

## 1: Project Details

Project	<input type="text"/>		
Customer	<input type="text"/>		
Address	<input type="text"/>		
	<input type="text"/>		
City/Town	<input type="text"/>	Postal Code	<input type="text"/>
Country	<input type="text"/>		

## 2: Size of the working area

< 500 m <sup>2</sup>	<input type="checkbox"/>	1,000 m <sup>2</sup>	<input type="checkbox"/>	5,000 m <sup>2</sup>	<input type="checkbox"/>	10,000 m <sup>2</sup>	<input type="checkbox"/>
20,000 m <sup>2</sup>	<input type="checkbox"/>	40,000 m <sup>2</sup>	<input type="checkbox"/>	80,000 m <sup>2</sup>	<input type="checkbox"/>	>100,000 m <sup>2</sup>	<input type="checkbox"/>

## 3: Automatic doors

Quantity

## 4: Working model/shift pattern

1 shift	<input type="checkbox"/>	2 shifts	<input type="checkbox"/>	3 shifts	<input type="checkbox"/>
4 days	<input type="checkbox"/>	5 days	<input type="checkbox"/>	6 days	<input type="checkbox"/>
		7 days	<input type="checkbox"/>		

## 5: Floor surface

Concrete	<input type="checkbox"/>	Ashphalt	<input type="checkbox"/>	Wood	<input type="checkbox"/>	Tile	<input type="checkbox"/>
PVC	<input type="checkbox"/>	Metal	<input type="checkbox"/>	Other	<input type="text"/>		

## 6: Working environment

Outdoor?	<input type="checkbox"/>	Freezer?	<input type="checkbox"/>	High humidity?	<input type="checkbox"/>
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## 7: Communications

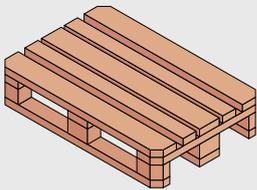
Use WMS for orders?	<input type="checkbox"/>	Use customer WiFi?	<input type="checkbox"/>
Name WMS/ERP	<input type="text"/>		
Scan barcodes?	<input type="checkbox"/>		

**8: Load reference**

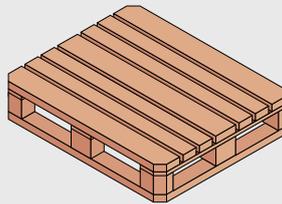
Reference

**9: Load/Pallet type**

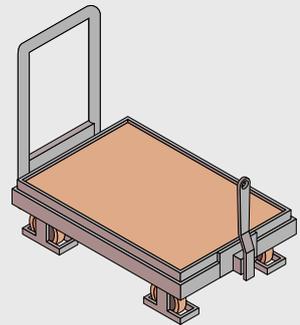
Open Aperture



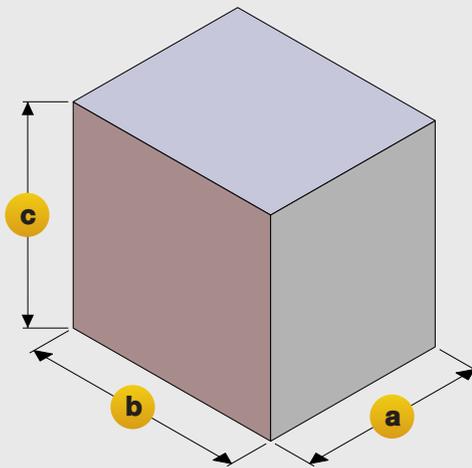
Closed Aperture



Trailer/cart



**10: Load dimensions**



Dimensions

a

b

c

Load weight

Max.

Max.

Entry face/hitch side

a

b

c

**10: Load wrapping**

Load is wrapped

Wrapping colour

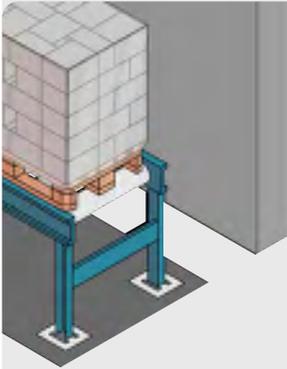
## 12: References

Route ref.

