PRODUCT PRESENTATION

IRB 390 FlexPacker™

Roy Fraser – Global Product Manager

March 2021
IRB 390 FlexPacker™ Product Presentation

• Introduction
• Technical Specifications
• Product Positioning
• Target Applications
• Takeaways
Introduction
IRB 390 FlexPacker™
IRB 390 FlexPacker™
Enhancing picking and packing portfolio

**IRB 390 FlexPacker**

**What & Market/Customer value**

IRB 390 is a 4 or 5 axis delta robot that offers up to 35% faster and 45% larger working volume for enhanced productivity. IRB390 aimed at customers in Food & Beverage, logistics, pharmaceutical and consumer-packaged goods industries who need secondary packaging and higher payload applications.

- Two variants (payload/reach): 4 axis with 15 kg, 5 axis with 10 kg
- Type: brand new robot

**Customer value proposition**

- **Productivity**: 35% faster and 45% larger working volume for enhanced productivity*
- **Flexibility**: 5-axis capability increases flexibility for secondary packaging
- **Quality**: Best-in-class path accuracy for high quality manufacturing
- **Simplicity**: Simplify production with FlexPacker and PickMaster Twin

* Compared with IRB 360-8/1130
**IRB 390 FlexPacker™**

Fastest high payload Packer on the market

- Higher speed and payload to increase productivity

**Target markets:**
- F&B (CSSR)
- Logistics (CSSR)
- Packaging (CSSR)
- GI

**Target applications:**
- Shelf-Ready Packaging
- Retail-Ready Packaging
- High Payload Picking
- Full Layer Packing
- Hygienic sensitive Picking and Packing
- High-speed picking with Payload 8kg+
- Parcel handling (Singulation)

Enlarge the ABB Packer Portfolio with the high-speed delta IRB390
Technical Specification
Delta Robots – FlexPicker® and FlexPacker™
Portfolio - Overview
IRB 390 FlexPacker™
IRB 390 FlexPacker™
Next Generation Delta Robots

IRB 390 – 5 axis

IRB 360 – 4 axis

10,000 IRB 360’s Now in Service
IRB 390 FlexPacker™

IRB 390 – Upper 2DoF Joint

IRB 390 – Lower 2DoF Joint

Fixed bearing joints with 2 Degrees of Freedom, Hygienic Seals
IRB 390 FlexPacker™
4 Axis, 15/1300

Dia 40mm Hollow Shaft
IRB 390 FlexPacker™
5 Axis, 10/1300
IRB 390 FlexPacker™

Drive Train and Connectors

- Upper Arm Interface
- Motor
- Battery
- SMB
- Cable Connector
## IRB 390 FlexPacker™

**Feature: Payload and Speed – Short Picking Cycles**

**Cycle One: with 90deg rotation and return**

<table>
<thead>
<tr>
<th>Type</th>
<th>1 KG</th>
<th>3 KG</th>
<th>6 KG</th>
<th>8 KG</th>
<th>10 KG</th>
<th>15 KG</th>
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<tbody>
<tr>
<td>IRB360 1/1130</td>
<td>167</td>
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<tr>
<td>IRB360 6/1600</td>
<td>140</td>
<td>125</td>
<td>100</td>
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<tr>
<td>IRB360 8/1130</td>
<td>158</td>
<td>143</td>
<td>100</td>
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<td></td>
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<tr>
<td>IRB390 15/1300</td>
<td>143</td>
<td></td>
<td>115</td>
<td>105</td>
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<tr>
<td>IRB390 10/1300</td>
<td>122</td>
<td></td>
<td></td>
<td>102</td>
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</table>

**Cycle Two: with 90deg rotation and return**

<table>
<thead>
<tr>
<th>Type</th>
<th>1 KG</th>
<th>3 KG</th>
<th>6 KG</th>
<th>8 KG</th>
<th>10 KG</th>
<th>15 KG</th>
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</thead>
<tbody>
<tr>
<td>IRB360 1/1130</td>
<td>136</td>
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<tr>
<td>IRB360 6/1600</td>
<td>105</td>
<td>95</td>
<td>75</td>
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<tr>
<td>IRB360 8/1130</td>
<td>109</td>
<td>92</td>
<td>65</td>
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<tr>
<td>IRB390 15/1300</td>
<td>102</td>
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<td></td>
<td>81</td>
<td>74</td>
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<tr>
<td>IRB390 10/1300</td>
<td>87</td>
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<td></td>
<td></td>
<td>72</td>
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</tr>
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</table>
**IRB 390 FlexPacker™**

