

# BPM Portable BinPicking Machine for Foundry

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## The need.

**Target customer:** FOUNDRY / OEM MACHINING / TIER1.

**Need:** Feed from parts placed randomly inside a deformed container.

**Solution:** A portable station that picks parts from the container and releases parts at fixed positions and orientations. Typical: 10 to 30 sec per part.

**Parts:** Complex casting parts (discs, drums, sleeve holders, ...)

**Info:** Immune to part variations, like color, stains, disposition, deformity of the container, ambient light, aggressive environments ...



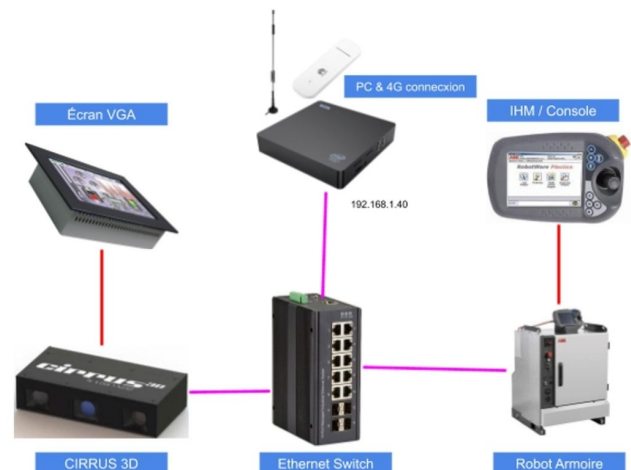
## Container specifications

- Typical container dimensions:  
Base 1200x1000mm, Height 1000mm  
(a base of up to 1600x1200mm is possible)
- Container positioning device with guides.
- Allows to work with AGV devices.
- Automatic container door operation.
- Option to feed from two containers, either to feed two different models or to not stop production at the end of one container.

# The applied solution.

## Description of the Virtual Reality Scanner

- The scanner acquires a cloud of 3D points of the entire scenario (including the container), locates the parts, discards those that are too buried to remove and verifies that there are no collisions of the gripping tool with container, parts, structure, etc. using a Virtual Reality scenario.
- Immune to shifts in color, stains, dust, oil, ...
- Part position determined with 6 degrees of freedom.
- From the point of view of robot programming, the part is a fixed point, so it is easy for the customer to program new models or modify existing points.
- Controls the parts that are intertwined, to avoid pick two parts at once.
- It has AI (Artificial Intelligence), if the scenario reaches a point where no parts to pick can be found, robot moves parts inside the container, generating a new scenario with new parts to pick.
- We always provide support, but also customer receives a complete training so he is able to do maintenance and program new part models by itself.
- Service options include a 24/7 recording camera and 4G remote connection for fast problem solution and support.



## Part specifications

- Weight range: 1- 60 Kgr.
- Production rates: up to 10 seconds per part (360 parts per hour), with average rates of 20 seconds per part (180 parts per hour).
- Part types: raw cast iron (even with sand and burrs).
- Immune to shifts in color, rust, stains, ...
- Average number of pick points per part: 14 (up to 30).
- When the Virtual Reality system does not find any more selectable parts, the Artificial Intelligence directs the robot to move the disks inside the container, in order to modify the scenario and thus be able to find new selectable parts.



## General specifications

- Machine access points: 2 types  
1 automatic door for containers.  
1 manual door for workers.
- Physical form of the machine: portable monoblock.
- Fixing the machine to the floor: 8 chemical anchors of 150mm length.
- Robot: ABB IRB4600 or IRB6620
- Noise level: < 74 db (85 db for less than 1 second pulses).
- Machine dimensions: Length: 4000mm Width: 2300mm Height: 2900mm







### Calibration of the machine.

When the machine is moved from one place to another, the 3D scanner is replaced or moved, the robot is replaced, ... the system needs to be recalibrated to adjust the scanner coordinate system with the robot base.

This process is fully automatic: mount the calibration ball in the robot gripping tool and press a button on the screen HMI. The robot starts the automatic calibration routine with the scanner.

The calibration routine takes less than 2 minutes, without any operator action needed.

### Integration with your machine.

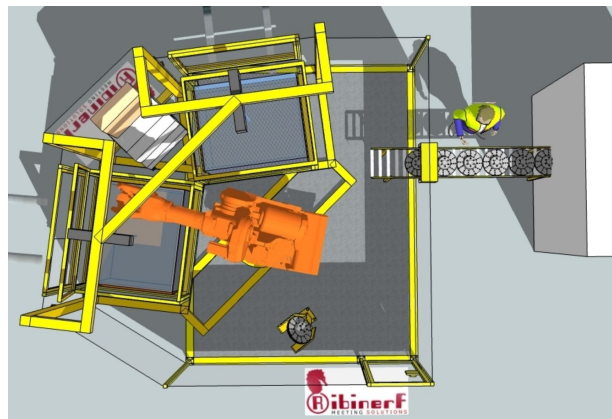
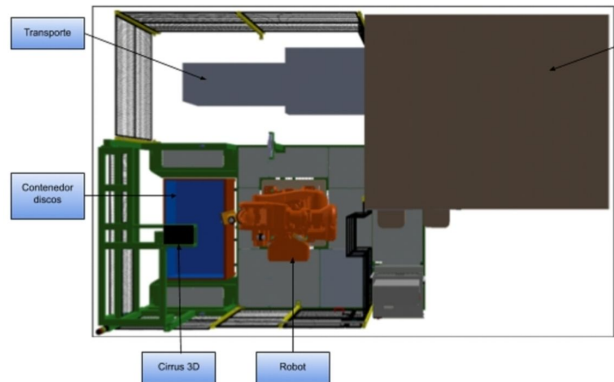
The machine allows the integration with multiple floor plan layouts.

Our design can be modified to fit with your machine (CNC mill, blasting machine, ...).

Because your machine may include a transport buffer for several parts, your machine will keep working without stop while an empty container is replaced. As an option we can include a second input container to keep feeding your machine in case your it does not includes a transport buffer.

Average integration time in your premises:

- 1 day of installation.
- 1 week of adjustment and training.





## More information:



[BPM Machine](#)



[2 Bin Model](#)

Web: [www.ribinerf.com](http://www.ribinerf.com)