



**WPPENERGY**  
World Power Production

# INDUSTRIAL HHO CONVERSION UNITS



**MODELS:**  
**HGU 7,500**  
**HGU 10,000 &**  
**HGU 20,000**

 [www.wppenergy.com](http://www.wppenergy.com)

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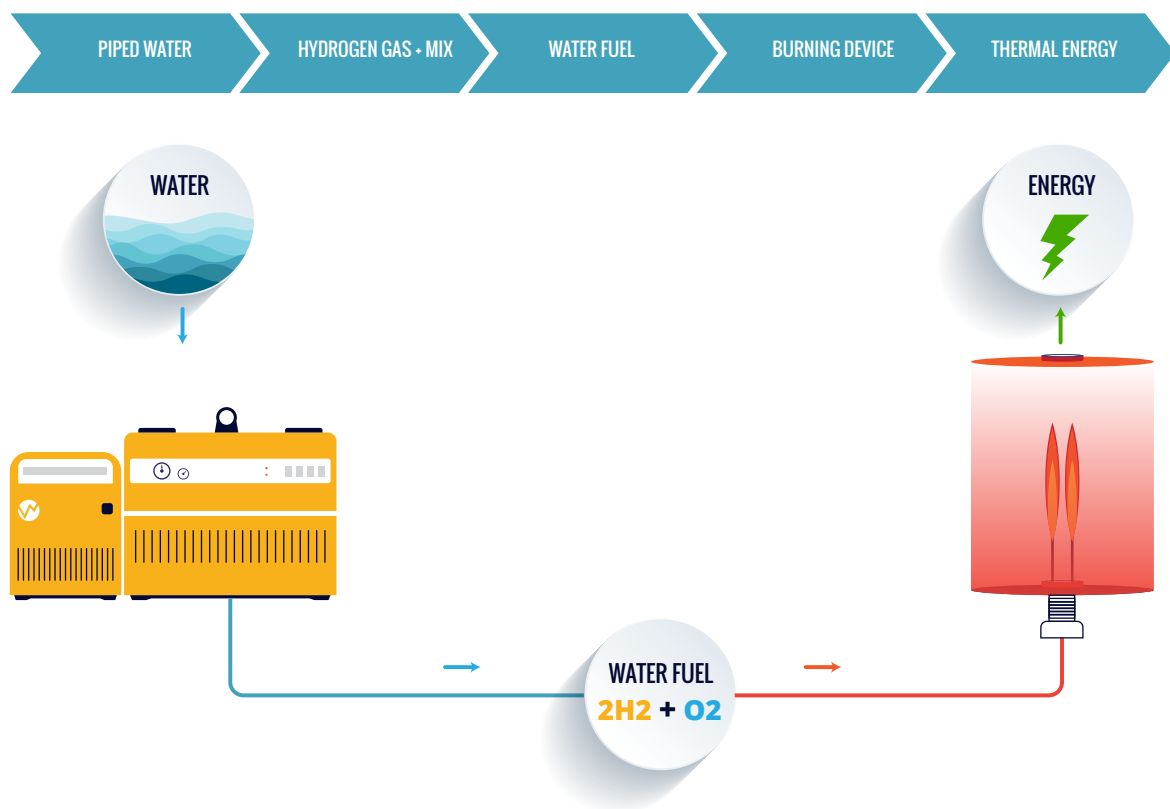
# HHO-FIRED STEAM GENERATION AS AN ALTERNATIVE TO FOSSIL FUELS

While fuel-cell technology holds promise as a component in an energy storage and retrieval system in automobiles, homes and some small business operations, its efficacy in a gigawatt-scale power plant is at best questionable at this time. HHO-fired steam generation is the only technology capable of generating gigawatt-scale electric power from energy stored in the form of hydrogen and oxygen gases.

HHO-Fired Steam Generation is an outstanding and reliable technology capable of driving gigawatt scale steam turbine generator sets in commercial power plants, generating steam directly from the combustion of a fuel-mix composed of a hydrogen gas and oxygen gas in stoichiometric proportion.

