



# IRB 1600

## The highest performance general purpose 10 kg robot

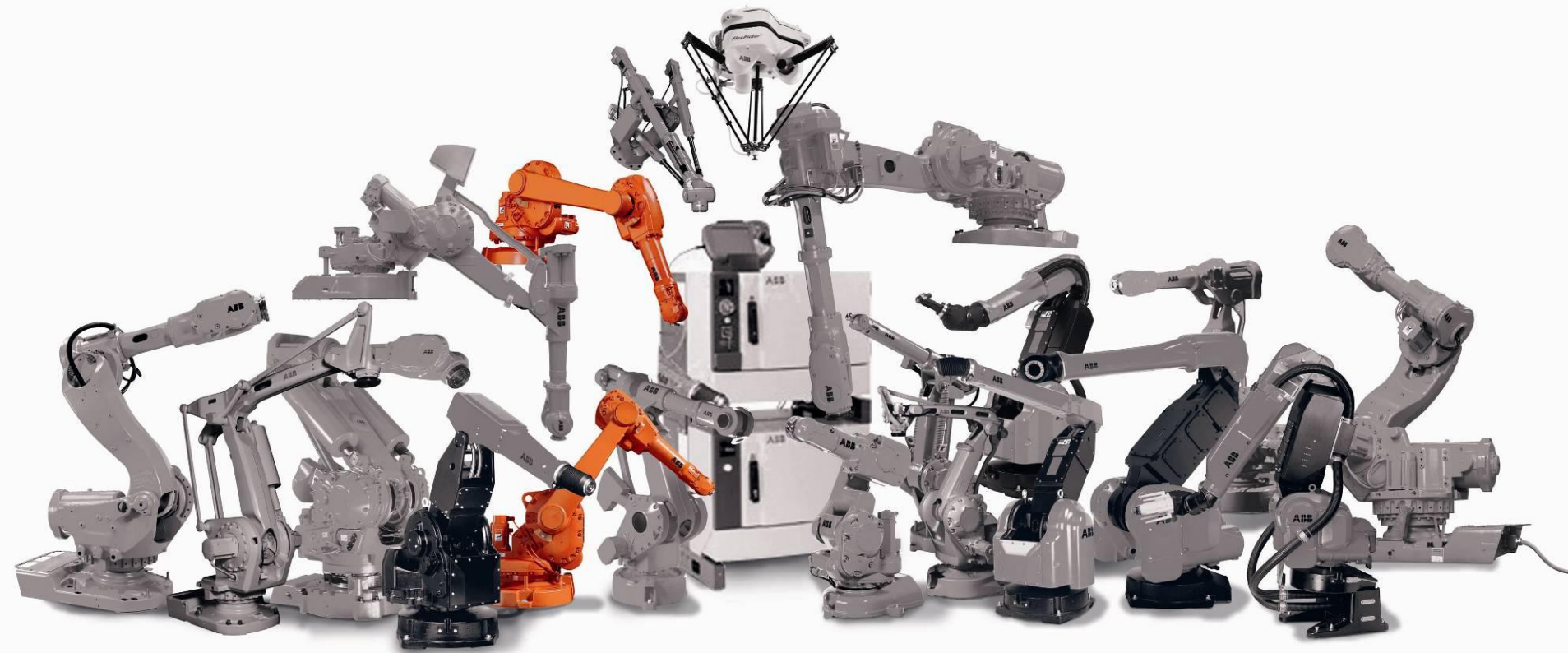
# IRB 1600 general presentation

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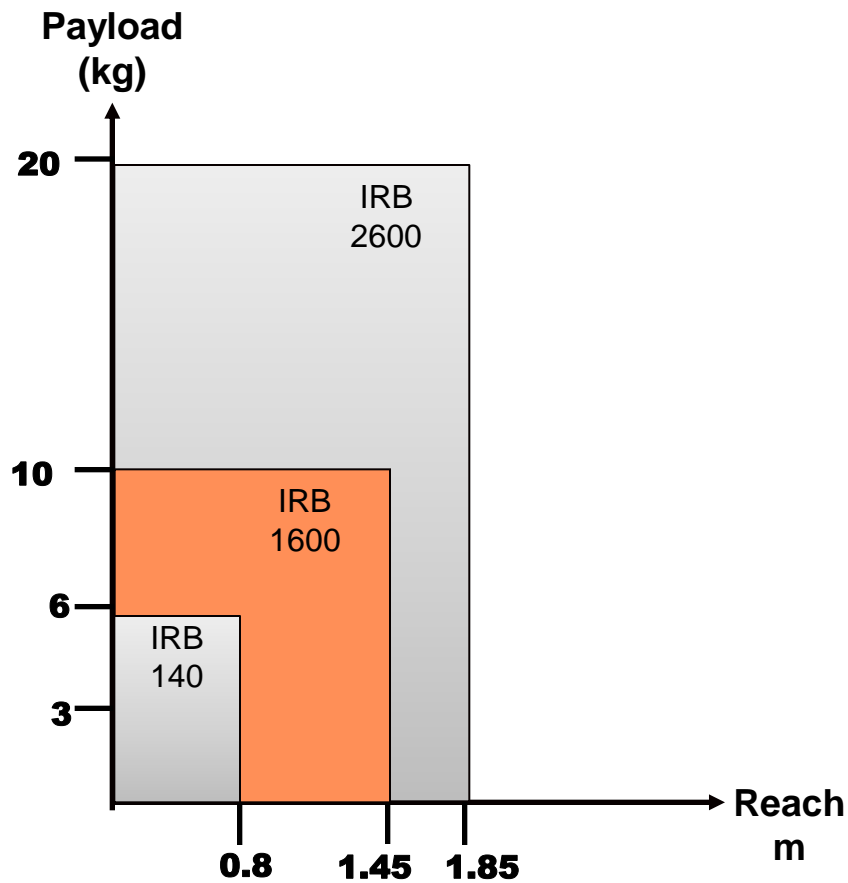


