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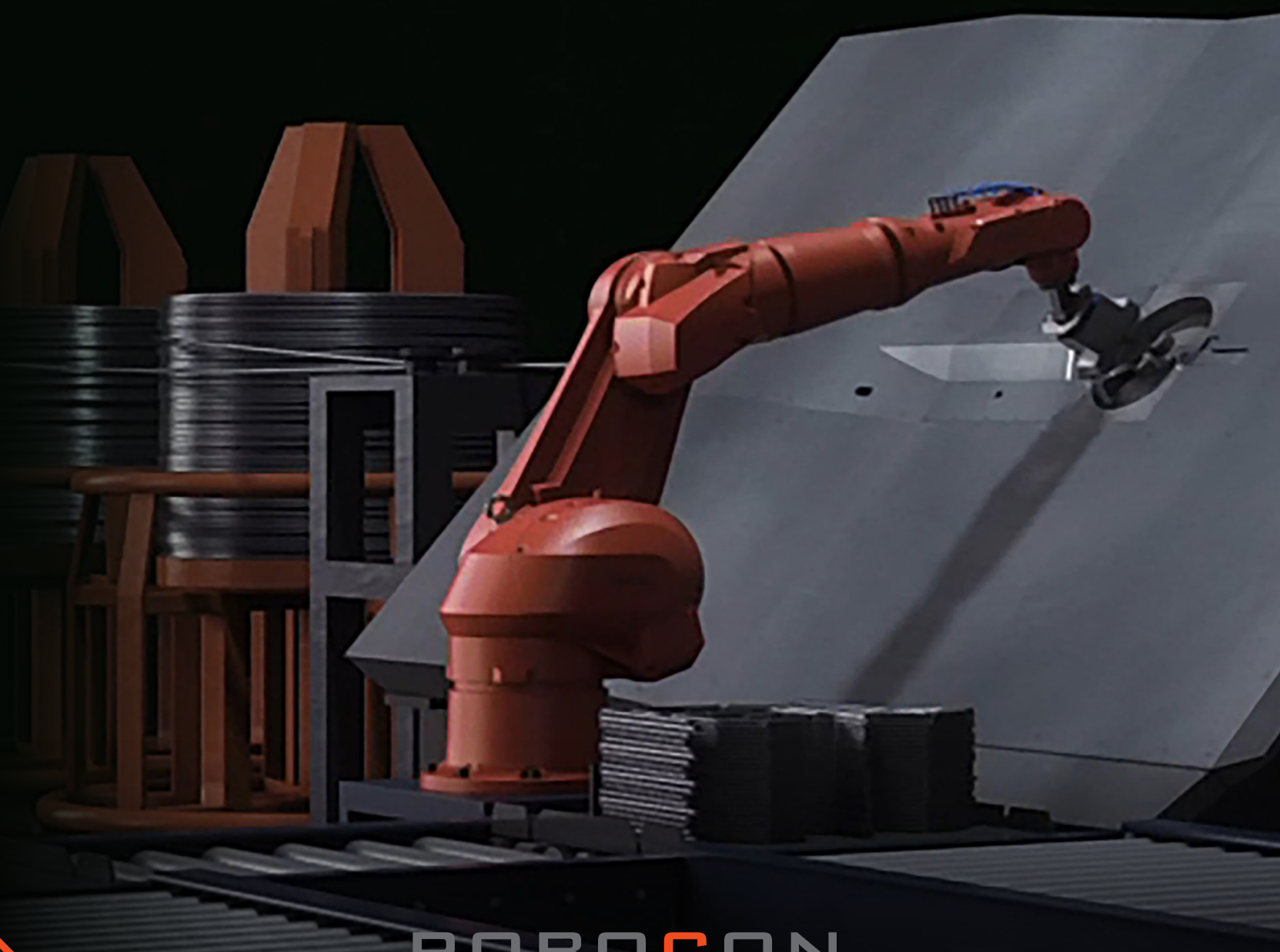
AUTOMATION SOLUTION

ROBOCON

Robotics Construction Technologies

Global NO. 1

Premium Construction / Steel Solution Provider



ROBOCON

your innovation partner

We will become a partner that creates a new value and leads
the future with our costomers through constant change and innovation.

