

TECHNICAL BRIEF

Subject: Merris Air Curtain Burner – Overview and Regulatory Guidance

Prepared by: Machinery Partner

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1. Purpose

This memorandum is designed to support permitting and regulatory approval of Merris Air Curtain Burner machines for municipalities, fire departments, and local environmental agencies. It provides a clear overview of the machine's technology, emissions profile, regulatory classification, and permitting guidance.

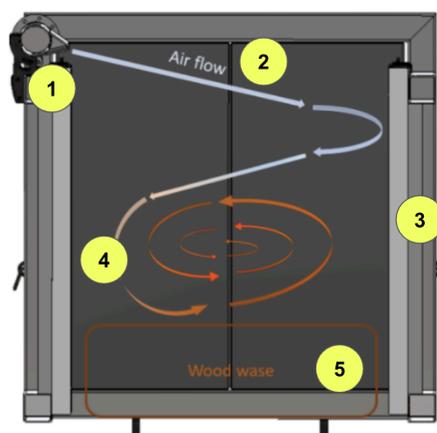
2. What is an Air Curtain Burner?

A Merris air curtain burner is used to dispose of clean wood, lumber, and vegetative waste through open combustion, while minimizing visible emissions and particulate release.

Key Principle:

- A high-velocity fan creates an "air curtain" over the combustion chamber (or trench).
- This curtain traps particulate matter and smoke, forcing re-burn in the high-temperature fire zone.
- The result is a highly efficient, low-emission burn process.

How Air Flows in Burn Chamber:



1. Air curtain burner diffuser directs high velocity airflow from fan downward and across fire box
2. The air flow creates a curtain of air over the burn capturing smoke and particulate
3. Ceramic refractory liners on the walls of the fire box contain the burn and protect the surrounding site
4. The continuous air flow overoxygenates the burning wood waste creating higher temperatures for a more complete burn
5. Wood waste in the fire box is burned and reduced >95% to ash and carbon that can be used as fertilizer or easily disposed of

3. Benefits vs. Open Burning or Grinding

Feature	Open Burning	Grinding	Merris Air Curtain Burner
Smoke Control	Poor	N/A	Excellent (opacity <10%)
Black Carbon Emissions	High	High	Very Low
Equipment Needed	None	Expensive grinder (horizontal, tub, etc.) + hauling equipment	Single compact unit
Cost	Low	High (fuel, labor, trucking)	Low to moderate
Environmental Impact	Significant	High	Low / Carbon-neutral

- Grinding is a process, not a disposal method.
- Merris air curtain burners provide a complete end-solution with a minimal emissions footprint.

4. Federal Regulatory Classification (EPA)

According to 40 CFR Part 60, Subparts CCCC & EEEE:

- Merris air curtain burners that burn only **wood waste, clean lumber, or yard waste** are **exempt from Title V operating permit requirements** (as of April 2024).
- Only opacity limits apply:
 - ≤ 10% opacity (steady-state)
 - ≤ 35% opacity (during first 30 minutes of startup)
 - Annual opacity testing per EPA Method 9

These machines are considered **carbon-neutral** and are treated as pollution control devices under federal guidance.

5. Permitting Pathways

A. Temporary Use (Mobile / Short-Term):

- Permit similar to open burning (issued by fire department or forestry office)
- Max site operation: 6 months
- Common for land clearing, disaster recovery, invasive species removal

B. Stationary Use (Permanent Site):

- May require a simplified state air permit
- Exempt from full NSPS/MACT due to limited emissions scope
- Compliant under OSWI rule (40 CFR 60 Subpart EEEE)

6. Monitoring & Recordkeeping Requirements

- Notify regulators prior to startup
- Submit:
 - Planned fuel type
 - Startup date
 - Site address
 - Supporting documentation (i.e. this Technical Brief, machine data sheet, etc.)
- Conduct and log:
 - Keep records of burns for 3 years (paper or digital)

7. Emissions Profile

From USDA Forest Service and EPA CRADA tests (Air Curtain Burner results):

- **CO₂**: 3616 lbs/ton of waste
- **CO**: 2.6 lbs/ton
- **CH₄**: 1.4 lbs/ton
- **PM_{2.5}**: 1.1 lbs/ton
- **Opacity**: <10% during operation

8. Fire Department Relevance

- **Minimizes fire risk**: contained burn area, no flying embers
- **Improves visibility & safety**: dramatically less smoke
- **Ideal for forestry or public works teams** needing mobile waste disposal

9. About Merris Air Curtain Burner & Machinery Partner

Merris Airburners are designed for easy transport, fast deployment, and low environmental impact. They come in a range of models with different burn chamber sizes that will consume from 3 - 20 tons per hour of wood waste.

Machinery Partner is the exclusive U.S. distributor of Merris Air Curtain Burners. We provide:

- Local service & setup support
- Maintenance and site prep instructions
- Emissions guidance
- Permitting guidance

10. Resources

- [EPA OSWI Rule Summary](#)
- [MDE Air Permits](#)
- [Method 9 Testing Guide](#)
- [EPA Title V Permit Provisions for air curtain burners.](#)

For technical questions or demonstration requests, contact: Machinery Partner

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