- Overview
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- Summary

# IRB 1600 in ABB Robotics product range



# IRB 1600 position vs. smaller and larger robots

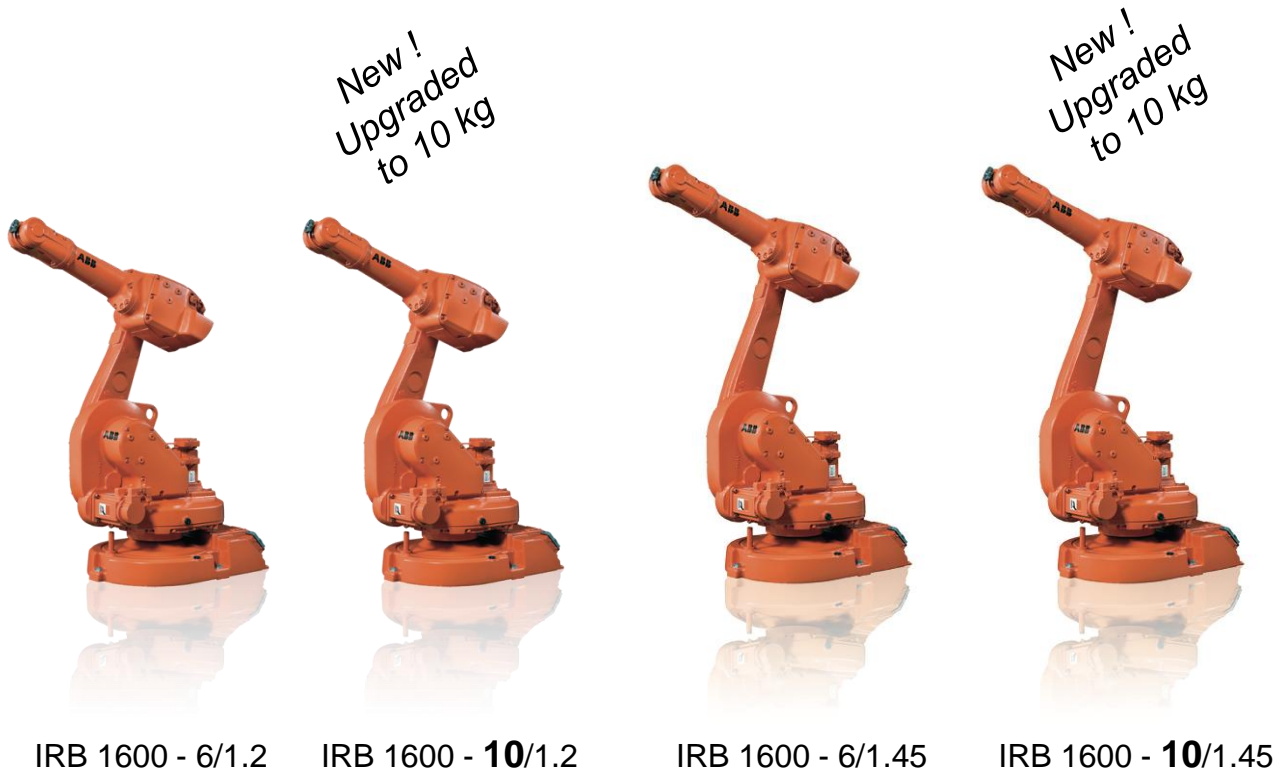


Robots in the 6-20 kg range

- IRB 140
- IRB 1600
- IRB 2600

# Overview

## IRB 1600 family has 2 upgraded variants



# Overview

## Highest performance general purpose 10 kg robot



Enhanced productivity in the toughest environments at the most demanding 24/7 duty cycles by

- Doubling the output with up to 50% shorter cycle times vs. the competition
- Superior work piece quality vs. the competition

