



# ARKORA

TAILOR-MADE CORE SHOP SOLUTIONS



Your One-stop Shop



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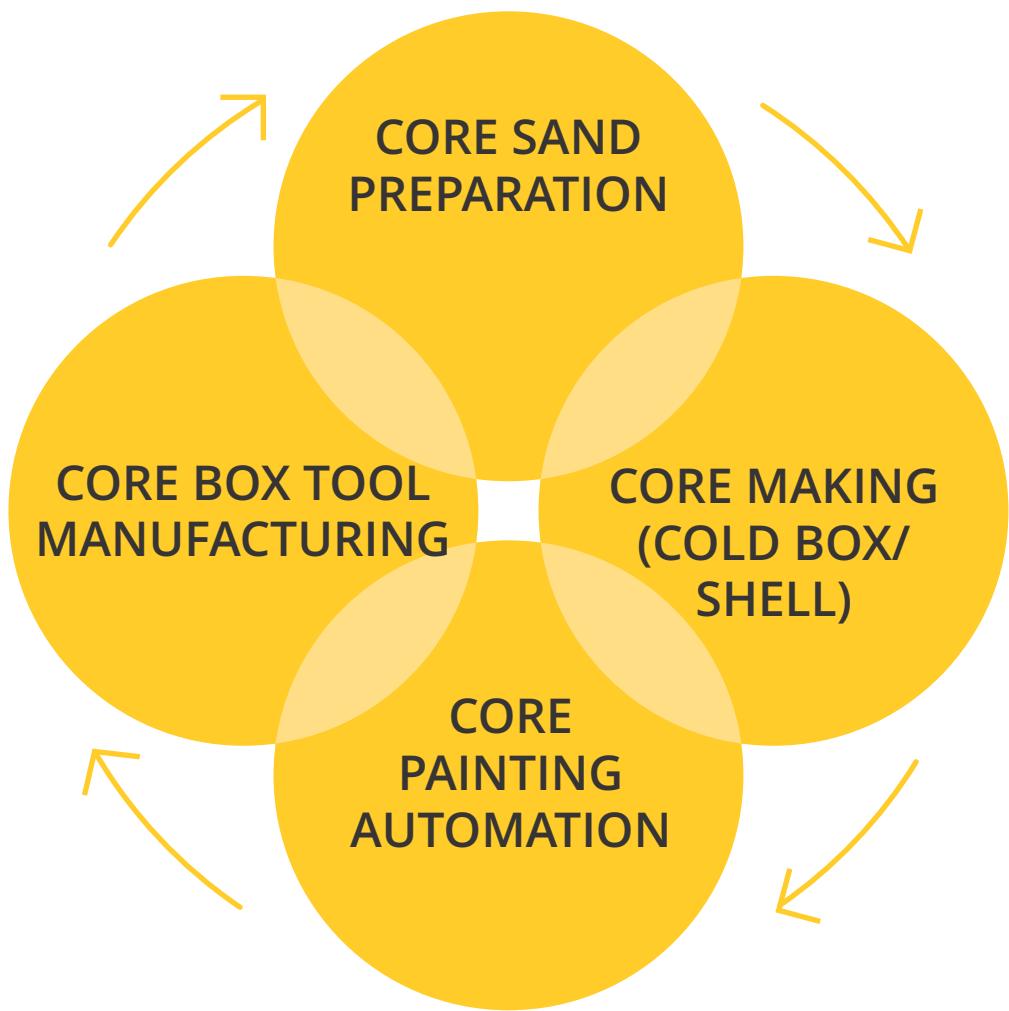
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## 1. ABOUT US

Established in 2010, ARKORA is one of the leading manufacturers of core shop equipment. Our expertise lies in the design and manufacturing of machines and material handling systems for the foundry industry.

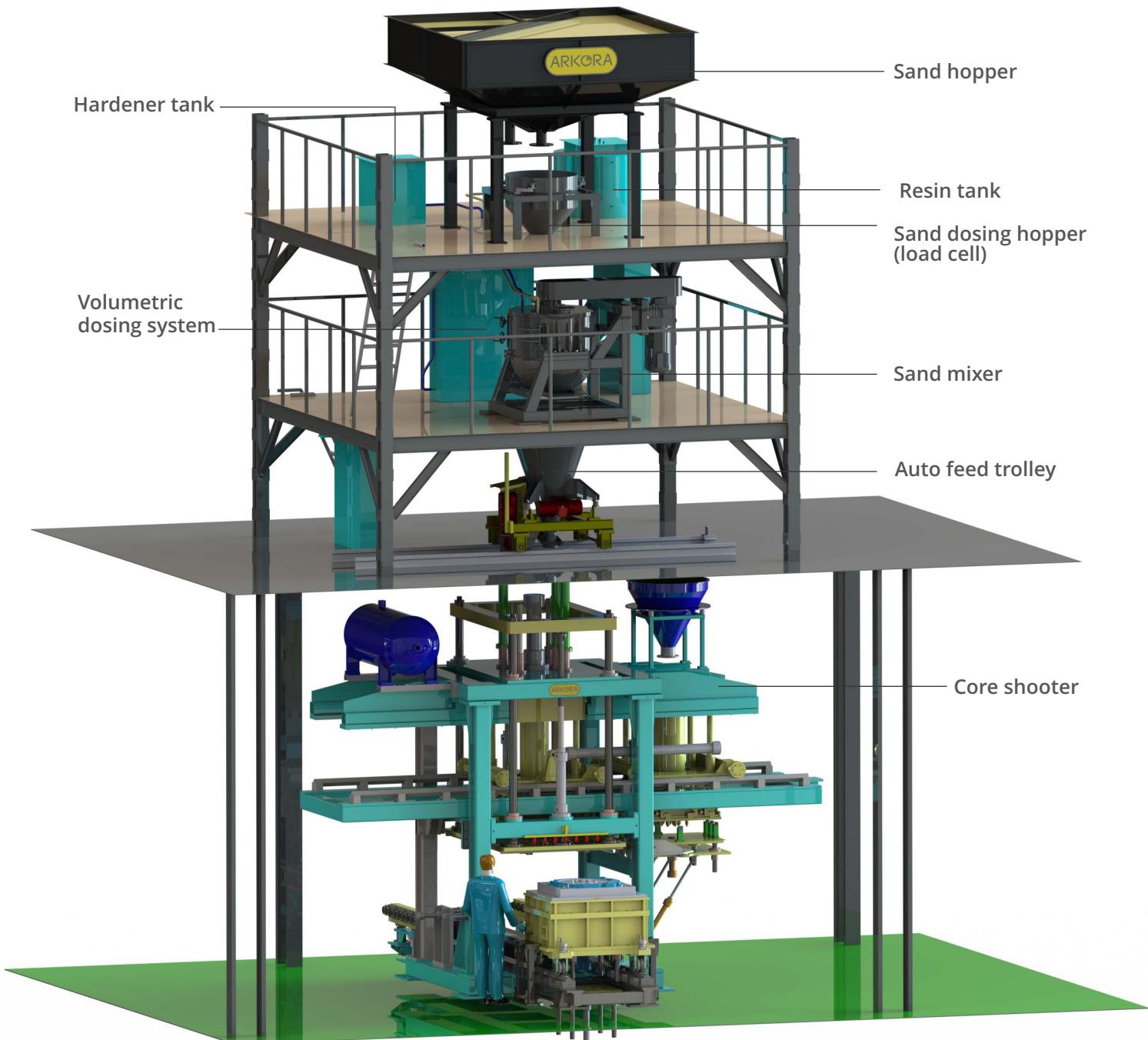
We provide cost-effective solutions for the unique challenges faced by our foundry customers. We are always driven to deliver the best products and services. We continue to innovate and create tailor-made solutions to meet the requirements of the foundry industry.