The intense heat generated (hydrogen burns at 2045 degrees Celsius versus methane/natural gas at only 1325) is used to vaporize the water-flow necessary to drive the turbine, creating electricity as it turns the generator set. The WPP HHO solution can dramatically increase fuel efficiency and reduce emissions by over 90% compared to fossil fuel alternatives and also reduce the cost of producing electricity by up to 50% because water is used as the fuel source.

## WATER ENERGY SYSTEM



The primary product of combustion in WPP HHO Power Plant Conversion Solution is pure, virgin water, used directly in powering the turbine. In a typical Rankine Cycle Power Plant, the combustion of hydrogen-oxygen fuel-mix adds approximately 20% of the total water flow to the system on each pass.

**INCREASE FUEL EFFICIENCY BETWEEN  
20% TO 40%!**



**REDUCING POLLUTION EMISSIONS  
BY 80 TO 90%!**

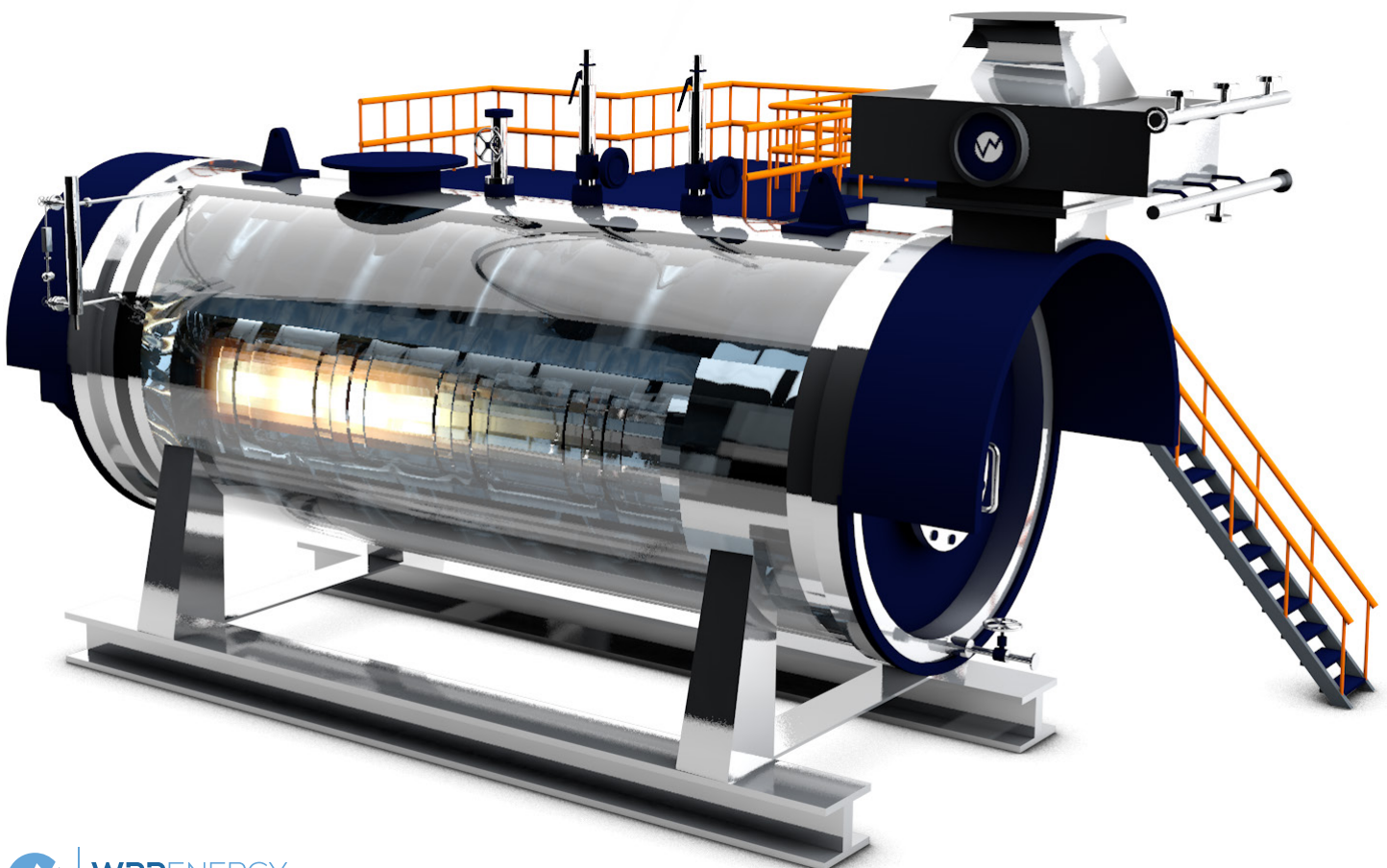


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# ADVANTAGES OF HHO TECHNOLOGY FOR BOILERS:

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- 1. Catalysis Characteristic** Hydrogen is an active catalyst which can be mixed with air to feed in to catalyze and combust all solid, liquid, gas fuel.. It can also speed up the reaction process, promote combustion completely.
- 2. Energy Saving** HHO gas is generated only by using electricity and pure water. this will reduce the cost of operating on other sources by up to 50%. It is both economical and practical.
- 3. No Pollution and Eco-Friendly** The mixed oxygen and hydrogen gas burns completely with essentially no pollutants, toxic fumes or public nuisance
- 4. Low Heat Loss, Increase in Efficiency and Production** Use of oxyhydrogen fuel provides a more focussed heat source with less heat loss, maintaining a more comfortable, safer, lower fatigue working environment.
- 5. Safety and Ease of Operation** - Steady, reliable fuel delivery. Fuel is available immediately after our equipment is switched on. No need of a gas cylinder, which can rupture or explode. - Multiple safety devices, including overheating and insufficient water cut-off switches, will automatically turn off power to ensure the safety of both equipment and user.