Market & Products

1) Construction

- ARON Solution
  (General solutions for the entire rebar processing steps)
- Automatic Robot Cage Assembly System
  (General solutions for the entire preassembly steps)

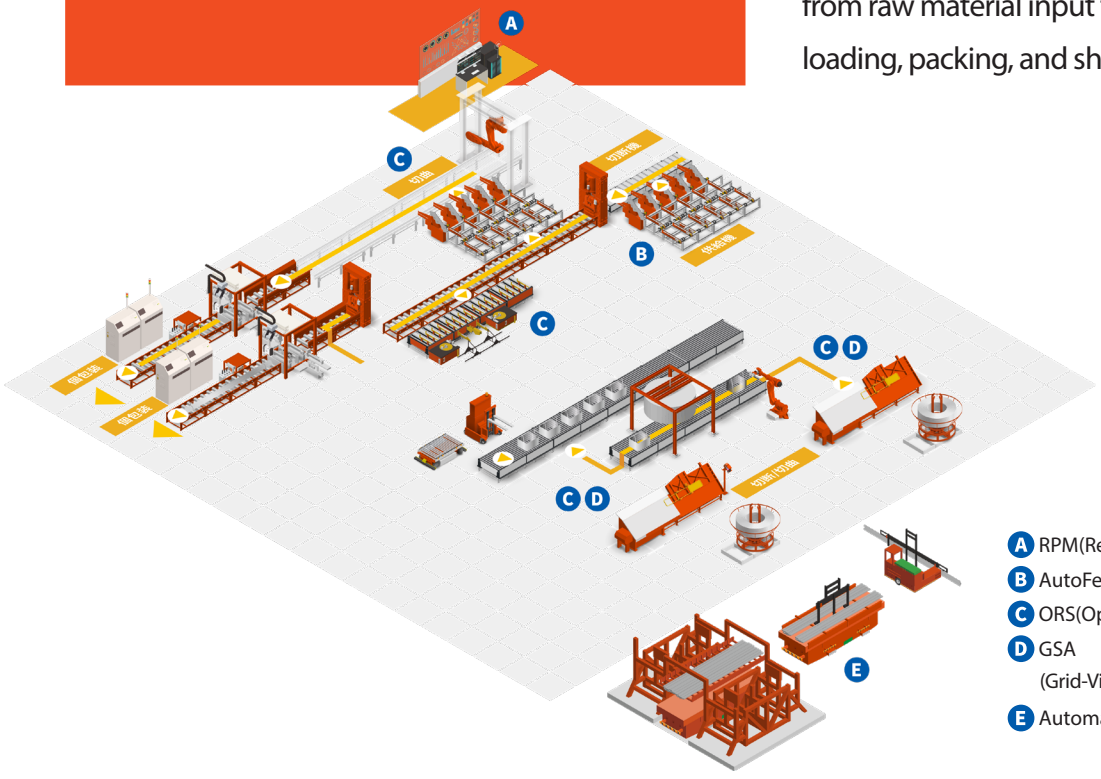
2) Steel

- Automatic Tagging robot for Bundle bars
- Cutting wheel Maintenace & Scrap Remover Robot
- Automatic sampling and measurement robot

CONSTRUCTION

ARON Solution

ARON is a smart factory solution based on robots specialized in rebar processing for construction. As robotics and vision technology are combined, the entire process of rebar processing can be automated from raw material input to cutting, bending, loading, packing, and shipment.



- A RPM(Rebar Production Manager)
- B AutoFeeder
- C ORS(Optimized Robotic Stacking)
- D GSA (Grid-Vision Straightening Adjustment)
- E Automation Equipment for Logistics

Productivity

Aron can operate constantly and continuously due to the automatic robot controlled system. It leads to the drastic reduction of non-valuable time in non-automated system and therefore not only increases productivity but also minimizes labor and equipment cost.