Our Core Shop Solutions includes cold box & shell core shooters, sand mixers, sand transfer trolleys, core painting units. We provide robotic solutions for core painting and handling systems. We also provide core box tooling required for foundry production. With a commitment to innovation, we provide cost-effective and efficient core shop solutions through close interaction with customers.



## 2. A COMPLETE SOLUTION FOR CORE MAKING

Cold Box Core Shooters with complete setup of all equipment which include mixer, sand trolley, hoppers, gas generators, electric panels etc.



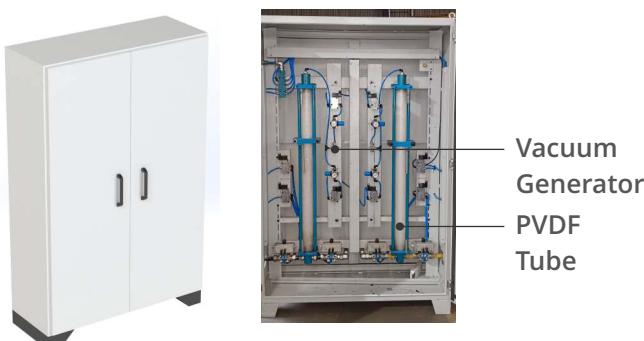
### 3. SAND PREPARATION SYSTEM

#### Core Sand Mixer (Capacity: 100 kg to 300 kg)



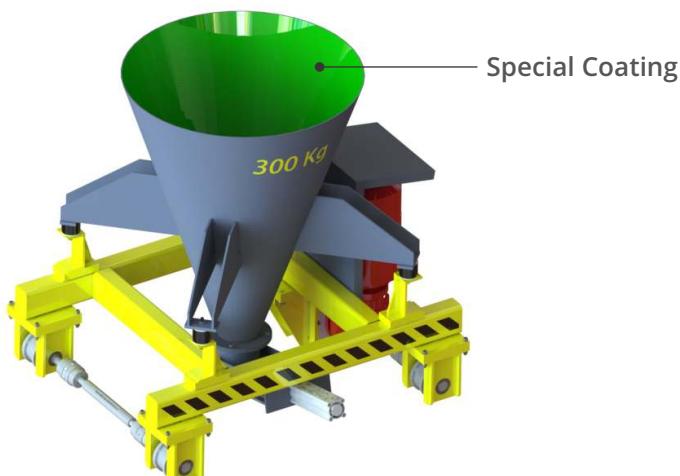
- Bowl type intensive mixer
- VFD/PLC control
- Consistent homogeneous mixing
- 100% discharge of the mixed sand, no wastage of sand
- Less mixing cycle time
- Special long lasting anti-wear coating
- Can be integrated with optional automatic volumetric dosing system for additives. (98% accuracy)
- Electronic sand weighing system for sand addition (load cell with 99% accuracy)
- Reduced cleaning requirements making mixers more efficient for maintenance

#### Binder Feeding Unit



- **Dosing System Type:** Volumetric type (vacuum type) ensures precise dosing.
- **System Accuracy:** Consistent performance (98% accuracy)
- **Calibration Provision:** Calibration feature is provided for reliability.
- **Tube Material:** PVDF tubes are used for chemical resistance and durability.

#### Core Sand Auto Feed Trolley



- 100 kg to 300 kg capacity of auto feed trolley
- Special non-sticky coating for easy sand flow
- Sand distribution to core shooter machines in stipulated time
- Robust design & high consistency
- Consistency and accuracy achieved by PLC

## 4. CORE SHOOTERS

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ARKORA core shooter has been developed to provide extremely high productivity combined with flexibility to produce variety of cores. The operating function of the ARKORA series machine is designed to provide long term flexibility and consistent high-quality cores in conjunction with ease of operation incorporating simple tooling changes. The hydraulic system provides high clamping force, ensuring the dimensional accuracy of the cores.