**Feature: Payload and Speed – Packing Cycles Per Minute**

<table>
<thead>
<tr>
<th>Type</th>
<th>1 KG</th>
<th>8 KG</th>
<th>10 KG</th>
<th>15 KG</th>
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</thead>
<tbody>
<tr>
<td>IRB360 1/1130</td>
<td>91</td>
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<td></td>
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<tr>
<td>IRB360 6/1600</td>
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<td>IRB360 8/1130</td>
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<td>IRB390 15/1300</td>
<td>81</td>
<td>69</td>
<td>66</td>
<td>61</td>
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<tr>
<td>IRB390 10/1300</td>
<td>70</td>
<td>61</td>
<td>59</td>
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</table>

**Cycle Three:** with 90° rotation and return

<table>
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<th>Type</th>
<th>1 KG</th>
<th>8 KG</th>
<th>10 KG</th>
<th>15 KG</th>
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</thead>
<tbody>
<tr>
<td>IRB360 1/1130</td>
<td>77</td>
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</tr>
<tr>
<td>IRB360 6/1600</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>IRB360 8/1130</td>
<td>73</td>
<td>39</td>
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<td></td>
</tr>
<tr>
<td>IRB390 15/1300</td>
<td>67</td>
<td>57</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>IRB390 10/1300</td>
<td>58</td>
<td>50</td>
<td>49</td>
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</table>

**Cycle Four:** with 90° rotation and return

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### Specification

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Payload</td>
<td>10kg</td>
</tr>
<tr>
<td>No of axis</td>
<td>5</td>
</tr>
<tr>
<td>Diameter</td>
<td>1300mm</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP 67</td>
</tr>
<tr>
<td>Controller</td>
<td>IRC5</td>
</tr>
<tr>
<td>Weight</td>
<td>148 kg</td>
</tr>
<tr>
<td>Food grade compliance</td>
<td>NSF H1 Food Grade</td>
</tr>
<tr>
<td></td>
<td>Lubricants and FDA compliant material</td>
</tr>
</tbody>
</table>
### Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>15kg</td>
</tr>
<tr>
<td>No of axis</td>
<td>4</td>
</tr>
<tr>
<td>Diameter</td>
<td>1300mm</td>
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<tr>
<td>Ingress Protection</td>
<td>IP 67</td>
</tr>
<tr>
<td>Controller</td>
<td>IRC5</td>
</tr>
<tr>
<td>Weight</td>
<td>133 kg</td>
</tr>
<tr>
<td>Food grade compliance</td>
<td>NSF H1 Food Grade Lubricants and FDA compliant material</td>
</tr>
</tbody>
</table>
## IRB 390 FlexPacker™
Product strategy & positioning

<table>
<thead>
<tr>
<th>Variant</th>
<th>Strategy</th>
<th>Positioning</th>
<th>Target Application</th>
</tr>
</thead>
</table>
| IRB 390 10kg/1300mm (5-axis) | Market entry and development   | Premium - high speed and high payload packer - unique in its class | □ Shelf Ready Packaging  
□ Retail Ready Packaging  
□ High Payload Picking  
□ Hygienic sensitive Picking and Packing  
□ Full Layer Packaging  
□ High-speed picking (2 kg+)  
□ Parcel handling (Singulation)  
□ More...                   |
| IRB 390 15kg/1300mm (4-axis) | Market entry and development   | In line with the Delta product portfolio               | □ Shelf Ready Packaging  
□ Retail Ready Packaging  
□ High Payload Picking  
□ Hygienic sensitive Picking and Packing  
□ Full Layer Packaging  
□ High-speed picking (2 kg+)  
□ Parcel handling (Singulation)  
□ More...                   |
Application Mapping

Reach [mm] vs Payload [kg] chart showing the reach and payload capabilities of different IRB models.

- IRB 390-15/1300:
  - Shelf Ready packaging
  - Retail Ready Packaging
  - Parcel handling

- IRB 390-10/1300:
  - High payload picking
  - Full Layer Packaging
  - High speed picking (2kg+)

- IRB 360-1/1130
- IRB 360-3/1130
- IRB 360-6/1600
- IRB 360-8/1130
- IRB 360-1/1600
# IRB 390 FlexPacker™