Safety

Because ARON is a robot controlled system, it can minimize labor and ensures greater safety due to no operator on the Cut & Bend machine.

Quality

ARON uses the real-time automatic straightening adjustment system, GSA(Grid-vision Straightening Adjustment). There's no need for operators to calibrate rebar straightening during production and it ensures high quality of straightened processing rebar

ARON technologies

RPM(Pebar Poduction Manager)

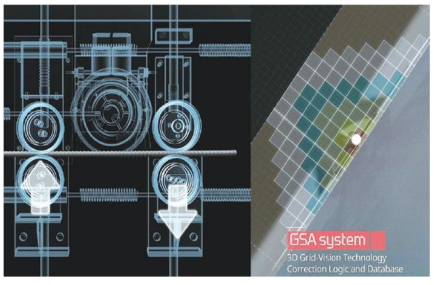
- Work order instructions and management at the office (w/o barcode tagging)
- Work order optimization to minimize losses of processed rebar
- Web-based real-time monitoring of production and logistics status

Auto Feeder

- As an automatic rebar feeding device, when supplying a bundle of rebars, the number of necessary rebar can be automatically counted and sorted and supplied to the processing line

ORS(Optimized Robotic Stacking)

- Automatic robot able to pick and stack straight bars or stirrups of variable shape and size (up to about 30,000 kinds) directly from the cut & bend machine
- Patented special gripper applied
- Able to stack in various forms, i.e. guided carrier, cages, ton bag, etc.



GSA(Grid-vision Straightening Adjustment)

- Automatic calibration system of rebar straightening in a cut & bend machine
- Real-time adjustment in conjunction with production of processed rebar
- Patented calibration working algorithm

Automation Equipment

- Development of automated logistic facilities including AGVs(Automated Guided Vehicle) and auto loader and X-Y axis forklift

ARON can be installend in any places

ARON can be installed in large-scale construction and civil engineering construction sites. As it is produced and supplied in a container form, ARON can be promptly installed in and easily transported to construction sites. In addition, rebar processing hardware facilities used in building and infrastructure sites can be efficiently relocated in new construction sites or rebar processing sites after the completion of previous work.

Factory

Construction site

References

Robocon Project 1

Ireland Plant, one of the top-5 rebar processing companies

Installed on the factory

- Day and night unmanned operation
- 30% cost reduction / 2 times higher productivity

Robocon Project 2

Tuas Port, D company which is a leading construction firm in Korea

Installed On-site (Container-type)

- Zero safety accidents
- 15% Cost reduction and 1.7 times higher productivity (continuous operation 18 hrs/day

Install Process of ARON-Unloading


Site check


Facility unloading


Unpackaging

Install Process of ARON-Hardware Setting


Robot Installation


Conveyor test


System setting

Install Process of ARON-System letegration Test


Safety fence


Operation test


Integration test

Install Process of ARON-Mass Production


Mass production


Production-On site Standby


ARON Product

ARON Delivery

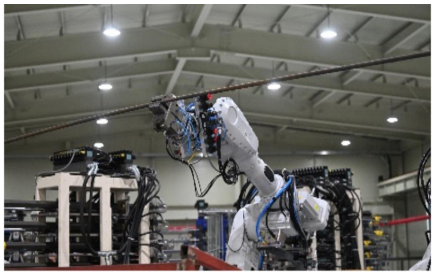
Contact	Requirement & Analysis	Proposal	Order Confirm	H/W & S/W Develop	Install
Pre-work		1 month		2-3 months	4 months

CONSTRUCTION

Automatic Robot Cage Assembly System

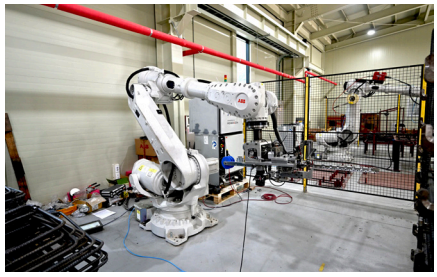
The arch-shape segment preassembly automation equipment applying the source technology can handle various forms and sizes of rebar assembly structures.