# Targeted applications

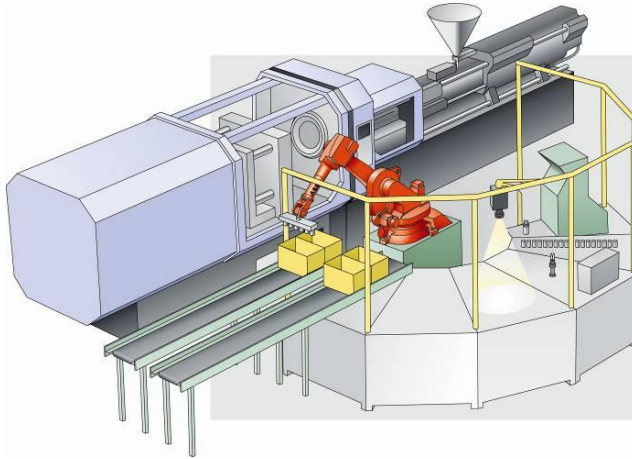
## CNC machine tending



- Loading and unloading of diesel injectors inside a CNC machine.
- The machine has been tailor made for the IRB 1600-10/1.2 - the short arm variant.
- No other robot available with
  - High compactness
  - 1.2m reach
  - sufficient payload
  - the required performance
  - Foundry Plus 2 protection

# Targeted applications

## Machine tending – Spraying/extraction



- Payload 10 kg sufficient for both spraying and extraction applications.
- Reach 720 mm below the base is very useful in spraying applications.
- Short cycle times crucial for extraction application since the output can be increased significantly.
- Foundry Plus 2 protection increases the reliability and the lift expectancy of the robot.



# Targeted applications

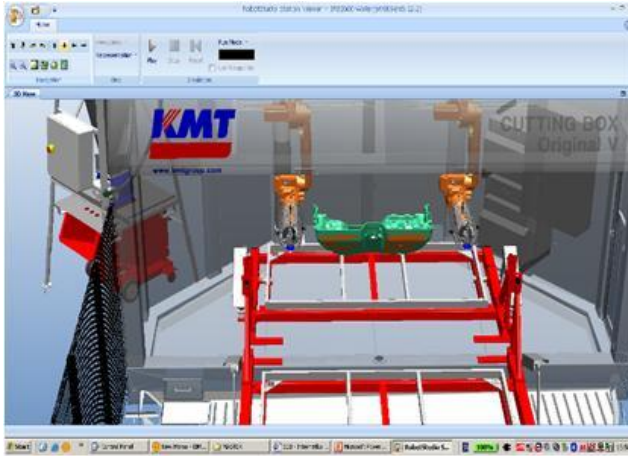
## Arc welding



- IRB 1600-6/1.45 can handle up to 6kg torches and 15kg wire feeders on the upper arm plus 15 kg bobbin on axis 2.
- Offered with several process equipment packages from Fronius, Esab, Kemppi, SKS, Miller, Lincoln, ...
- Powerful software offers
  - Integrated power source with single-point-of-programming for FRONIUS and ESAB.
  - RobotWare Arc
  - RobotStudio Arc Welding PowerPac
- Wide program with external axis
  - IRBP Positioners
  - MTD and MID Gear units,
  - MU Motor units
  - RTT Track motion

# Targeted applications

## Waterjet cutting



### IRB 1600-10/1.45

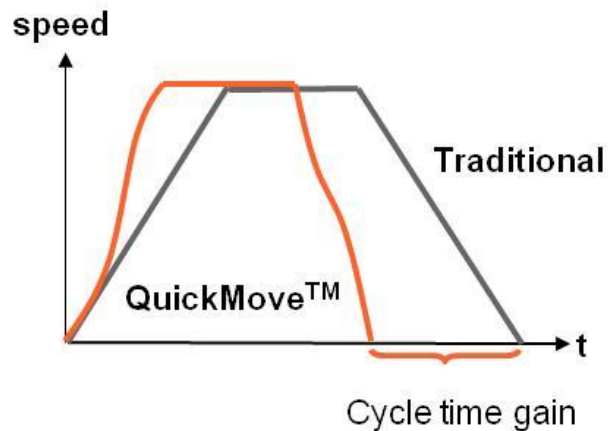
- Path repeatability (ISO) = 0,13 mm at 250 mm/sec
- Wall mounting possible
- Foundry Plus 2 protection

# IRB 1600 key differentiators



1. Up to 50% shorter cycle times
  - QuickMove™
  - Highest accelerations / decelerations
2. Superior work piece quality
  - TrueMove™
  - Stiff design, low vibrations, low friction
3. Outstanding reliability
  - Unique protection offer
  - Robust design
  - Collision detection
4. Sustainable
  - Lowest power consumption
  - Lowest noise level
5. Easy to integrate
  - Fully flexible mounting
  - Can fit inside machines
  - Total load capacity up to 36 kg

# Up to 50% shorter cycle times In material handling / machine tending applications



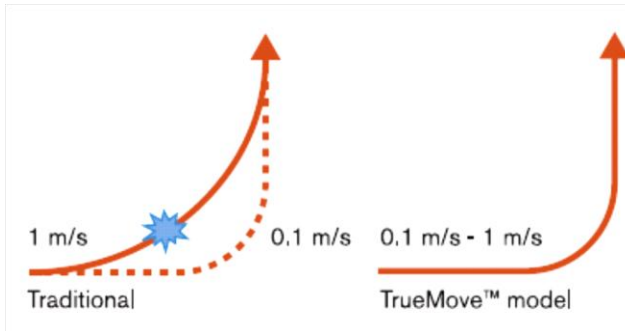
- The unique and patented 2nd generation QuickMove™ motion control
  - Accurate dynamic model
  - Max accelerations and decelerations always utilized
- The maximum acceleration and deceleration are higher than the competition's
  - Powerful motors and very low friction losses in the spur gears
- Result: Up to 50% shorter cycle times in material handling, machine tending and process applications
- Benefit: Up to double production output.