- 6. ADDRESSES POLITICAL MANDATES FOR STATE IMPOSED LEGISLATION AND INTERNATIONAL CLEAN ENERGY ACCORDS**
- 7. LOWERS THE RISK OF ENVIRONMENTAL LITIGATION**
- 8. BETTER HEALTH FOR POWER PLANT WORKERS, FEWER SICK DAYS, HIGHER EMPLOYEE RETENTION AND HIGHER MORALE**







**GAS EMISSIONS  
WHICH POLLUTE THE  
ENVIRONMENT.**



**BOILERS REQUIRE A  
LOT OF FUEL TO BURN.**



**INCOMPLETE  
COMBUSTION OF  
FUEL.**



**FLAMES DOES NOT  
FOCUS, NOT EXUBERANT.**



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# TECHNICAL SPECIFICATIONS

HGU MODELS	HGU/7500	HGU/10000	HGU/20000
AC Volt Requirement (V)	380	380	380
Voltage Phase (V)	three	three	three
Power Input kWh	23 kWh	31kWh	62kWh
Gas Rated Output L/h	7500L/h	10000L/h	20000L/h
Power Output kWh	21,107kWh	28,142kWh	56,285kWh
Mega Joule Output(mj)	76017(mj)	101,367(mj)	202,714(mj)
Max. Pressure (kg/cm <sup>2</sup> )	2 bars	2 bars	2 bars
Water Consumption (L/h)	4(L/h)	5.6(L/h)	11.6(L/h)
Water Feed	auto	auto	auto
Power Protection Grade	IP2S	IP2S	IP2S
Cooling method	Air Cooling	Air Cooling	Air Cooling
Insulation	F	F	F
Flame temperature (T)	800-3200 Adjustable	800-3200 Adjustable	800-3200 Adjustable
Gross Weight	12,674Kg	14,920Kg	18,281Kg
Dimensions W/H/L Meter	W2.44m/H2.6m/L6.05m	W2.44m/H2.6m/L6.05m	W2.44m/H2.6m/L6.05m

The indicators in the table above are for projects with of smaller scale implementation where HHO combustion assistance is used to accompany fossil fuels to reduce costs, reduce emissions and increased efficiency. At this time, the company WPP Energy is developing revolutionary grade scale technology to run a power plant entirely on water, to replace the use of fossil fuels, and in the near future will be launching a new technology to increase the external indicators of output products. In this regard, these indicators in the table above will be dramatically changed in consultation with the customers project and the upcoming technology deployed by WPP Energy.