Key features, advantages and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reach &amp; Payload</strong></td>
<td>Exclusive in the class</td>
<td>8 KG</td>
</tr>
<tr>
<td>1300mm</td>
<td></td>
<td>10 kg</td>
</tr>
<tr>
<td>10, 15 kg</td>
<td></td>
<td>15 kg</td>
</tr>
<tr>
<td><strong>Speed (Cycle Time)</strong></td>
<td>Leading in the class</td>
<td></td>
</tr>
<tr>
<td>0.59 – 0.83s(^1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Repeatability (RP)</strong></td>
<td>Leading in the class</td>
<td></td>
</tr>
<tr>
<td>0.01mm (4-axis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.08mm (5-axis)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) 90/400/90 mm cycle
# IRB 390 FlexPacker™

Key features, advantages and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advantage</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Grade Lubrication¹</td>
<td>Suitable for hygienic sensitive environments</td>
<td>• Up to 120NM on axis 4</td>
</tr>
<tr>
<td>FDA compliant material</td>
<td></td>
<td>• Up to 110 NM on axis 5</td>
</tr>
<tr>
<td>15 kg 4-axis</td>
<td>High torque in all axis (unique in its class)</td>
<td></td>
</tr>
<tr>
<td>10 kg 5-axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High speed picking</td>
<td>Leading in the class</td>
<td></td>
</tr>
<tr>
<td>Large working range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Target Applications
Picking and Packing

Target Applications
Target Applications

**Shelf- and Retail Ready Packaging**
- Enables the packaging of goods for Retail Ready Packaging (RRP) and Shelf Ready Packaging (SRP) by tilting of products in packaging.

**High Payload Picking**
- High Payload Picking (up to 15 kg)
- Enables heavy/complex mechanical grippers to handle multiple products

**Full Layer Packing**
- Packaging of full layers into boxes with tight fitting in secondary packaging
- Enables heavy/complex mechanical grippers to handle multiple products
- Supports Multiple picks, single place
- Large work envelope enables better reach into boxes
Hygienic Sensitive Picking & Packing

- Open food (dry food) handling capabilities due to FDA compliant material and Food grade lubrication

High-speed picking

- Picking of loads from high-speed conveyor belts
- Increased speed enables reduction of robots on high-speed belts also for payloads 2kg+ (e.g. 35% faster 8kg payload handling than IRB 360-8/1130)

Parcel handling (Singulation)

- Singulation of random bulk parcels
Takeaways
Takeaways: Offering along the entire production chain
Filling the gap between Picking and Palletizing with two new variants of a Delta Packer

**Picking**
- Applications:
  - Picking and placing
- Hardware:
  - 8 variants of IRB360s
  - 3- or 4-axis variants
  - Payload: 1kg up to 8 kg
  - Stainless steel variant available

**Packing**
- Applications:
  - 2ndary Packaging
  - Shelf Ready Packaging
  - Retail Ready Packaging
- Hardware:
  - 2 variants of IRB390s
  - 4- or 5-axis variants
  - Payload: 10kg or 15 kg

**Palletizing**
- Applications:
  - Palletizing
  - De-Palletizing
  - Material Handling
- Hardware:
  - 3 Products (IRB460, 660 and 760)
  - Payload 110kg: to 450 kg

Established ABB standard Software: PickMasterTwin, RobotStudio, Palletizing Power Pack
### Takeaways: Unique features

<table>
<thead>
<tr>
<th>High payload (10, 15 kg)</th>
<th>5-axis variant available</th>
<th>FDA compliance</th>
<th>High speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Unique in its payload class for delta robots on the market</td>
<td>• 1st 5-axis Delta robot from ABB</td>
<td>• NSF H1 Food Grade Lubricants and FDA compliant material</td>
<td>• 35% faster and offers 45% larger working volume*</td>
</tr>
<tr>
<td>• Enabling higher payload picking and Packing</td>
<td>• Product tilting enables new application in the Retail &amp; Shelf Ready Packaging</td>
<td>• Suitable for use in hygienic sensitive environments</td>
<td>• Picking from high-speed belts with up to 100m/min</td>
</tr>
<tr>
<td>Variants:</td>
<td></td>
<td></td>
<td>• Suitable also for payloads &lt;8kg depending on application</td>
</tr>
<tr>
<td>• 10 kg / 5-axis: IRB 390-10/1300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 15 kg / 4-axis: IRB 390-15/1300</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full compliance with ABB standard Software suite

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*) compared to IRB360-8/1130
ABB Delta Robots
History

**First Sale**
IRB 340 – 1998

**IRB 360**
10,000 units in service

**ABB Portfolio**
2021
IRB 390 Takes ABB Delta Robots to the next level.
IRB 365 to come

Call To Action – IRB 390 positioned for your success