# 1. Up to 50% shorter cycle times

## Example from a material handling application



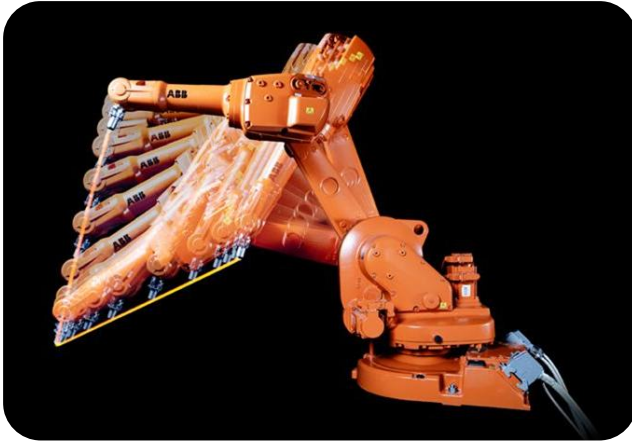
## 2. Superior and consistent work piece quality In cutting and material removal applications



- The unique 2nd generation TrueMove™ motion control
- Stiff design, low vibrations, low friction
- Result:
  - The best position, path and speed accuracy control on the market
  - The path is the same at all speeds
  - “What you program is what you get”



## 2. Superior and consistent work piece quality In cutting and material removal applications



### Benefits:

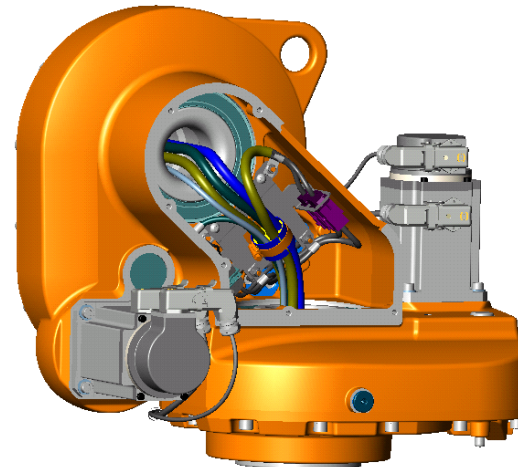
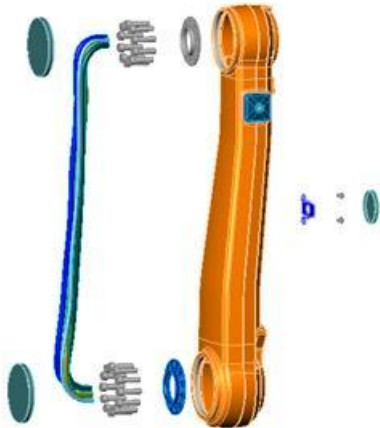
- Superior and consistent work piece quality
- Higher yield and less rejects.
- Higher work piece value

### 3. Outstanding reliability

## Unique protection offer – Standard IP 54



- IP 54 for the entire manipulator
- Internal routing of cables
- IP 67 for sensitive areas:  
Covers, signal cable connector, motors with connectors and all moving axes





# 3. Outstanding reliability

## Unique protection offer - Foundry Plus 2 (option)



### For harsh environments

- Die casting and similar
- Sprays of coolants, lubricants and metal spits.
- High pressure steam washable

### Main features

- IP67 on the entire robot
- Wear resistant paint
- Cable connector protections
- Rust preventives on screws, washers and unpainted / machined surfaces

