



Sitos Monterey 1, LLC

Pilot Plant

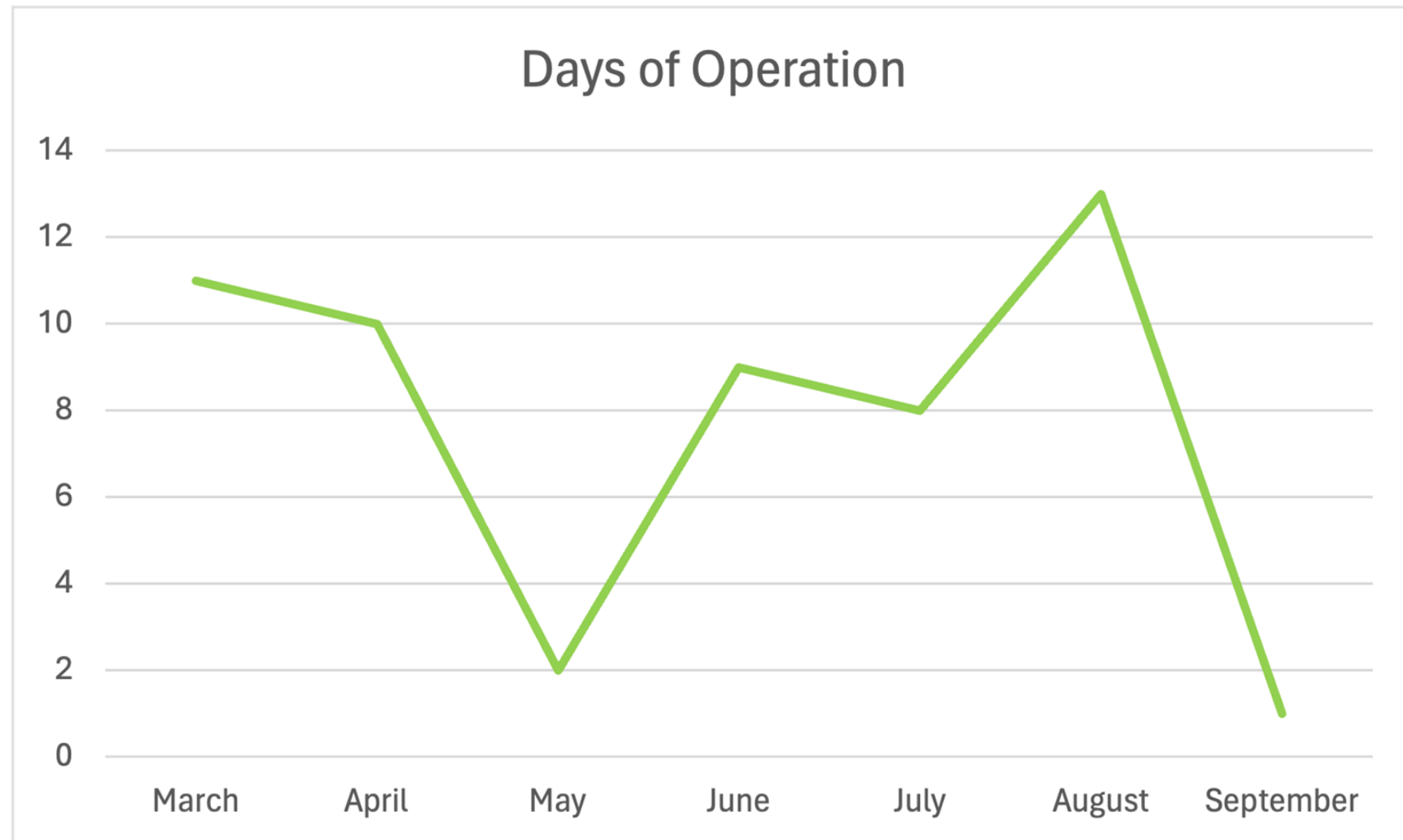
Quarterly Report



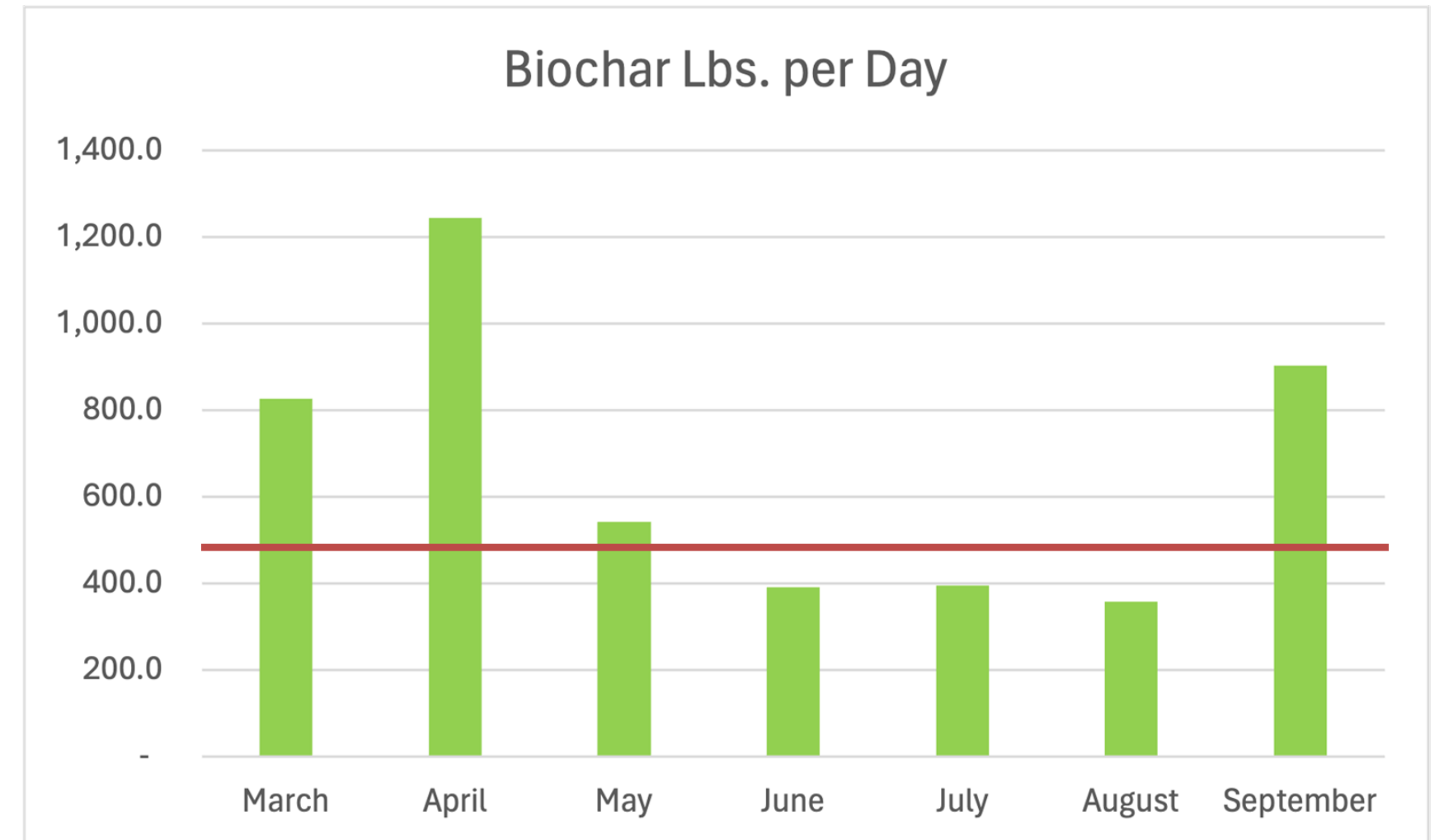
Pilot Plant Goals

- **Test New Generation Slow Pyrolysis Equipment** ✓
- **Demonstrate Municipal Wood Waste as a Viable Feedstock** ✓
- **Establish Methodology for High Quality / Customizable Biochar** →
- **Promote Slow Pyrolysis and Biochar in a Physical Plant Setting** ✓
- **Pave the Way for Air Quality Permitting Favorable to Pyrolysis** ✓
- **Train & Educate Operators and Potential Operators** →
- **Prepare for Full Commercialization of Three-Machine Plant Operation** →

Monthly Performance 2024



Operational Days



Production : Biochar in Lbs.

Max. Production = 198 Lbs. per Hour or 1,188 Lbs. per Shift

Max. Expected Production = 475 Lbs. With 6 Hour Shift @ 40% Capacity

Biochar Quality



Issues:

- 2023 biochar tests were high quality
 - High carbon content, minimal ash, high hydrogen to carbon ratio
- Addition of emissions stack in April for EPA testing results in high-ash biochar production
- No tests were taken through Summer due to obvious physical characteristics

Solutions:

- Paul Kerr, pyrolysis expert from Australia, visited early November to assist with quality improvement
- Expanding Gabilan lab to include biochar testing with Frank Shields using Sitos-provided equipment

Permitting (EPA)

Advanced Notice of Rule Change (2020)

- Pyrolysis is NOT combustion or incineration
- EPA and MBARD classified us under OSWI rules: CAA 40 CFR 129 Subpart EEEE

Significant Education and Policy Change Effort Led by Sitos Group and USBC

EPA Releases New Guidelines Late September 2024

- Pyrolysis is NOT incineration nor combustion and NOT subject to CAA as an Other Solid Waste Incinerator under Section 129



