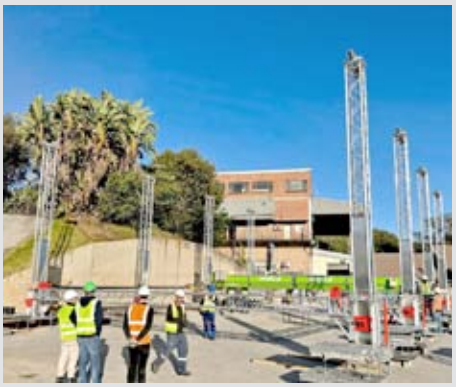
PMSA®
Concrete Equipment
Solutions and Technology

3D CONCRETE PRINTER

14TREES-PMSA Innovative 3D Concrete Printing Solutions

TECHNICAL SPECIFICATION SHEET:

14TREES
Building better lives.



3D Concrete printing represents a leap forward in our industry, unlocking new possibilities in design, efficiency, and sustainability. **The IROKO™** is a **cutting-edge 3D Concrete Printing Machine developed around Mobility, Affordability and Reliability**:

- **Mobility** – Built in structural aluminium for strength, light weight and easy assembly without a crane on site; simplicity in site set-up through the patented LevelTrac™ technology for defection compensation and fast setup on any site. LevelTrac™ is protected under South African Patent Application No. 2023/06922.
- **Affordability** – Built with affordability in mind to ensure a higher ROI (Return on Investment) for clients to have success faster with **3D Concrete Printing**.
- **Reliability** – Built to Last, The IROKO ™ is designed for tough conditions and able to work day in and day out for years allowing for an ever decreasing cost of capital.

FEATURES AND BENEFITS

- **Servo drive Motors providing Speed and Efficiency:** With the ability to rapidly fabricate complex structures in concrete with 3D printing significantly reduces construction time.
- **Cost-effectiveness:** By minimizing labour and material waste, 3D concrete printing optimizes cost-efficiency. It eliminates the need for formwork and reduces the required manpower.
- **Purpose built operational software, HMI and SCADA for full Design Freedom and Print Customization:** 3D Concrete Printing allows for intricate, customized designs that were previously challenging or impossible to achieve, opening a world of new possibilities.
- **Sustainability:** 3D Concrete Printing minimizes waste and reduces the environmental impact associated with conventional construction methods.
- **Structural Strength and Durability:** 3D Concrete printing produces structures with excellent strength and durability and optimized geometries enhance structural integrity.
- **Versatility and Adaptability:** 3D Concrete Printing is highly versatile, it can be applied to various construction scenarios and adapt to different project requirements.
- **Waste Reduction:** 3D Concrete Printing minimizes waste by utilizing only the required amount of material, optimizing resource usage.

TECHNICAL SPECIFICATIONS

SETUP:
- No crane required.
- 1 to 1.5 days from packed to printing (depending on printer size).

STRUCTURE:
- Gantry style printer.
- Structural Aluminium used for framework.
- Printing area of 13.4m x 9.5m footprint with a height of up to 5.5m depending on plant configuration and printer size.
- Extruder with interchangeable rotating nozzles and LaserTrac™ technology for automatic continuous live tracking of fresh printed layers.

CONSTRUCTION MATERIALS:
- Compatible with both mortar printing ink and on-site concrete multi component batching.
- Print layer width: 30mm up to 80mm wide printing (with different nozzle designs increased print widths are possible).
- Layer height: 20mm+ (print layer height is concrete printing ink dependent).

MACHINE PERFORMANCE:
- Printing Speed: Maximum of 250mm/s.
- LaserTrac™ and the patented LevelTrac™ technology assists in accuracy of printing.

SOFTWARE AND CONTROLS:
- Printing Software: Industrial Grade Technology (Windows based).
- User Interface: HMI Panel and portable handheld tablet.
- Remote Access: Offsite access dependent on site internet coverage.
- SCADA System: Printer control and data acquisition allowing for live and post print processing of ambient and machine parameters.
- Slicer: 14TREES purposely built slicer for the IROKO™ 3D Concrete Printer.

CONNECTIVITY AND INTEGRATIONS:
- G Code Upload: Remote upload or USB port on HMI Panel.
- CAD files can be converted to G Code using the 14Trees Slicer.

POWER AND OPERATIONAL REQUIREMENTS:
- Power Supply: Generator or mains power supply.
- Maintenance: Designed for easy maintenance.

SAFETY FEATURES AND COMPLIANCE:
- Emergency Stop Buttons: Found at Extruder, HMI Panel, X and Y axes.
- Emergency Pull Cords: Along Y-Axis (Long Axis) and X-Axis.
- Collision Protection: Extruder will automatically stop if it collides with an object or person.
- Mechanical: Bumpers and guides on each axis to prevent derailment.
- Lasers: Mounted on both X and Y Axis for closed loop feedback control and positioning.
- Software: Software systems to ensure machine operates within safe, legal limits.
- Standards: SANS, EC compliance.

OPTIONS AND UPGRADES:

We are continuously investing in research and development to bring you cutting-edge features and functionalities that will further optimize your printing experience. **Our current R&D efforts include batching, mixing, pumping and admixture dosing**.



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Supplied by PMSA in South Africa. Our professional and experienced technical support team will provide you with the assistance you require. Our comprehensive spare parts facility enables us to provide immediate dispatch globally. E&OE. [Rev_1_2023]

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