### Benefits

- Higher up-time
- Less maintenance
- Longer life expectancy



Nickel coated mounting flange

### 3. Outstanding reliability Foundry Plus 2 (option) – IP 67 measures



IP67 connector



IP67 axis sealings



IP67 connectors



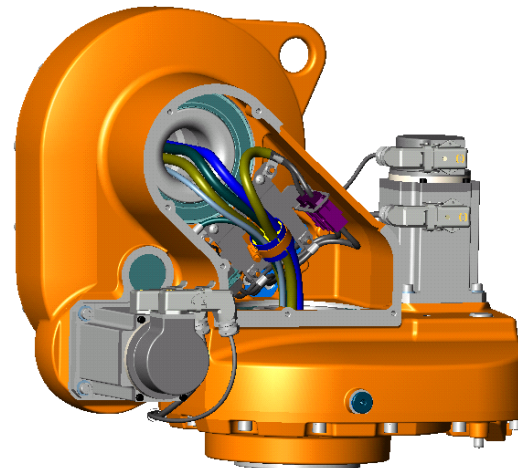
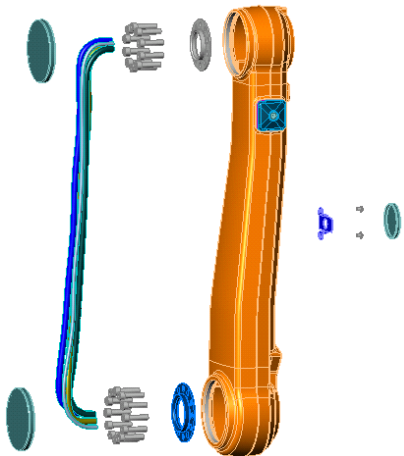
IP67 motors & connectors

### 3. Outstanding reliability

#### Robust design



- Rigid design, the weight of the robot is 250 kg, higher than the competition.
- Well proven spur gears on all axis.
- Internal routing of cables for better protection.



# 3. Outstanding reliability

## Collision detection software (option)



### Functions

- Quickly detects a collision
- Stops the robot, backs up along the path
- Detection in all directions
- No mechanical parts or cabling

### Benefits

- Protects robot and equipment from damages

# 4. Sustainable

## Power consumption less than half of the competition



### Features:

- Spur gears with very low friction.
- Efficient motion control with QuickMove™ and TrueMove™, avoiding unnecessary moves.

### Benefits:

- Power consumption at max speed is only 0,57 – 0,58 kW (active power) or 1,08 kVA (apparent power) !
- Competition consumes at least 40% more in kVA at max speeds.
- You can calculate your power consumption in Robot Studio.

Speed (mm/s)	Power consumption (kW)	
	IRB 1600-x/1.2	IRB 1600(ID)-x/1.45(1.5)
Max.	0.57	0.58
1000	0.46	0.47
500	0.39	0.42
100	0.34	0.39

## 4. Sustainable Lowest noise level



### Features:

- Airborne noise level < 70 dB (A)

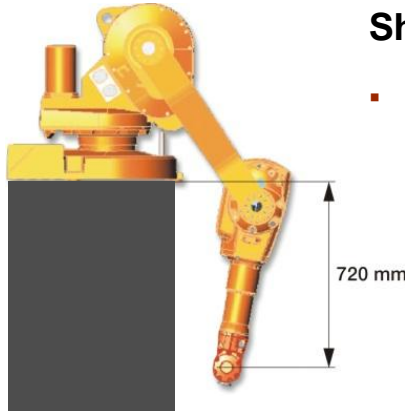
### Benefits:

- Less hazardous working environment.
- The operators can stay more alert.

Data	Description	Note
Airborne noise level	The sound pressure level outside the working space	< 70 dB (A) Leq (acc. to Machinery directive 2006/42/EG)