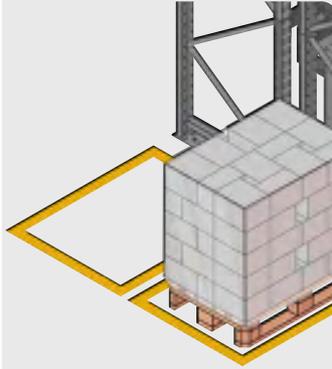
Load ref.

## 13: Collection stations

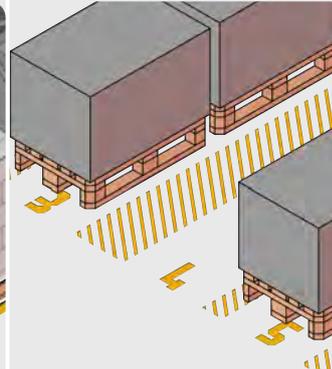
Machine



Floor space



Staging lane



Racks



Number of collection points

Dock lane length

Machine collection point height

## 14: Route length

Distance to deposit point

## 15: Deposit stations

Machine

Floor space

Staging lane

Racks

Number of collection points

Dock lane length

Machine collection point height

## 16: Throughput

Number of loads, per hour

### 17: References

Route ref.

Load ref.

### 18: Tractor loop attributes

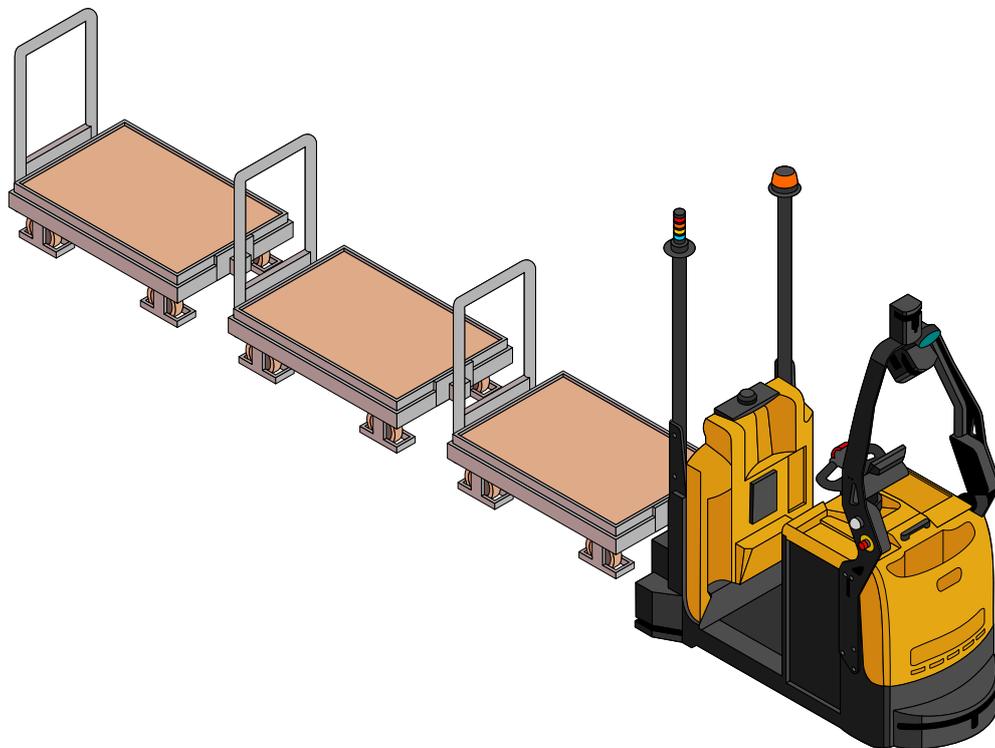
Tractor loop length

Number of stops per run

Number of trailers per run

Time to hitch/unhitch

Number of runs per hour



**19: Battery management type**

Lead-Acid with manual exchange



LTO (Lithium) with auto. charge



**20: Customer/Dealer-supply energy**

No battery supply required

- 1 Enter the basic details of the customer. For the address, the location of the facility where the solution will be installed is preferable.
- 2 Measure the working area of where the Robotic Forklift Truck will operate. This does not have to be the entire facility. The size of the working area directly affects the cost of mapping and route setup.
- 3 Count all of the automatic internal doors that the Robotic Forklift Trucks will operate through, on all recorded or proposed routes. These automatic doors will require a COMBOX to interface the Robot Manager with the door electronics. This enables the Robotic Forklift Truck to pass through the door when it is safe to do so.
- 4 Select how many shifts per day the solution is expected to operate. Additionally, indicate how many days per week the solution will be operation.
- 5 The floor surface is very important. Principally traction, adhesion and levelness is the most important aspect of any floor and the surface material can promote or retard these aspects.
- 6 **Robotic Forklift Trucks cannot operate outside!** Dust, dirt, water & direct sunlight will interfere with sensors and create numerous operational problems. Areas of high humidity may cause a problem with condensation again with sensors. Use in freezers is not currently supported.

#### **Job Triggering**

Jobs can be triggered a multitude of ways. Seamless is via a direct connection to the customer's WMS/WCS/ERP system. Alternatives include push-button or via a touch screen on the Robotic Forklift Truck itself. In the case of a WMS link requirement, indicate the brand name/supplier of the customer system.

#### **Barcode scanning**

- 7 Some applications may require a barcode scan by the Robotic Forklift Truck – for example to check that the correct load is being collected. In this case, the unit needs to be equipped with a barcode scanner. The exact type will be subject to later discovery.

#### **Wi-Fi**

It is usual to make use of the customer Wi-Fi network. If this isn't possible or desirable, then leave this box unchecked. There are detailed requirements for the use of the customer's Wi-Fi network, which should be communicated with any pricing offer.

- 8 Enter a unique and meaningful reference that refers to the load being documented.

Select the basic type of pallet. There are three types:

- 9