Office of Resource Conservation and Recovery
EPA 530-F-24-013
September 2024
www.epa.gov/rcra/nhsm

Fact Sheet on Clean Cellulosic Biomass
and Non-Hazardous Secondary Materials
Determinations¹



Permitting (MBARD)

Air Quality Permit

- Authority to Construct – Granted 4/23
- Monterey County Building Permit Granted
- Conducted Long-term Emissions Test (\$110,000+) April 2024
 - Despite no emissions control equipment or baghouse, unit passed particulate matter and all gases - failed on lead present in feedstock
- Pending Request Through MBARD for Exemption at Temporary Pilot Plant
- Awaiting Reconsideration of ATC and Air Permit Application Based on New EPA Guidelines
- Organizing Educational Session with EPA Region 9, MBARD, and San Joaquin Valley Air District on Pyrolysis.

Equipment Development

ReGen Pilot Plant Machine – Applied Gaia #1

- Early-stage manufacturer
- Significant operational issues
 - Insulation, observation, fugitive air input, OEM bearings, burner(s)
- Riello burner – installation and operational issues
 - Replaced burner three times – no domestic source available

Lack of Feedstock Dryer: A Significant Impediment

- No feedstock moisture consistency
- Unit never operated over 50% of capacity due to moisture

Major Developments in New Equipment Design to Address Key Issues

3

Machines

26,000

Input Tons/Yr.