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### **Features**

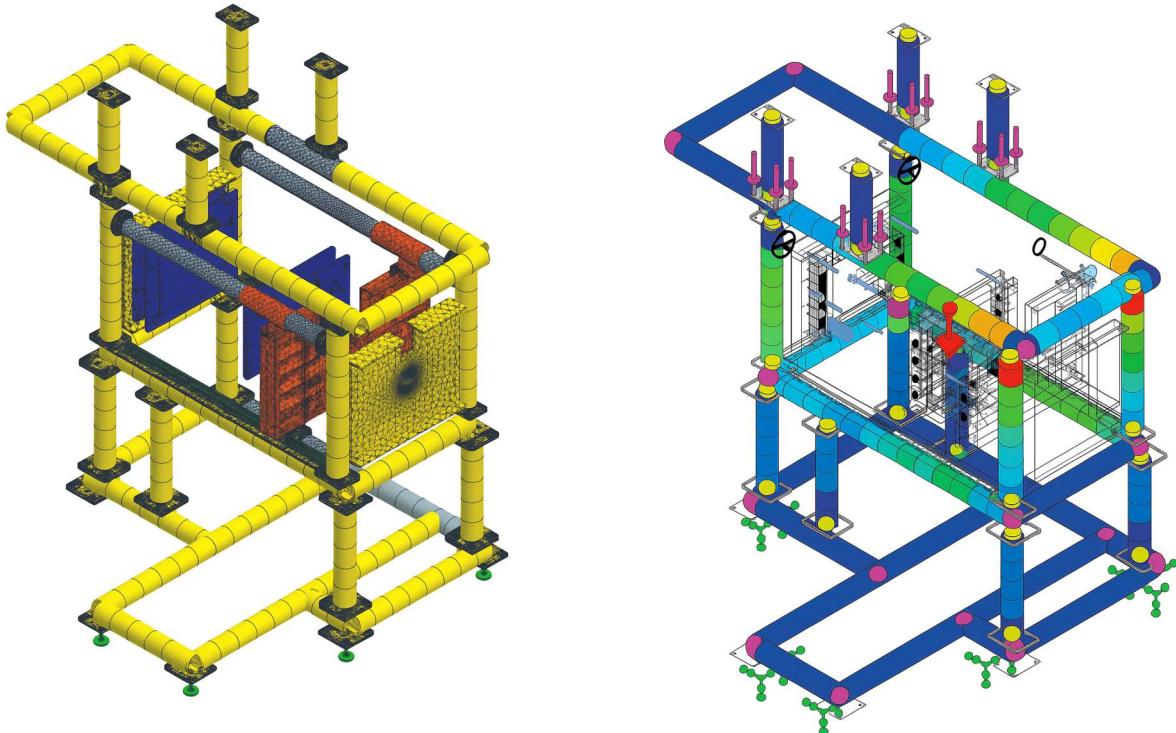
- Indigenously developed technology to achieve high density cores, comparable to those made by any European capital equipment manufacturer.
- Our manufacturing capability is to produce core shooters as per customer requirements.
- Machines are designed robustly considering optimum factor of safety.
- Diagnostic monitoring system for machine operations with malfunction appearing on screen
- Touch screen HMI console to set parameters.
- ARKORA core shooting machines have been developed to provide extremely high productivity combined with flexibility to produce variety of cores from core shooting machines.
- The operating function of ARKORA series machines are designed to provide long term flexibility and consistent high-quality cores
- The entire machine is designed with hydraulic system for improved consistency and repeatability.
- Electronic sand level sensors are used as per core weight.
- The scratch hardness of the core is min.70 - max.90, ensures core produced with high compatibility. It improves finishing quality of casting internally with reduced fettling activity.
- Triethylamine is high flammable and so this device is manufactured under complete safety precautions as per the safety norms laid down by the government.
- The pneumatic proportional control valve used in gas generator ensures gradual increase of pressure from 0.5 to 6.0 kg/cm<sup>2</sup>
- The pipe connection from gas generator to machine is completely insulated.
- The bowl type mixer comes along with the machine ensuring 100% sand discharge and homogeneous mixing of sand from mixer.
- The life of machine is approx. 20+ years.
- Maintenance cost is low.

### **Our Product Specialization**

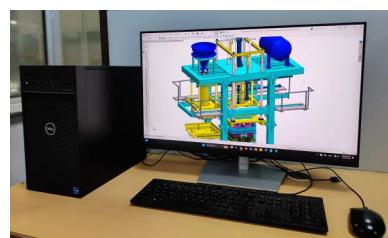
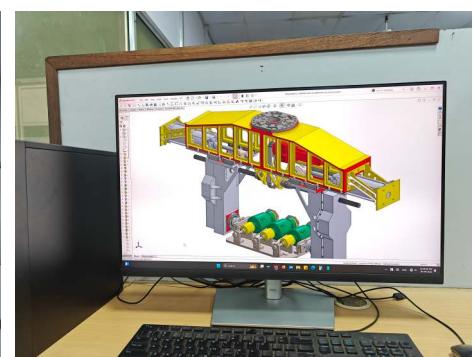
- Robust and rigid structure
- High consistency and accuracy
- Coating for sand mixer & auto feed trolley to provide smooth flow of sand
- Supports Industry 4.0 integration
- User-friendly interface connectivity & easy to program
- Maintenance friendly

## Structural Analysis for Design Verification

The machine is designed robustly with a rectangular seamless pipe giving it better bending moment. Structural analysis is done at 2.5 times the rated capacity for static and dynamic loading.



Finite Element Analysis  
with Static & Dynamic

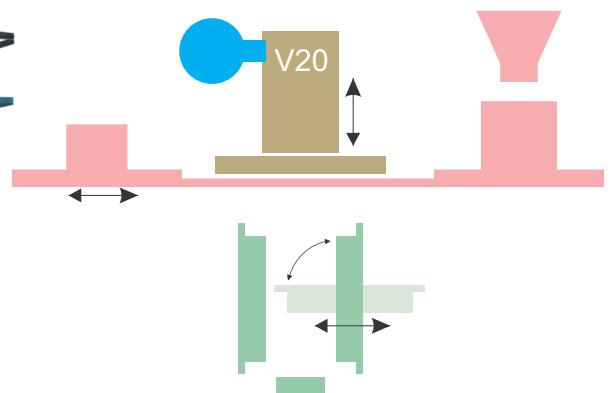


## Cold Box Core Shooter

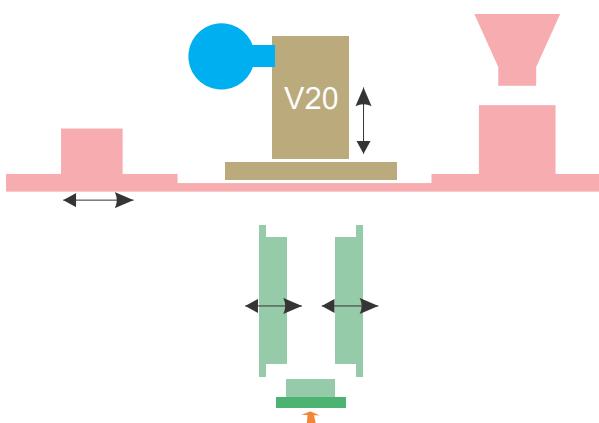
Machines are designed and manufactured as per customer requirements.