  - Open. This is a pallet or load without stringers or runners underneath the fork aperture. A Euro Pallet is a great example of this type of load.
  - Closed. This type of load has stringers underneath the fork aperture. When handling a Euro Pallet on the 1.2 metre face, this is considered a closed pallet.
  - Trailer/Cart. This load is any type of cart or trailer for use with a powered Tugger Train System.
- 10 Enter the load dimensions; width, length and height. Please also indicate which dimension (A or B) is the fork entry or hitch side.

Pallet wrapping can affect the operation in two main ways.

- 11
- The first is the stability of the load. When moving stable loads, a faster travel speed may be possible as the load is less likely to spill in the event of an emergency stop.
  - Secondly, the colour of the wrap may affect the operation of some of the sensors on the Robotic Forklift Truck.

- 12
- Enter a unique name for the route you are defining. Enter a reference for the load that is being moved on this route (defined earlier, page 3).

Select one of the types of area where the Robotic Forklift Truck will collect loads from at the start of the route.

- 13
- The number of collection points relates to the number of staging lanes, racking locations, machine points, etc.

If appropriate, enter the dock lane length.

If appropriate, enter the height of the bed above the floor.

- 14
- Once the load has been collected, it will need to be transported to the deposit point. Enter the **one-way** distance here.

- 15
- Enter the data for the deposit point, in the same manner as the collection point.

- 16
- The biggest driver of fleet size will be the number of loads required to move per hour over this route. Enter this here.

- 17
- If a tugger train loop is required, then enter a unique reference here, along with the reference of a trailer or cart defined earlier.

Enter here the total length of the loop the Robotic Tractor will be required to run. It must be a loop for fully automatic operation. A single loop will generally run with the same trailer or product or carry different loads for the same type of process. For example in a manufacturing plant, JIT parts may be carried to 4 stations, which would be one loop. A second loop at the same plant may collect empty trailers.

- 18
- The number of stops for this loop should be entered.

The maximum number of trailers per run should be recorded.

If hitching, unhitching or pausing is required, then the average number of seconds to do this should be recorded here. Automatic un-hitching is possible.

Finally, specify the number of times this loop should be performed per hour.

Specify if a battery is required to be supplied by the factory. There are two types that are possible:

- 19
- Lead-Acid, which must be swapped or put on charge by a human. By default, our calculation will assume that a battery will be changed and the unit be put into service immediately.
  - LTO, which is a Lithium-based technology that allows for rapid, fully-automatic charging.

- 20
- If no battery supply from the factory is required, please note this here. The battery may be required during manufacture – please bear in mind any potential shipping cost to the automation plant.