

INDUSTRIAL HOT AIR GENERATORS (HAG)

PRODUCT OVERVIEW

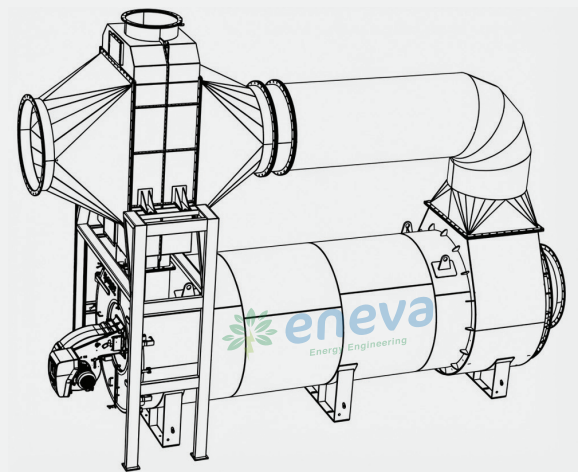
ENEVA Industrial Hot Air Generators (HAG) are high-efficiency indirect fired heating systems designed to supply clean, stable and controllable hot process air for a wide range of industrial applications.

By completely separating combustion gases from process air, ENEVA systems ensure contamination-free operation, making them especially suitable for food processing and hygiene-sensitive industries.

Compared to conventional steam-based air heating systems, HAG units provide a more efficient, compact and operationally simple solution with faster response times and lower investment costs.

MAIN ADVANTAGES

- Indirect heating with no contact between flue gas and process air
- Clean and contamination-free hot air generation
- Higher efficiency compared to steam-based systems
- Lower investment and operational costs
- Fast start-up and rapid temperature response
- Reduced system complexity and maintenance requirements
- High turn-down ratio for flexible operation
- Custom engineered solutions for each process



ENEVA ENGINEERING APPROACH

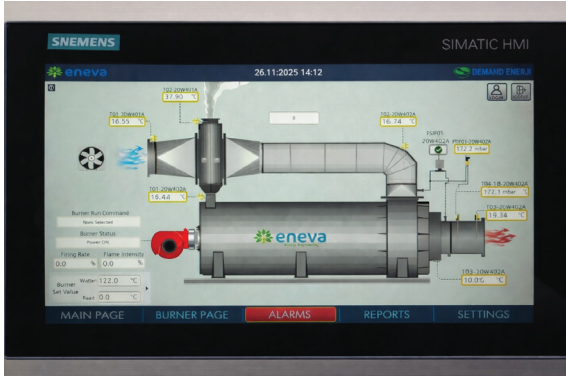
Each ENEVA HAG system is engineered specifically according to process requirements:

- Air flow rate and temperature profile analysis
- Fuel type and combustion optimization
- Heat transfer surface sizing and efficiency optimization
- Thermal expansion and refractory design
- Integration with downstream process systems

The modular and compact design ensures easy installation while maintaining high performance and long operational life.

CONSTRUCTION AND MANUFACTURING FEATURES

- Multi-pass smoke tube heat exchanger design
- Optimized refractory for high-temperature zones
- Welded construction with strict quality control procedures
- Post-fabrication thermal insulation to minimize heat losses
- Durable industrial design for long-term operation



Heating Type:	Indirect fired (clean air output)
Air Outlet Temperature:	Up to 300°C
Thermal Capacity:	Up to 7 MW (per unit)
Fuel Types:	Natural gas, LPG or liquid fuels
Construction Type:	Multi-pass smoke tube design
Configuration:	Horizontal or vertical
Materials:	Carbon steel or stainless steel
Burner:	High turn-down ratio burners
Pressure Drop:	Optimized for efficient airflow
Design Features:	Thermal expansion resistant structure

TYPICAL APPLICATIONS

- Food industry drying and baking processes
- Spray dryer systems
- Chemical and process industries
- Industrial drying and heating applications
- Hygienic air heating applications
- Any process requiring clean and controlled hot air

DELIVERY OPTIONS

- Burner system
(ambient air or preheated air operation)
- Flue gas recuperator
- Process air fan
- Air ducts and expansion compensators
- PLC control panel and safety instrumentation
- Frequency inverter for fans

DESIGN AND WORKING PRINCIPLE

ENEVA hot air generators operate on the indirect heating principle:

- Fuel is burned in a dedicated combustion chamber
- Thermal energy is transferred through heat exchange surfaces
- Process air flows separately and is heated without mixing with combustion gases
- Clean hot air is delivered to the process at controlled temperature levels

Systems can operate with ambient or recirculated air and are designed to match variable process loads with high operational flexibility.

When integrated with flue gas recuperators, system efficiency can exceed 95%, significantly improving overall energy performance.

WHY ENEVA?

- Strong expertise in thermal system design
- Custom-engineered solutions for each application
- High efficiency and low operating cost systems
- Reliable and robust industrial design
- Integrated system approach (burner + heat recovery + controls)

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