**Cold Box 20 ltr Vertical Parting  
(with tilting arrangement)**



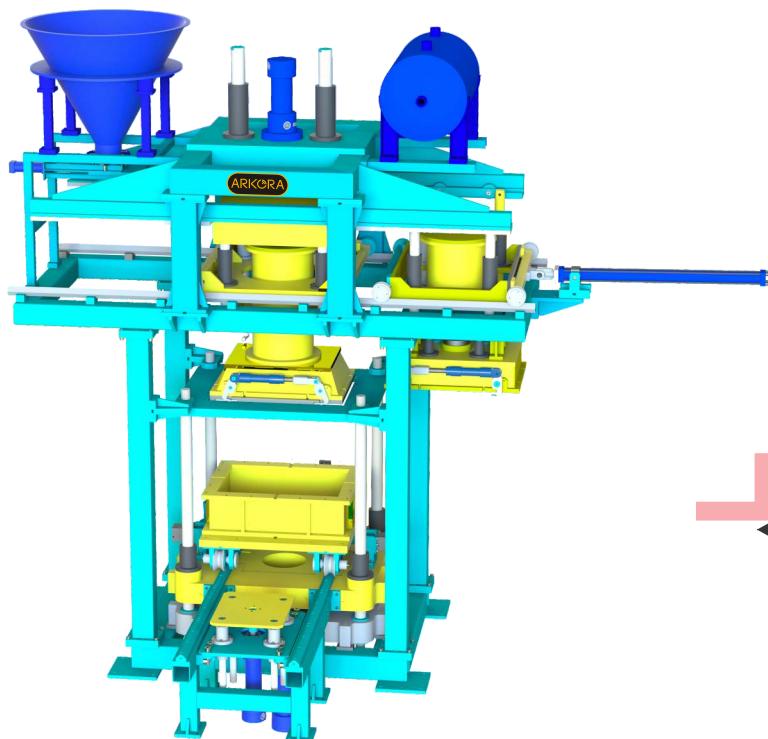
**Working Principle**



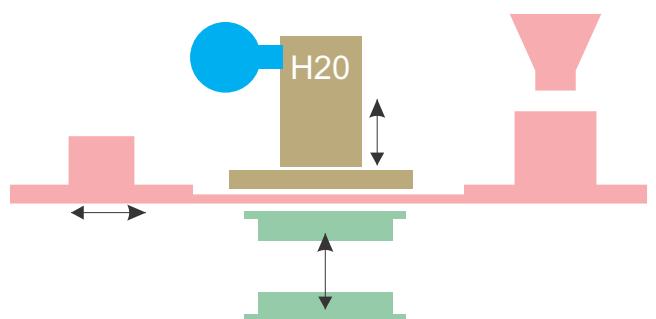
**Working Principle**



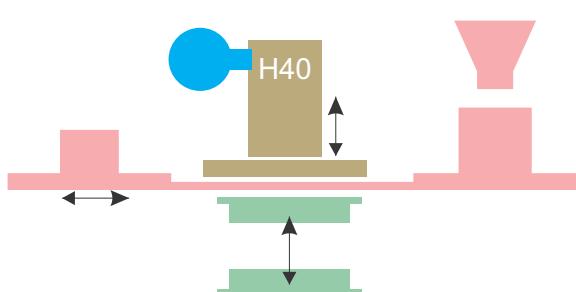
**Cold Box 20 ltr Vertical Parting  
(with both halves moving)**