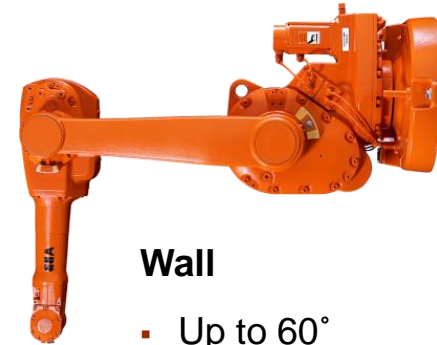
# 5. Easy to integrate

## Fully flexible mounting at max load and full speed



### Shelf

- 720 mm reach below the base



### Wall

- Up to 60° working range on axis 1

### Tilted

- Up to 55° with full working range on axis 1



### Inverted

- Excellent working range





## 5. Easy to integrate

### Can fit inside machines: Ex KMT Lidköping

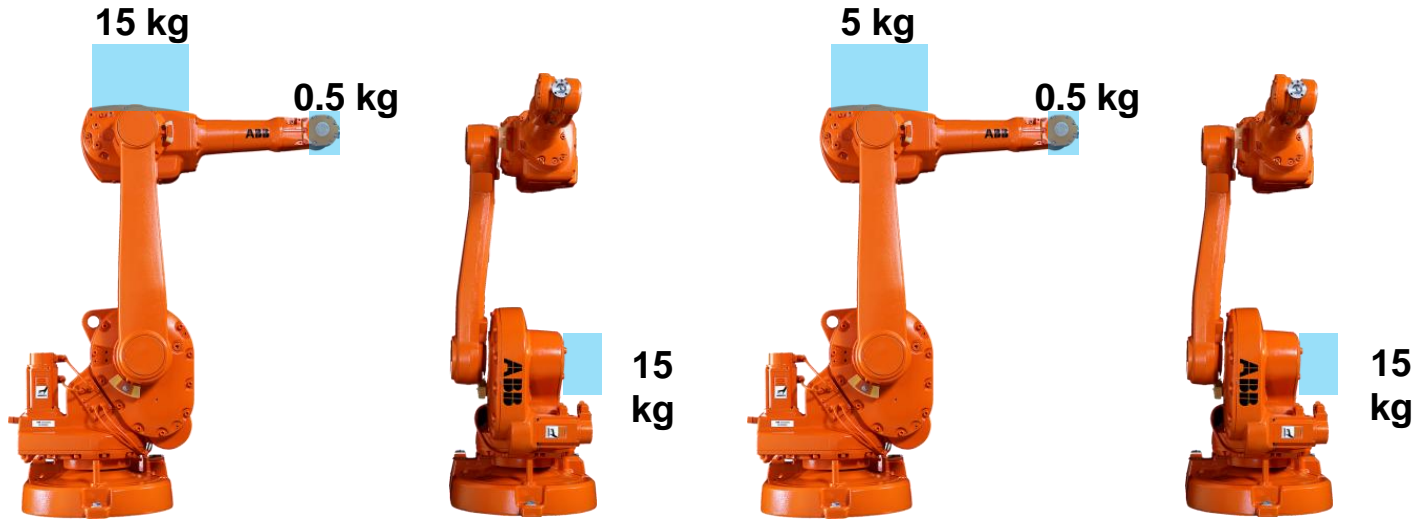


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# 5. Easy to integrate

## Total load up to 36 kg at full speed



IRB 1600-6/x

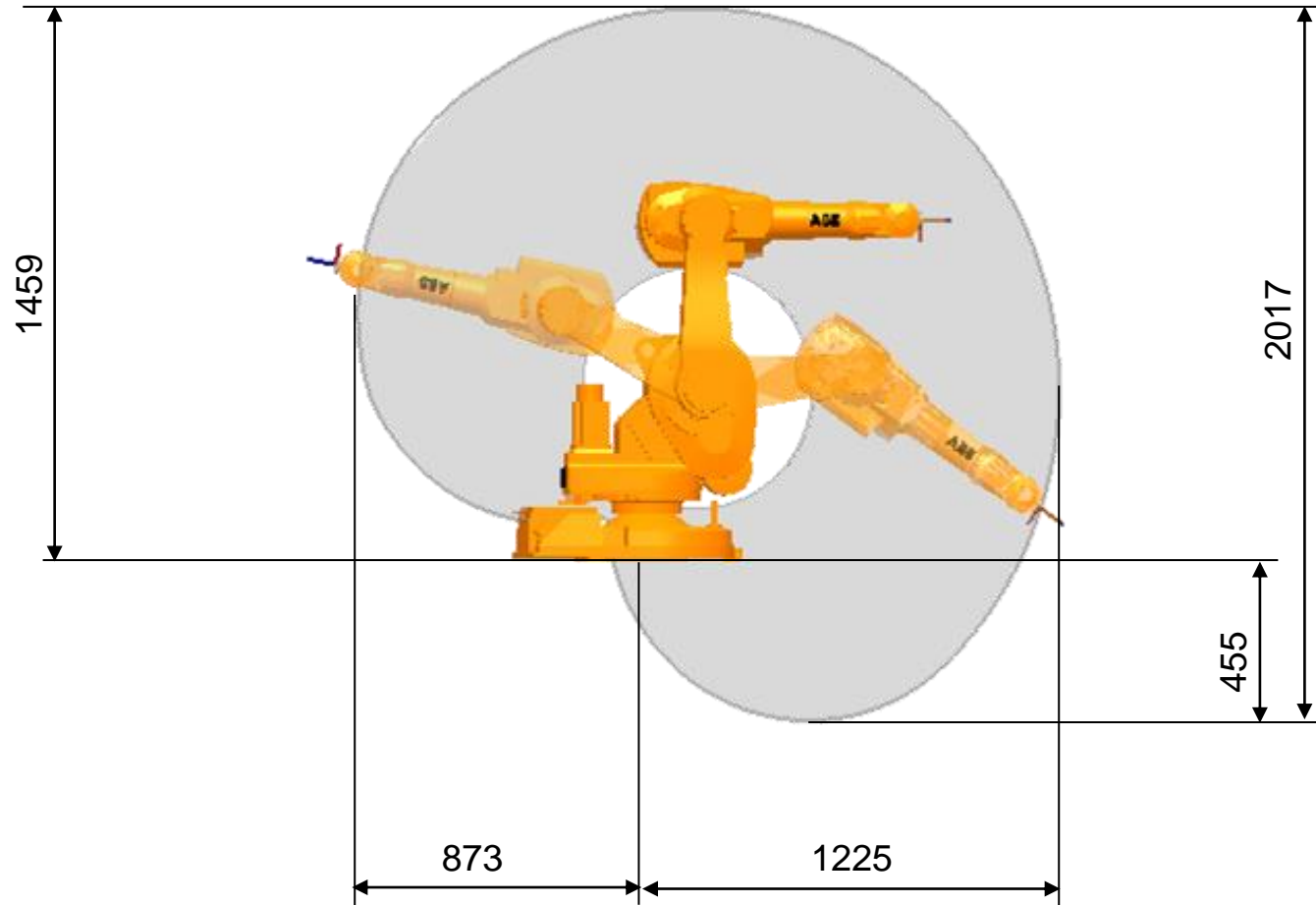
IRB 1600-10/x

Variant	Payload (kg)	Max Armload (kg)	Total load (kg)
IRB 1600-6/x	6	30.5	36.5
IRB 1600-10/x	10	20.5	30.5