ARCA technologies



Rebar loading robot

6-axis based robots with specialized gripper can automatically load heavy rebars on a position as high as over 2m.



Binder mechanism for rebar assembly

As it has joints, this automatic binding machine can easily access a narrow space between rebars. Large diameter rebars, which are difficult to bind with commercial binding machine, can be tied using binding machanism.

Rebar arranging system

This automatic rebar arranging system allows interlinked robots to automatically deploy rebars and holds main rebars in place to avoid interference with the hoop rebar supplier so that hoop rebar can be transported.

Hoop rebar supplier

Hoop rebars are automatically taken out from the hoop rebar magazine and transported to the designated location.

Products to be developed

These products are applicable to walls, slabs, cores, and arch type segments of various structures such as skyscraper, tunnel, bridge, underground structure, and so forth.

STEEL

Automatic Tagging robot for Bundle bars

The position of bundle bars is sensed with the 3D machine vision system, and a tag with tracking information is attached on it. This can enhance the quality of finished products and lower the delivery error rate.

Components

- Tag Printer
- Auto Feeder Of Stud
- 3D Laser Scanner
- Tag Alignment M/C
- Feeding ready position
- Welding grip gun

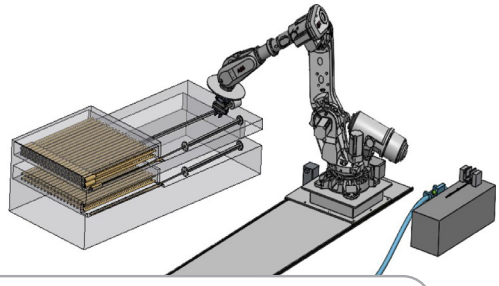
References

Pyeongtaek Plant and Sinpyeong Plant of one of the top-7 iron makers in Korea (D Company)

STEEL

Automatic sampling and measurement robot

Cartridges of various functions and forms are automatically loaded for sampling and measuring. The solution level is precisely measured with the steel samples separated and transported. It is also possible to install 3D machine vision camera for internal inspection of EAF. Dangerous tasks that are performed manually in general are handled by robots, which reduces risks of accidents.



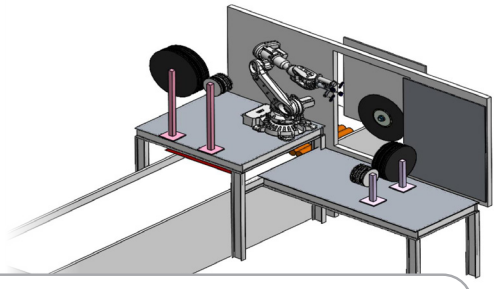
Components

- Robot
- Stacker system
- Crusher machine
- Capsule transfer

STEEL

Cutting wheel Maintenace & Scrap Remover Robot

Robots automatically replace rebar cutting wheels and clean scrap while improving the safety and accuracy of the work. They constantly maintain the stability and optimize the process time.



Components

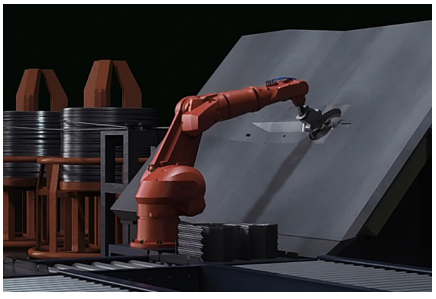
- Robot
- Automatic door
- Cutting wheel & paper loading station
- Waste material loading stand
- Scrap Remover
- Structural frame

ROBOCON x MEP

MEP Group is a leading company in the rebar equipment manufacturing and in resistance welding technology and ROBOCON is a steel solution provider in the rebar processing and operation.

ARON has developed and launched based on the strengths of both companies. With Aron, the market of processing rebar will move forward with the advent of the industry 4.0 revolution.

ROBOCON Works all over the world



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