**Cold Box 20 ltr Horizontal Parting**



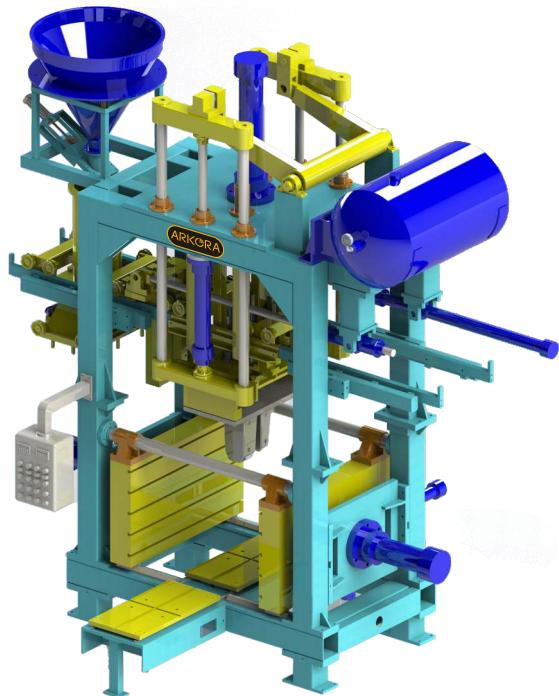
**Working Principle**



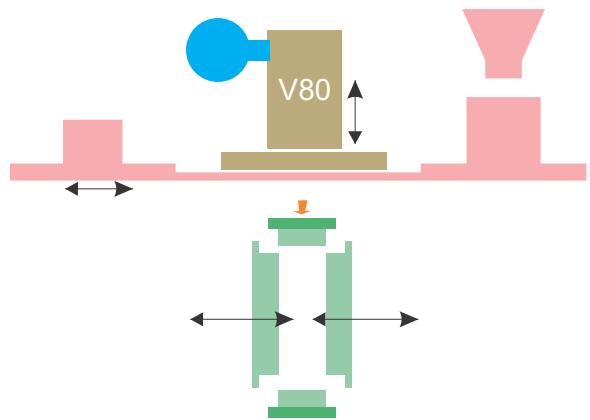
**Working Principle**



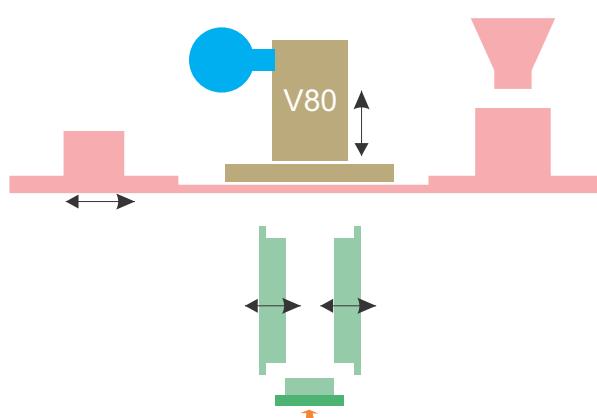
**Cold Box 40 ltr Horizontal Parting**



**Cold Box 80 ltr Vertical parting  
(6 axis including top mandrel)**



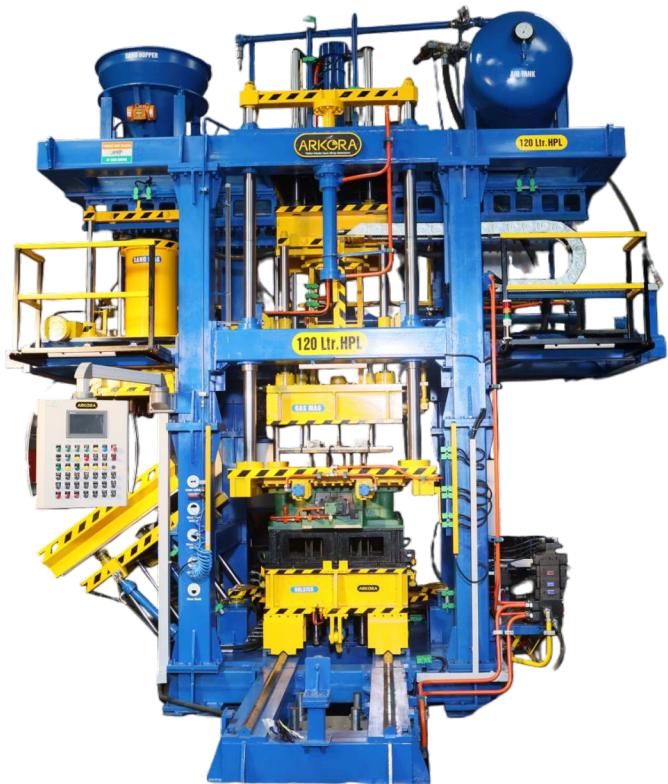
**Working Principle**



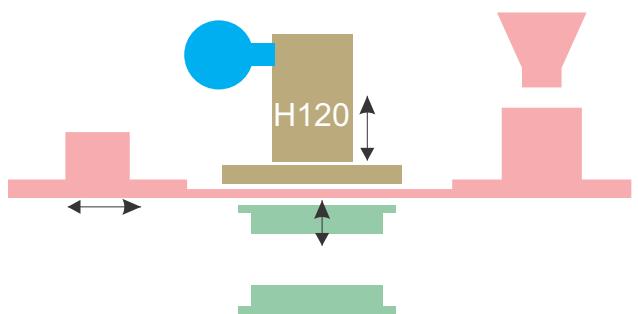
**Working Principle**



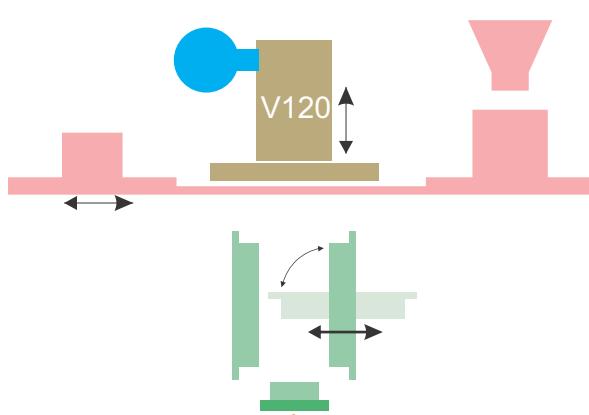
**Cold Box 80 ltr Vertical Parting  
(with both halves moving)**



**Cold Box 120 ltr Horizontal Parting**



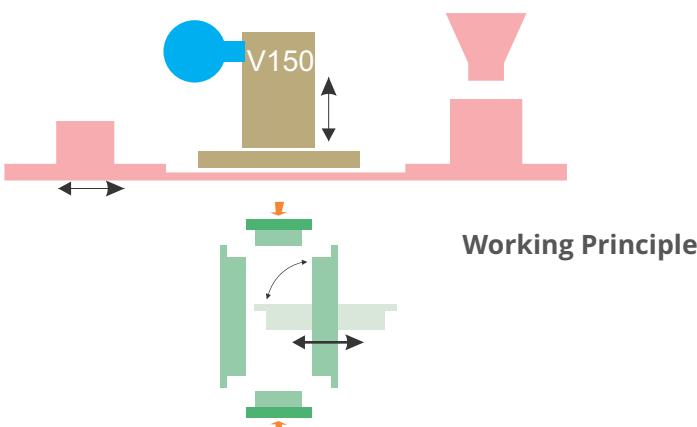
**Working Principle**



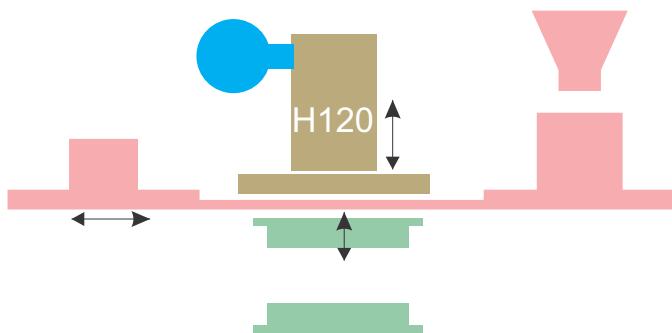
**Working Principle**



**Cold Box 120 ltr Vertical Parting  
(with tilting arrangement )**



**Cold Box 150 ltr Vertical Parting**  
(equipped with tilting & top mandrel)



**Working Principle**



**Cold Box 120 ltr Horizontal Parting**

## Cold Box Cores

### 10 ltr Cold Box Core Shooter



GB HSG.  
Weight: 4 kg



DIFF CASE  
Weight: 11 kg



3 CYL. BLOCK  
Weight: 10 kg

### 20 ltr Cold Box Core Shooter



HST CT  
Weight: 17 kg



CARTER AUTO  
Weight: 29 kg



3 CYL BLOCK  
Weight: 18 kg

### 80 ltr Cold Box Core Shooter



DIFF CASE  
Weight: 105 kg



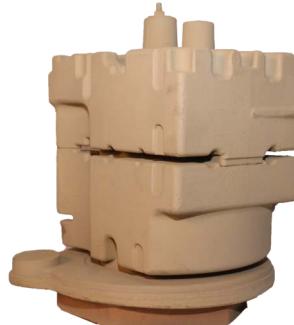
2 BORE INLINE  
Weight: 27 kg



DIFF CASE  
Weight: 35 kg



GEAR BOX HOUSING  
Core Weight: 103 kg+ 48 kg  
Core Assembly Weight: 151 kg



2 BORE INLINE CC  
Weight: 70 kg



CASE TRANSMISSION  
Weight: 123 kg

## Cold Box Cores

### 120 ltr Cold Box Core Shooter



6 CYL. BLOCK  
Core-Assembly  
Weight: 169 kg



FRICTION DISC  
Weight: 48 kg



CASE FRONT  
Weight: 54 kg



CASE FRONT  
Weight: 29 kg



AXLE CASING  
Weight: 62 kg



CASING  
Weight: 76 kg



GB HSG.  
Weight: 103 kg



CASE TRANSMISSION  
Weight: 60 kg



CLUTCH HOUSING  
Weight: 140 kg

## Shell Core Shooter

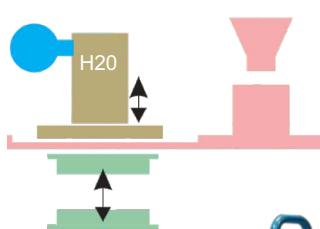
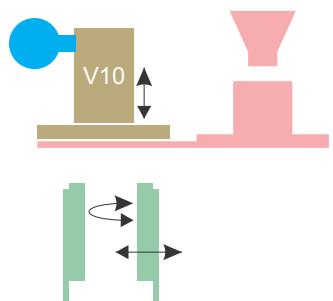
- ARKORA made Shell Core Shooters are designed and developed to provide high productivity and quality. Resin-coated sand is used for shell core production and equipped with auto temperature controller for core box heating.
- The shell core shooters produce all types of shell cores for intricate and complicated castings such as cylinder blocks, cylinder heads, pump turbines, impellers, water jackets etc.
- The scratch hardness of the shell core achieved is above 90.
- Machines are designed and manufactured as per customer requirements.