7,800

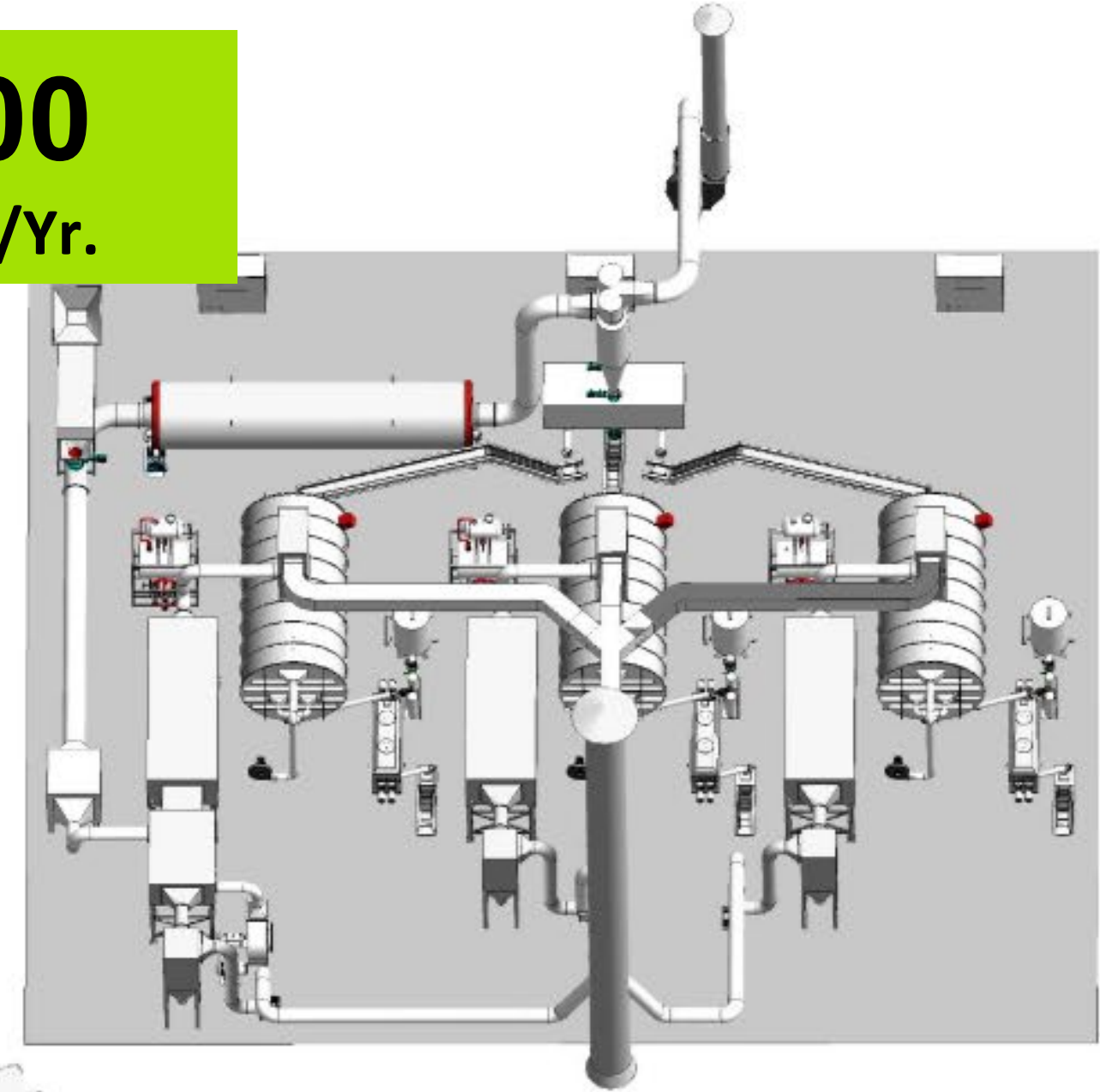
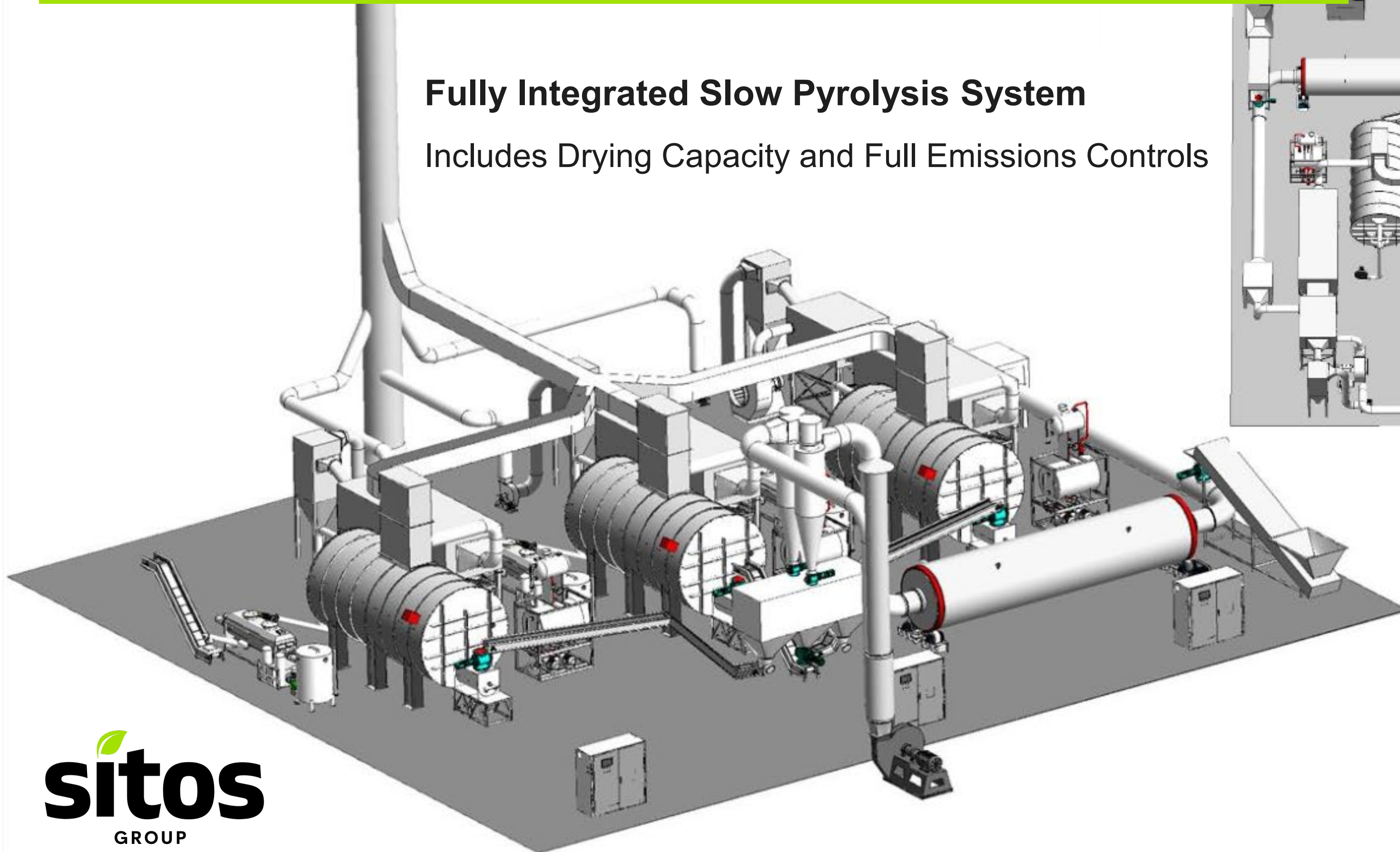
Biochar Tons/Yr.

20,000

CDR Tons/Yr.

Fully Integrated Slow Pyrolysis System

Includes Drying Capacity and Full Emissions Controls



Equipment Development





sitos

GROUP

THANK YOU

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