## HYDROGEN GAS ENERGY CONTENT VS OTHER POLLUTING FUELS

Unit	Power output	Calories Output
1 kilogram of dry wood	5,3kWh	19,0mj
1 kilogram of coal	8,1kWh	29,3mj
1 cubic meter of natural gas	8,8kWh	31,7mj
1 liter of petrol	9,1kWh	32,6mj
1 liter of diesel-oil	10,0kWh	35,9mj
1 kilogram of hydrogen	33,6kWh	120,8mj (Highest Efficiency VS other fuels)

WPP Energy can customize our models based on the requirements of our clients to increase the amount of HHO production. Multiple units can also be deployed a scalable solution depending on the size of a power plant.

# COAL-FIRED POWER PLANT CONVERSION TO HHO:

Alternative steam path engineering utilizing WPP Energy's HHO technology can proceed in parallel to ongoing coal-fired operations, resulting in minimum interruption. Gas generation infrastructure must be located onsite, and typically will include a natural gas forming furnace and an air separation system to provide the hydrogen and oxygen supplies required to drive the turbine. An HHO system is engineered for each turbine component of a modern. Multi-stage unit, a computerized control unit providing optimum temperature and pressure conditions for each stage. Water supply to each stage is engineered to provide distilled water (post de-aeration, distal to the condenser infrastructure) to each stage.

A key element of the installation process is connecting one piece of WPP's equipment gas out pipe tube to the air and fuel inlet of the steam boiler. The mixed oxygen and hydrogen gases feed into the combustion chamber for sufficient burning. When engineering is complete, tie-in can be accomplished in the time it takes for a normal, scheduled maintenance shut-down.

Because the existing steam-turbine and generator set infrastructure can be driven by hydrogen fuel, the cost of conversion of a coal-fired power plants is a mere fraction of the cost of dismantling them or converting them to gas-fired turbines.

## HHO CONVERSION OF COAL ADVANTAGES



Despite large public and private investments over several decades, the use of conventional technologies has failed to process coal into both an economically and ecologically acceptable fuel. While the persistence of funding these old-line technologies is certainly not opposed it is evident that the survival, let alone the expansion of the coal industry under increasing environmental restrictions requires NEW expanded outlook and the adaptation of new available technologies.

Hydrogen is, by far, the best possible additive to improve coal combustion and the resulting cleaner burning environmentally friendly exhaust due to its highest available flame temperature and speed that permit the combustion of the unburned hydrocarbons in coal exhaust.

The HHO Water Gas Technology is the ONLY industrially ready and proven technology for the production of a clean burning fuel that is cost competitive with respect to existing fossil fuels. HHO Water Fuel Mix technology can now be supplied to any qualified potential power plant.

## A VERY BRIEF OVERVIEW OF THE HISTORY OF HHO DEVELOPMENT:

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**HHO** was originally developed as a fast start, or black-start technology to enable conventional boiler-driven plants to produce power in the time it takes to warm a turbine to its operating state, while waiting 4-6 hours it takes for the boiler to build a full head of steam.

The recent increase in the number of fossil fuel generating stations either decommissioned or scheduled to be so in the near future, presents an opportunity to deploy HHO as a preferred alternative to fossil fuel operations, saving on production costs, pollution and power plant jobs and generation for downstream markets.

## POWER PLANT PARTNERSHIP WITH WPP ENERGY

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Every HHO Power Plant Conversion Solution WPP conducts needs to be customized based on the existing fuel source and unique characteristics of the existing fossil fuel power plant equipment.

Each project requires an assessment by WPP scientific and engineering team before WPP can provide an accurate quotation for the project.

WPP will perform the conversion and maintain the technology via service contract in exchange as part of joint venture agreements with converted Power Plants. WPP's advanced proprietary private technology and scientific processes are not for sale and not for lease.

Each WPP HHO Conversion Solution will be remotely connected to the WPP database center for performance monitoring, maintenance for trouble shooting. Energy production data will also be transmitted back to WPP Green Energy Platform (to be released later in 2019), so any surplus energy may potentially be sold to ready buyers looking for wholesale supply.