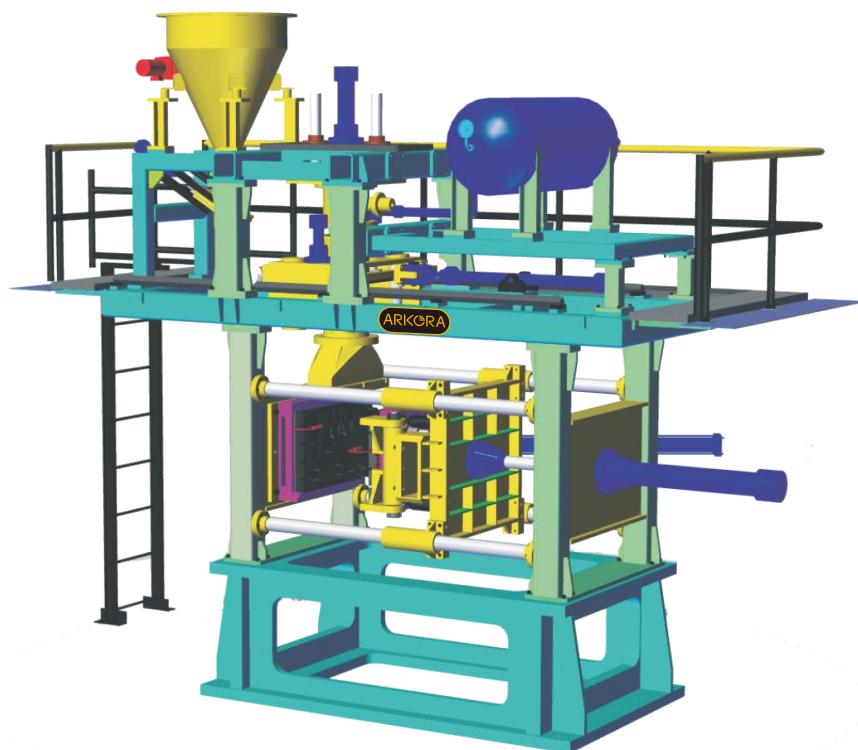
Shell Shooter 10 ltr Vertical Parting  
(with swing arrangement)

### Heating Element

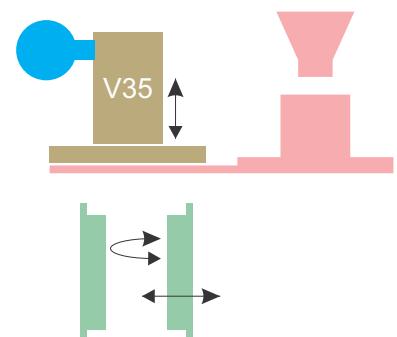
1. Multiple heat zones for uniform heating
2. Insulated to minimize heat loss and improve efficiency
3. Over-temperature cut-off protection



Shell Shooter 20 ltr Horizontal Parting



Shell Shooter 35 ltr Vertical Parting  
(with swing arrangement)



Shell Shooter 40 ltr  
Horizontal Parting

## Shell Cores

### 10 ltr cold box core shooter



3 WINDOW CT  
Weight: 0.5 kg

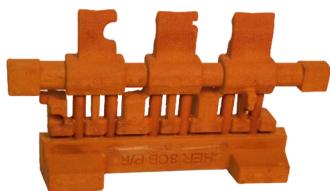


TRUBINE AL CASTING  
Weight: 0.5 kg



FRONT HSG.  
Weight: 1 kg

### 25 ltr shell core shooter



3 CYL. BLOCK  
Weight: 5.5 kg



FRONT HSG.  
Weight: 1kg



CONTROL VALVE  
Weight: 2 kg

### 40 ltr shell core shooter



3 CYL. BLOCK  
Weight: 7 kg



CYL. HEAD  
Weight: 4 kg



CYL. HEAD  
Weight: 3 kg



3 CYL. BLOCK  
Weight: 2 kg



2 CYL. BLOCK  
Weight: 1.5 kg



3 CYL. BLOCK  
Weight: 3 kg



## 6. CORE PAINTING AUTOMATION

### Robotic Core Painting

ARKORA made Robotic Core Painting Unit with core dipping in paint tank is manufactured wholly as per customer-specific requirements.

Robotic core painting unit can be used for painting individual cores or for core assembly painting.



### FEATURES

- Special type of robots suitable for foundry environment
- Robotic arm can be rotated in any direction with max. load carrying capacity of core wt. as per customer requirements
- Core can be tilted using gripper and fingers to avoid core paint accumulation in pockets
- Quick change system for gripper tool
- Auto inline viscosity control system



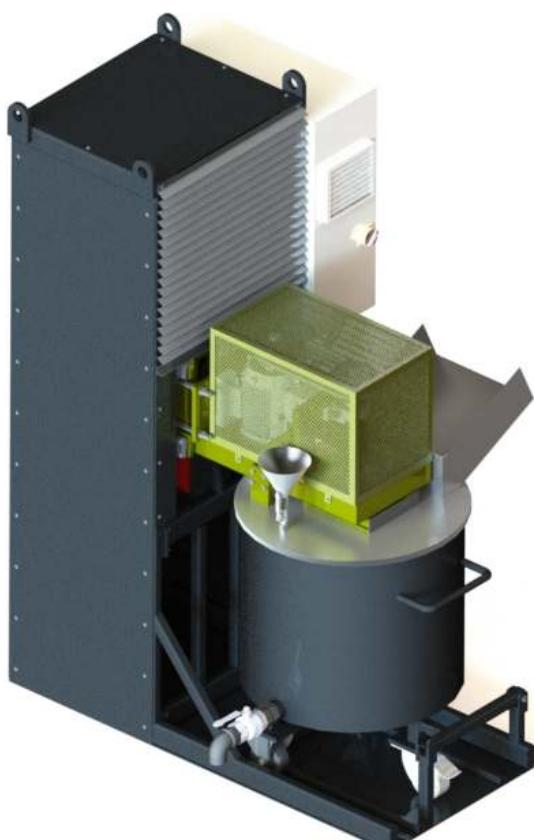
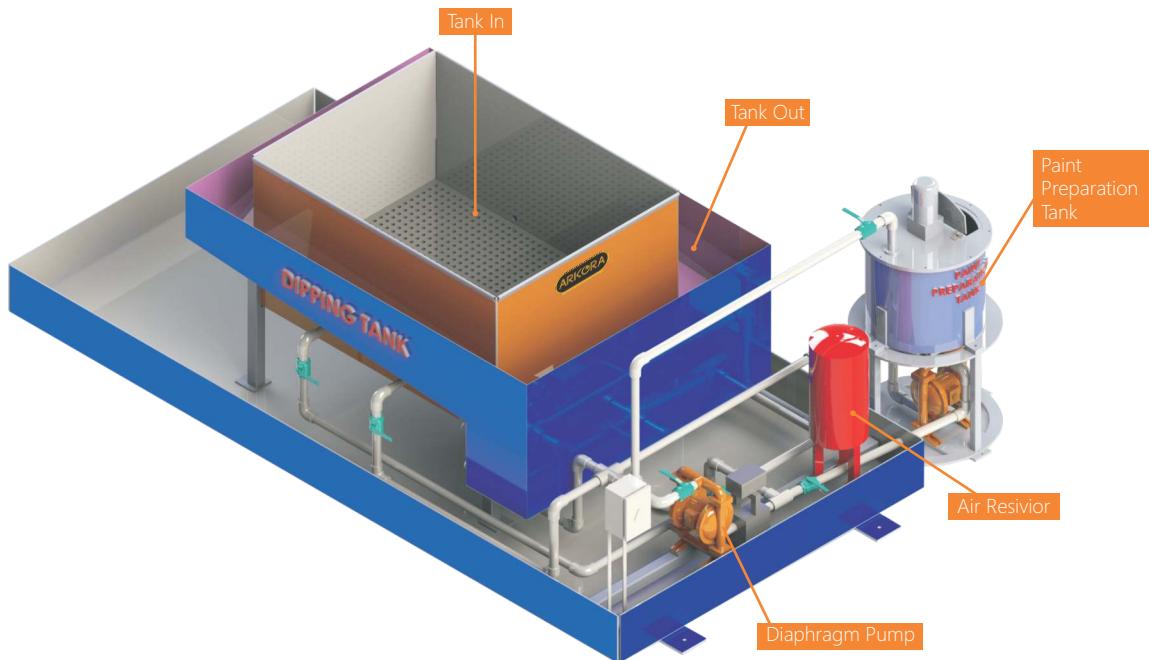
### BENEFITS

