real-Time Operating System** (VxWorks).

PROPERTY OF COMAU S.p.A. DUPLICATION PROHIBITED

C4G Software – functions & motion algorithms

- **Payload identification**: automatic identification of the payload (gun, gripper, gripper + weight) to optimize the robot movements
- **Collision detection**: stop of robot in case of collision to protect the mechanics and the equipment
- **Cooperative motion**: cooperative management of several robots, axes and auxiliary fixtures (slides, positioners, other application equipment).
- **Conveyor and Sensor tracking**: possibility to track parts in motion on linear and circular conveyors, precision in the path following, by use of different types of external sensors.
- **Joint Soft Servo Technology**: capacity of each robot axis to yield to external forces, according to application requirements.
- **Absolute Accuracy Algorithm**: algorithm for the adaptation of the actual kinematics to the theoretical model programmed off-line.
- **Software PLC**: to run a PLC program directly on the C4G when there is not a PLC line
- **Smart Search**: to manage routine research

PROPERTY OF COMAU S.p.A. DUPLICATION PROHIBITED

Control Unit - C4G Open Controller

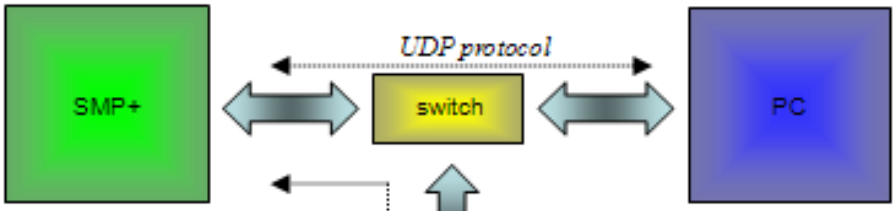
$a\omega$

C4G Open controller to directly command via Linux-PC all the robot movements

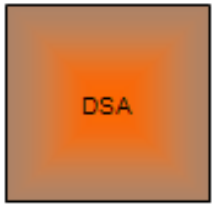
I

dp, dv, dI, I

client
10.2.12.150



socket ETH RAW



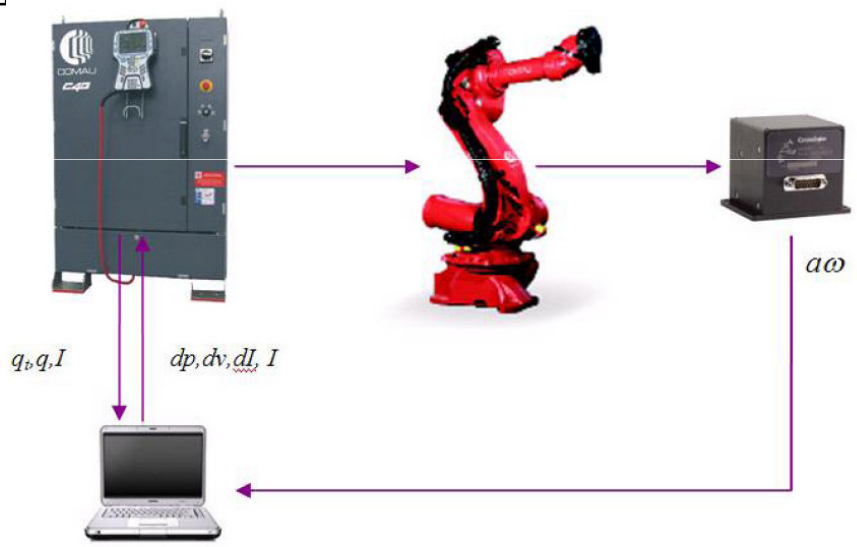
server
10.2.12.154

PROPERTY OF COMAU S.p.A. DUPLICATION PROHIBITED

First example/ideas for experiments

Use Open controller for new sculpture application

Use Open controller for new Human robot cooperation via MGD



Use Open controller for new two vay simulation

Use Open controller for new pharmaceutical application

PROPERTY OF COMAU S.p.A. DUPLICATION PROHIBITED