Benefits of a Dual Arm Collaborative Robot in Industrial Applications

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ABB Robotics
Drivers for Human Machine Collaboration

- Number of variants: high
- Lot size: high
- Flexibility: low
- Productivity: low

Manual assembly
- Low productivity
- Low flexibility
- Low lot size

Collaborative assembly
- High productivity
- High flexibility
- High lot size

Automatic assembly
- Low productivity
- Low flexibility
- High lot size

Source: adapted from B. Lotter
### Types of Human Robot Interaction

#### No Collaboration
- Human worker and robot do not share the same workspace
- Construction measures or safety devices prevent contact during operation

#### Fenceless Operation
- No intention that human worker and robot share the same workspace
- No construction measures to prevent contact during operation

#### Sporadic Interaction
- Human worker enters workspace for non-cyclic tasks
- Material in- and out-feed

#### Co-Working
- Human worker and robot share the same workspace during operation

Collaboration according to ISO 10218 / ANSI/RIA-R15.06-2012
Applications Benefiting From Collaboration

- Small or highly variable applications
- Conditions requiring frequent operator presence
- Machine tending
- Loading/unloading
- Small part assembly
Benefits of a Dual Arm System

• Flexible fixtures
• Availability of unlimited approach angles
• Re-orientation & re-grip of parts
• Two hand operations – similar to human assembly
• Cycle time improvement while maintaining safe operation speed
• Multiple simultaneous tasks
• Synchronized motion enabling safe handling of larger and heavier parts
Enabler 1: Flexible Fixtures
Enabler 2: Availability of Unlimited Approach Angles
Enabler 3: Re-Orientation of Parts
Enable 4 : Two Hand Operations
Enabler 5: Cycle Time Optimization
Enabler 6 : Multiple Tasks

- **Customer**: Kurtz Ersa in, DE
- Showcased at IPC in Las Vegas in March 2016
- **Application**
  - PCB assembly for THT with high precision requirements
- **Added value** for customer
  - Flexibility - Interchangeability with operators
  - Repeatability

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Enabler 7: Synchronized Motion Enabling Safe Handling of Larger and Heavier Parts
Collaborative Automation at Continental Plant in Karben, Germany
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