- Uniform core painting
- Automation in core painting with improved process control
- Reduced manual dependency in painting process
- Increased fettling output hence internal surface finish of casting is improved considerably
- Reduced casting defect due to core painting

## Core Paint Preparation Unit

**Tank In Tank Design of Core Paint Tank.**

- Paint mixing unit is made of stainless-steel material

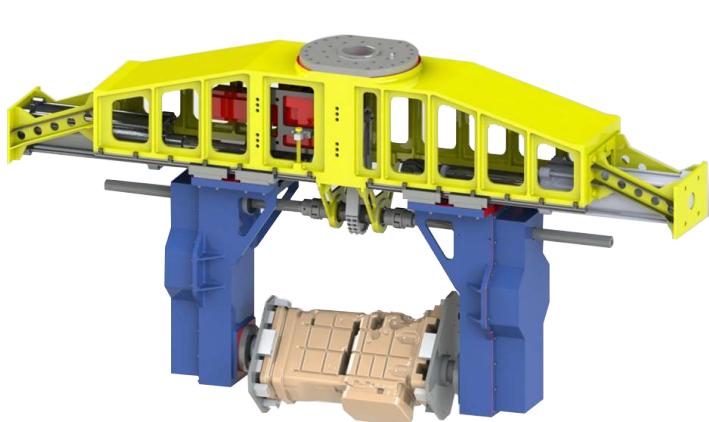


### Core Paint Mixer

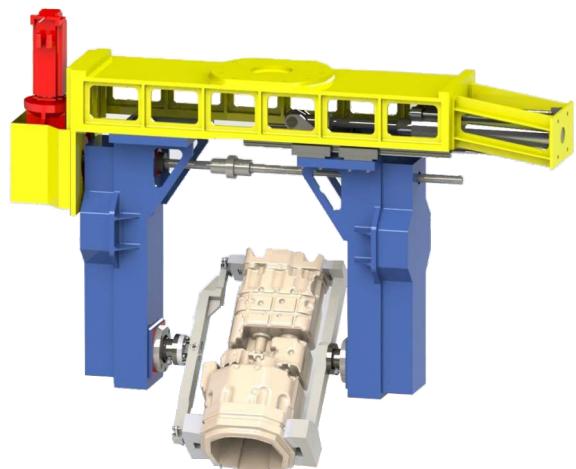
- Mixer capacity: 200 ltr.
- VFD / contact logic circuit
- Timer for adjusting mixing time
- RPM regulator / RPM display
- Interlocking between vessel top cover and top surface of closed chamber mixing
- Cut off limit switch for vessel cover
- Corrosion resistance stainless-steel material used

## Grippers for Robots

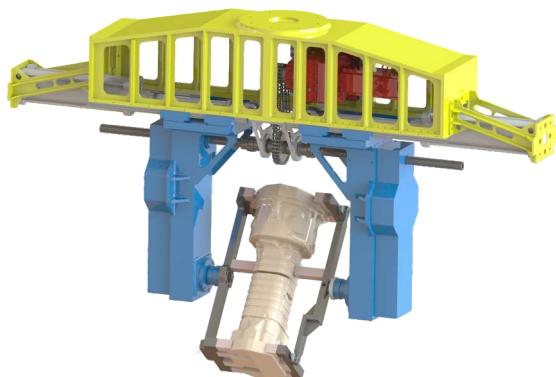
- Robotic gripper for core painting and dipping in paint tank are manufactured as per customer requirements
- Core grippers can be manufactured as per customer requirements
- Quick change system for fingers
- Special type of fingers will be provided suitable for required application
- Fingers are designed for easy and quick change