*Please see the product manual for further information regarding how the extra loads can be placed.*

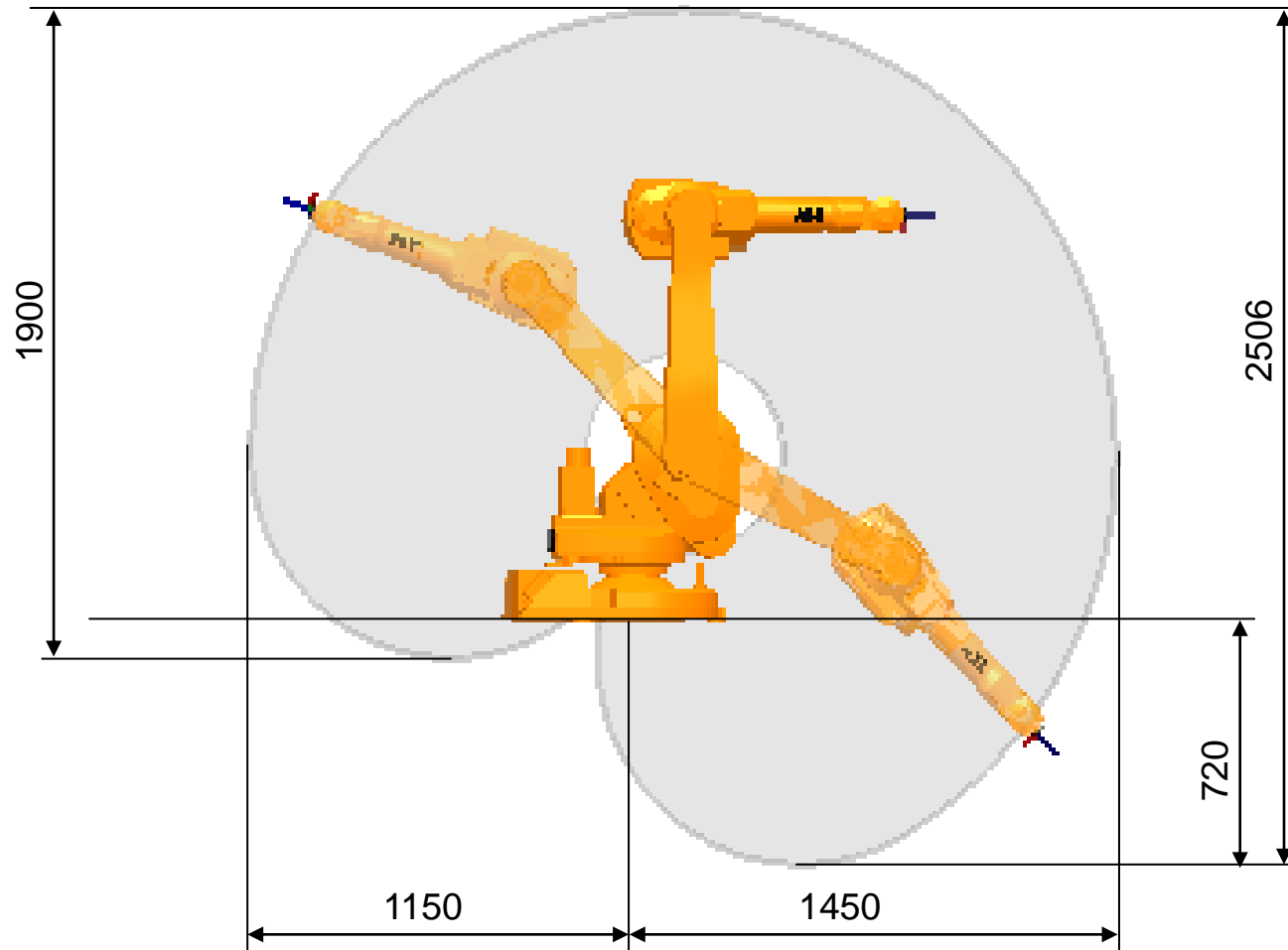
# Technical data

## IRB 1600-x/1.2 – the robot for compact cells



# Technical data

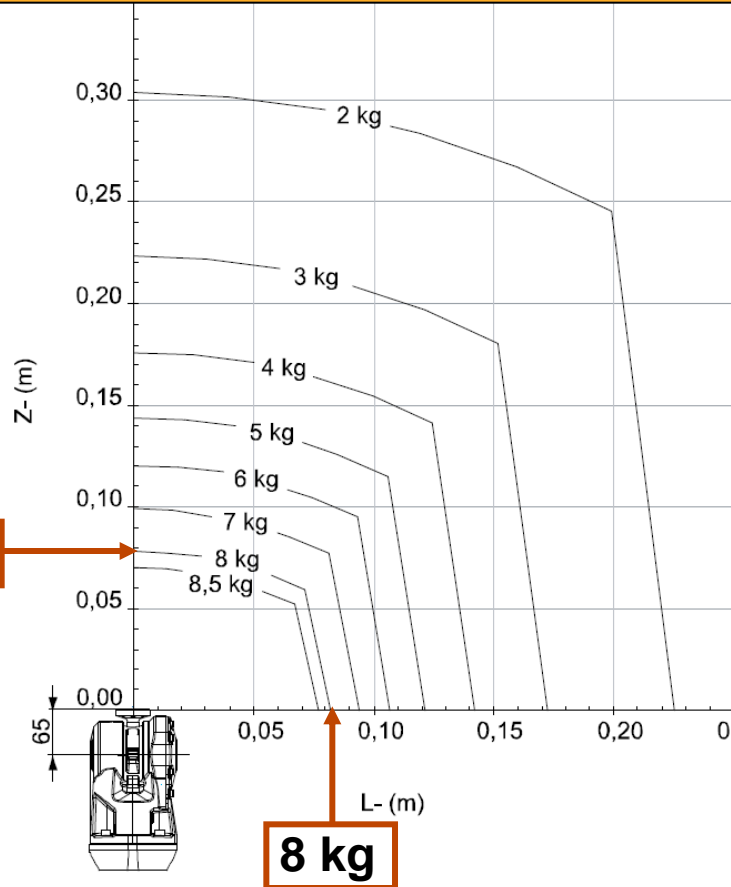
## IRB 1600-x/1.45 – wide working range



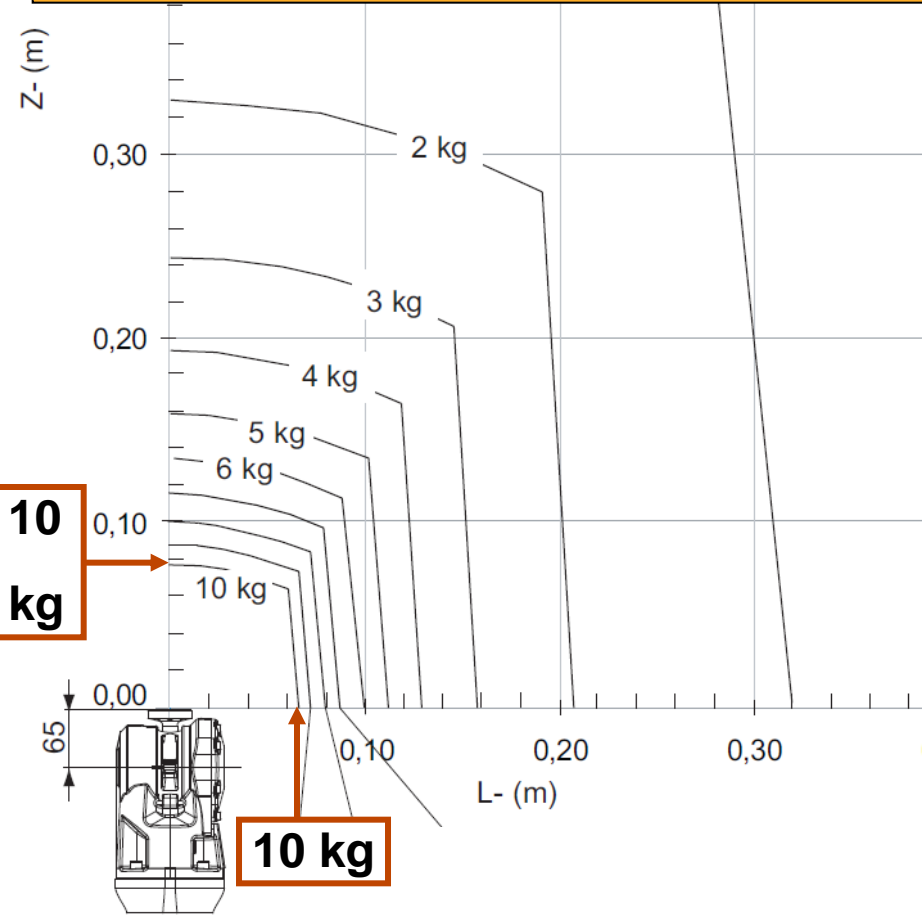
# Technical data

## Increase from 8 to 10 kg payload

### Old 1600-8/x.xx



### New 1600-10/x.xx



# Summary

## Two major benefits for our end users and integrators

### **Significant productivity gains**

- Increased output
  - up to 50% shorter cycle times
  - outstanding reliability
- Consistent high quality and reduced waste
- Sustainable and healthy production environment
  - lowest power consumption
  - lowest noise level

### **Efficient integration of a compact cell**

- Full freedom to place the robot in the most efficient position
  - fully flexible mounting
  - can fit inside machines
  - up to 36 kg total load capacity

# Summary

## The highest performance general purpose 10 kg robot



- Wide range of applications
- The short arm is unique
- The clear winner vs. the competition
- Enables significant productivity gains
- Highly efficient to integrate

Power and productivity  
for a better world™

