



DOCUMENT NO. AHLS-TDS-WESP	REVISION P1 — preliminary	DATE 2026-10-02	STATUS Concept — not for issue
PREPARED BY [AHLS engineer]	CHECKED BY [AHLS engineer]	APPROVED BY [AHLS]	CONTENT SOURCE ahlundberg.com (public site)

AIR POLLUTION CONTROL · SYSTEM 01.1

Wet ESP Systems

Wet Electrostatic Precipitator (Wet ESP / WESP)

Wet Electrostatic Precipitator (Wet ESP or WESP) Systems are widely accepted as the leading technology for control of difficult-to-collect fine particulate emissions.

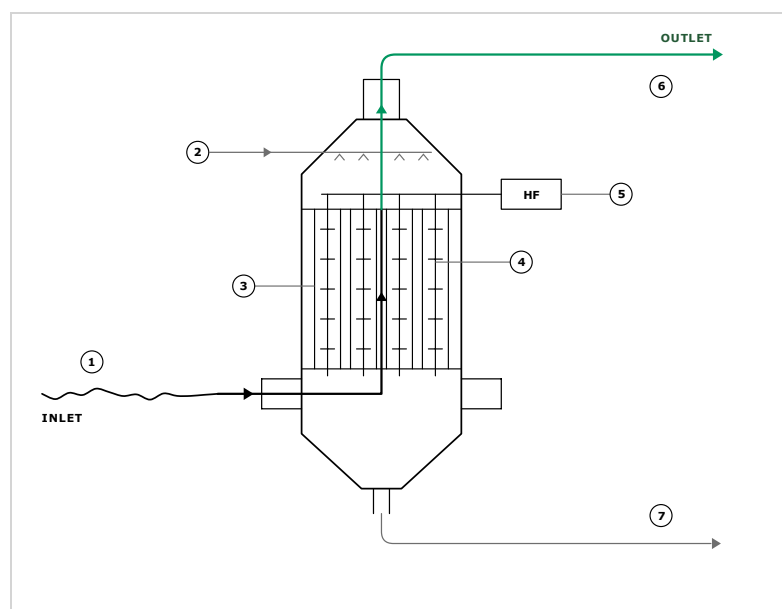
up to

99 %**COLLECTION EFFICIENCY**

less than

10 mg/Nm³**OUTLET LOADING**

Performance values as published on ahlundberg.com. Project-specific values and guarantees to be confirmed by AHLS.

01 CONCEPTUAL SCHEMATIC**LEGEND**

- 1 Gas inlet** — Process off-gas with fine particulate, fumes, aerosols or acid mist.
- 2 Wash water** — Integrated water recycle, treatment and disposal (scope option).
- 3 Collecting tubes** — Stainless steel on all internal surfaces; higher alloys available.
- 4 Disk-in-tube electrodes** — Proprietary AHLS electrode configuration.
- 5 High-frequency power supply** — Maximizes total electric field and available power.
- 6 Clean gas outlet** — Up to 99% collection efficiency; outlet loading < 10 mg/Nm³ (published).
- 7 Collected liquid** — Drained to the water recycle and treatment system.

Fig. 1 Conceptual Wet ESP schematic, upflow arrangement shown (downflow also available). Not to scale.

CONCEPTUAL ILLUSTRATION — GEOMETRY AND COMPONENTS TO BE VERIFIED BY AHLS ENGINEERING

**02 PURPOSE AND PRINCIPLE**

The collection of fine particulate emissions is often one of the most difficult environmental control problems faced by industry. Sub-micron particles (e.g. PM_{2.5}) present a significant threat to human health and are one of the leading causes of smog.

AHL's Wet ESP design features a proprietary disk-in-tube electrode configuration and a state-of-the-art high frequency power supply that maximizes the total electric field and available power to ensure the highest possible particulate collection efficiency.

AHLS designs the inlet of the Wet ESP for upflow or downflow gas handling to meet the requirements of the waste stream.

03 DESIGN AND SCOPE**DESIGN FEATURES — PUBLISHED**

- Proprietary disk-in-tube electrode configuration
- High frequency power supply
- Inlet designed for upflow or downflow gas handling
- Heavy-duty modular construction for easy installation and long service life
- Stainless steel on all internal surfaces
- Higher corrosion-resistant materials available as the process requires

SCOPE OPTIONS — PUBLISHED

- Full turnkey installation including tie-ins to the process
- Integrated water recycle, treatment and disposal systems
- Upstream cyclone
- Upstream and downstream chemical scrubbing
- Integration with RTO or RCO

04 TECHNICAL DATA

PARAMETER	VALUE	UNIT	STATUS
PERFORMANCE			
Collection efficiency	Up to 99	%	Published
Outlet loading	< 10	mg/Nm ³	Published
Target pollutants	Sub-micron particulate, fumes, condensable organic aerosols, acid mist	—	Published
DESIGN			
Electrode configuration	Proprietary disk-in-tube	—	Published
Power supply	High frequency	—	Published
Gas flow arrangement	Upflow or downflow inlet, per waste stream	—	Published
Internal materials	Stainless steel on all internal surfaces; higher alloys available	—	Published
Construction	Heavy-duty, modular	—	Published



PARAMETER	VALUE	UNIT	STATUS
PROCESS DATA			
Design gas flow	<i>[To be confirmed by AHLS engineering]</i>	Nm ³ /h	To confirm
Inlet gas temperature	<i>[To be confirmed by AHLS engineering]</i>	°C	To confirm
Inlet particulate loading	<i>[To be confirmed by AHLS engineering]</i>	mg/Nm ³	To confirm
Pressure drop	<i>[To be confirmed by AHLS engineering]</i>	kPa	To confirm
EQUIPMENT			
Number of collecting tubes / fields	<i>[To be confirmed by AHLS engineering]</i>	—	To confirm
Power supply rating	<i>[To be confirmed by AHLS engineering]</i>	kV / mA	To confirm
Wash water requirement	<i>[To be confirmed by AHLS engineering]</i>	m ³ /h	To confirm
Overall dimensions (L × W × H)	<i>[To be confirmed by AHLS engineering]</i>	m	To confirm
Design codes & standards	<i>[To be confirmed by AHLS engineering]</i>	—	To confirm

Grey fields are placeholders. Values must be supplied and verified by AHLS engineering for each project — none are estimated here.

05 APPLICATIONS

INDUSTRY	PUBLISHED APPLICATION
Wood panel board & wood pellets	Air emission remediation
Insulation manufacturing	Mineral wool, glass wool, gypsum
Mining & mineral processing	Ore dryers — acid mist elimination
Oil & gas	Particulate and acid mist removal
Power generation	Particulate and acid mist removal
Chemical & process	Meat smoking, potato frying, detergent plants

As listed on the AHLS industry pages for wood panel board, insulation, mining, oil & gas, power and chemical & process.

06 NOTES AND SOURCES

This sheet is a preliminary layout prepared as an initiative design concept (AHLS — Preliminary Visual System Concept). It has not been reviewed or approved by A.H. Lundberg Systems Limited.

Source: <https://www.ahlundberg.com/products/air-pollution-control/wet-electrostatic-precipitator-wesp/> (accessed 2026-10-02).

Applications: industry pages on www.ahlundberg.com.