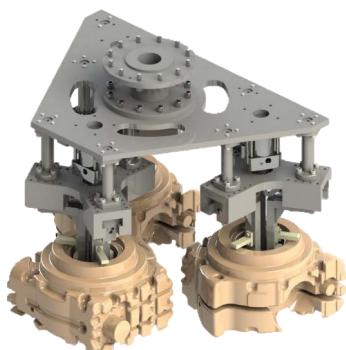
Gripper for holding horizontal core



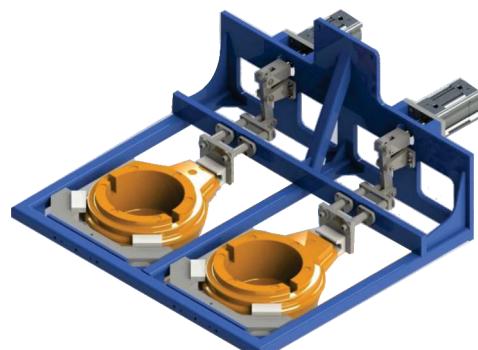
Gripper for holding vertical core



Universal Gripper



Expanding Special Purpose Gripper



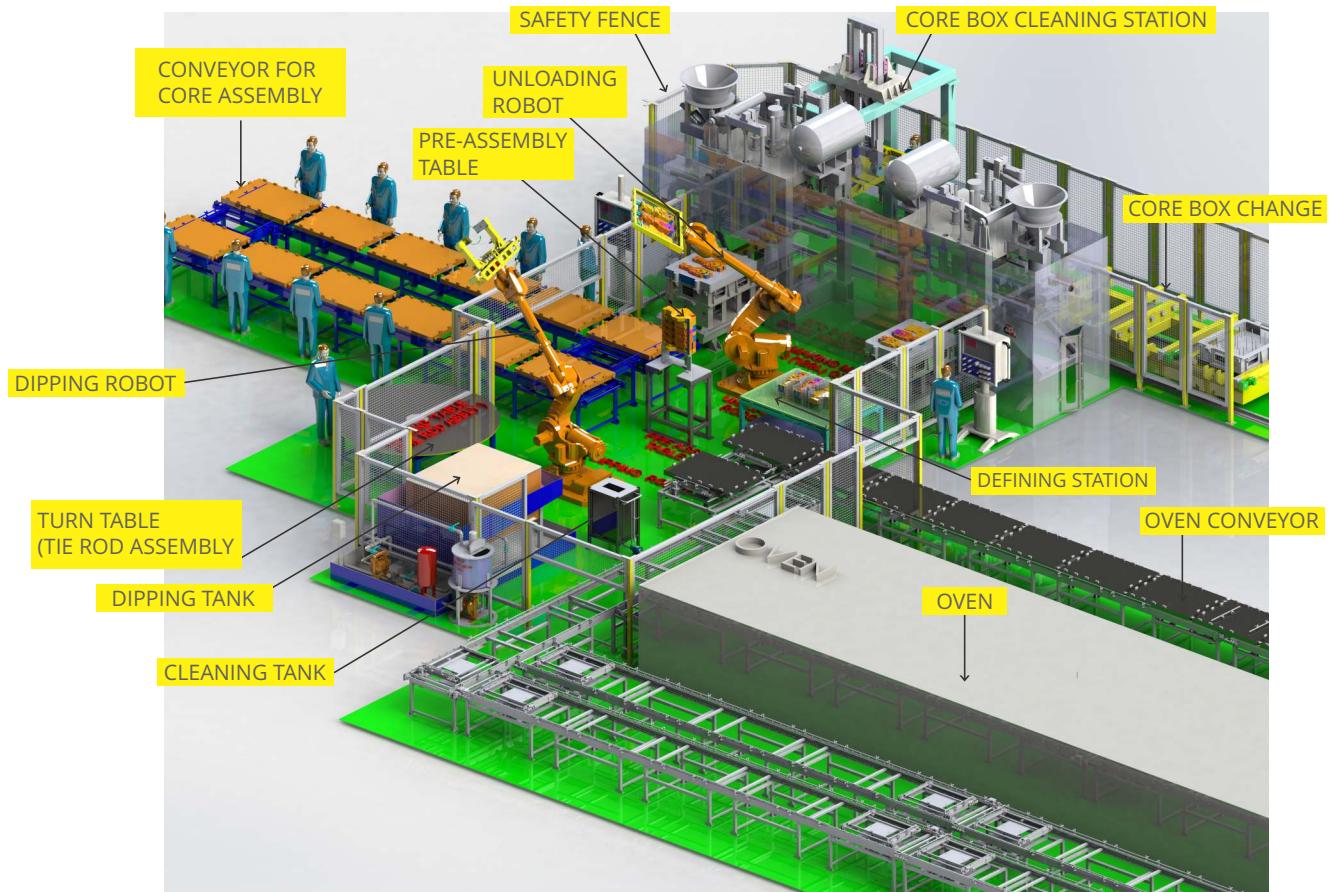
Special Type Gripper



## 7. CORE CENTER FOR CYLINDER BLOCK

ARKORA make core center is designed, integrated and manufactured as per customer requirements for producing critical core in one setup required for mass production.

Details of core center



### Key Features

- Machine capacity 120 ltr. HPL (Horizontal Parting Line). -2 nos.
- Robot capacity 800 kg. – 2 nos.
- Robust, effective and reliable design.
- Continuous clamping and no core box movement during the entire blow and cure cycle.
- Quick tool change system with hydraulic operation.
- Special coating in hopper, sand cartridge and blowing head, to avoid sand adhesion on the walls.
- Advanced blow system with lower blow pressure to avoid wear & tear of core box tooling
- Automatic lubrication system.
- Operator panel at the side of the machine.
- Lower and upper core injection system.
- The machine is designed so that the core box remains stationary and solidly clamped under high pressure throughout the complete core making cycle.



Core Making Machine  
(with robotic core handling)



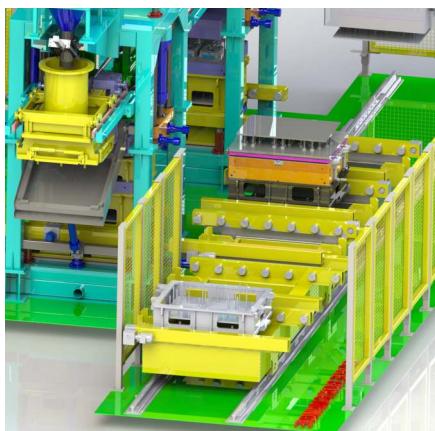
Core Sub-assembly Station



Robotic Core Dressing Station



Robotic Core Painting Station



Core Box Changing Station



Core Box Cleaning Station

## BENEFITS

- High productivity
- High quality core
- Less dependability on manual labor
- Automation in core manufacturing and assembly process
- Core making machines are provided with common triple core box changing station
- Less tool change time
- Single line process flow to ensure consistent output

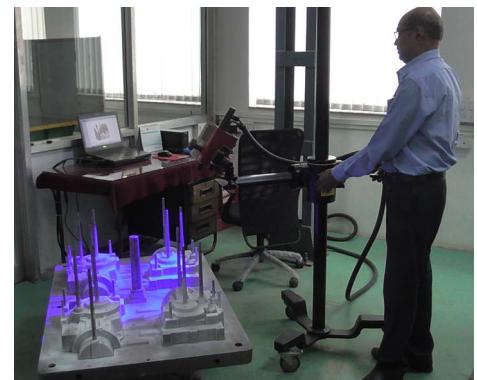
## 8. TOOL MANUFACTURING

### Core Box Tool Manufacturing

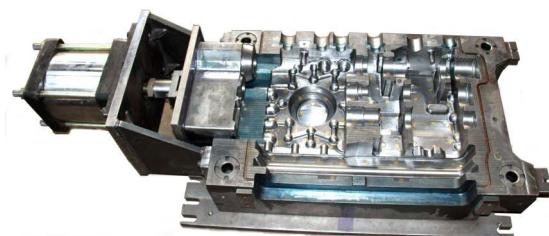
Inhouse capability of designing and manufacturing complete tooling solutions.



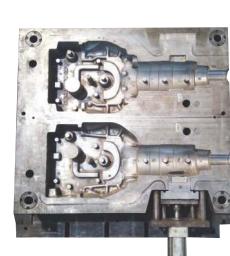
Inhouse tool inspection facility – CMM & 3D Scanning



- Core boxes for cold box and shell shooter machines required to produce castings such as housing, transmission, support, cylinder block & cylinder heads etc.
- Core boxes are manufactured in **Cast iron / Spheroidal graphite iron / P20 Material / Aluminum**.



Core Box (Cold Box)



Core Box (Shell)

