



FORMULA 1 HEINEKEN SILVER LAS VEGAS GRAND PRIX

SCIENCE & INNOVATION FOR SUSTAINABLE WATER MANAGEMENT

PRESENTED AT CRWUA 2023

2023

LAS VEGAS NV | NOV 16-18

Water

REAL WORLD OPPORTUNITY FOR TANGIBLE IMPACT

In our desert home, we are committed to minimizing our water consumption – both indoor and outdoor – given the finite supply of water from the Colorado River.

2022

FEDERAL GOVERNMENT DECLARES AN OFFICIAL WATER SHORTAGE ON THE COLORADO RIVER

COOLING

ONE OF THE LARGEST SOURCES OF WATER CONSUMPTION: EVAPORATIVE COOLING TOWERS

40M

NUMBER OF PEOPLE RELIANT ON WATER THAT COMES THROUGH HOOVER DAM

PRIVATE AND CONFIDENTIAL



SOURCE: NBC NEWS

LAS VEGAS GRAND PRIX, INC.

Promoter of FORMULA 1
HEINEKEN SILVER LAS VEGAS
GRAND PRIX 2023

SOUTHERN NEVADA WATER AUTHORITY

Agency that manages the
consumption and conservation
of water in the region

MGM

Operator and SNWA Innovation
Partner

WATERSTART

NGO responsible for the
facilitation of water saving
technologies



BECOMING A WATER POSITIVE GRAND PRIX

Our primary objective is to identify and test water saving technologies that can ultimately offset LVGP's outdoor water consumption.

LVGP's primary source of outdoor water consumption is the water that is used to prep the surface of the streets of Las Vegas. This makes the surface safe for racing.



ATMOSPHERIC WATER GENERATOR (AWG)

Atmospheric Water Generators (AWGs) are a proven technology that produce water from surrounding air. They are used around the world in settings where there is no access to running water.

AWGs require a high level of relative humidity in order to maximize the amount of water they can produce.



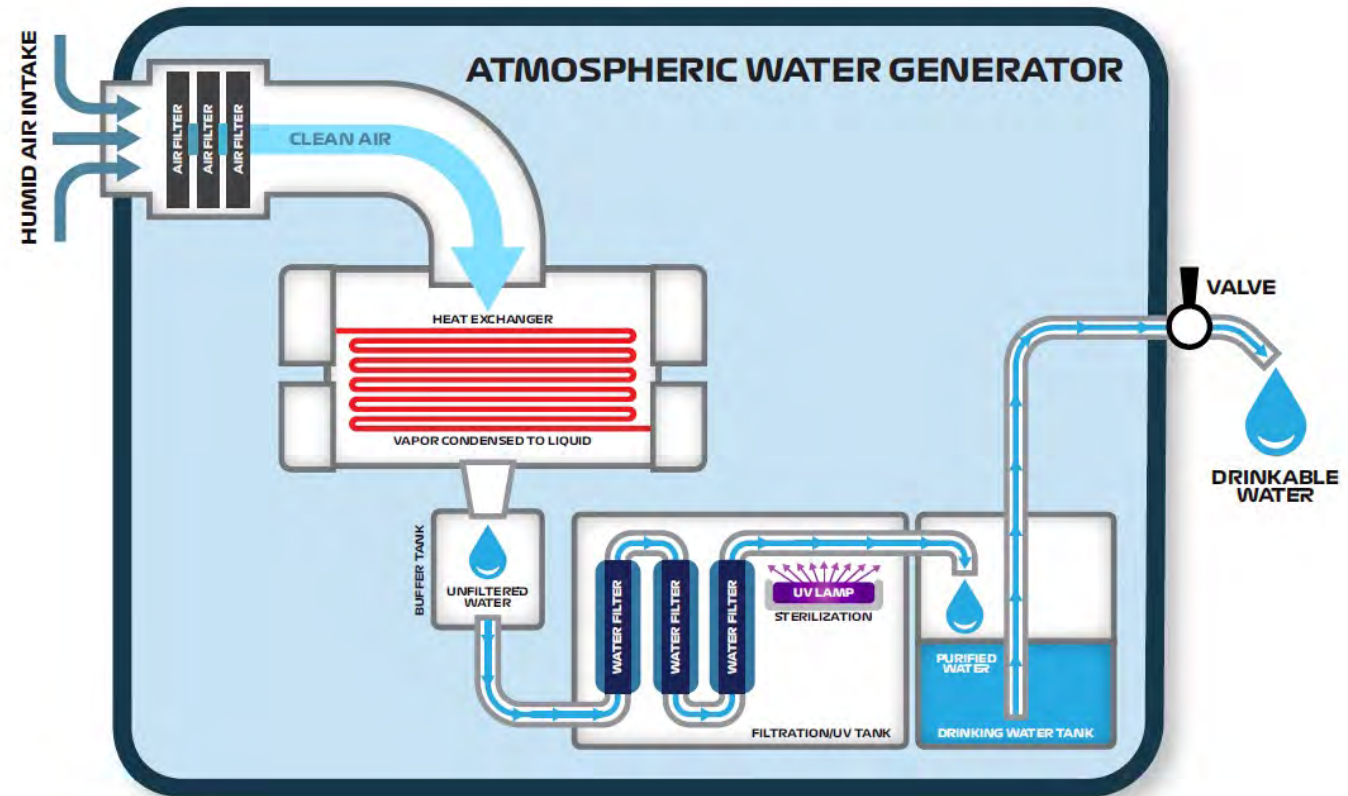
BECOMING A WATER POSITIVE GRAND PRIX

Custom fabrication allows us to connect the AWG to an evaporative cooling tower at MGM Grand.

Once connected, the AWG will turn the humid air from the cooling tower into "new", drinkable water.

As evaporative cooling towers are 'always on', there is an opportunity to capture the humidity and create new water on a year-round basis.

INTERNAL WATER GENERATION PROCESS



Timeline: Pre-Pilot Phase

MAY

Conducted a pre-pilot feasibility study to determine if this is a viable application of the AWG technology

JUNE

Identify and onboard an AWG vendor

JULY

Formalize partnership

AUGUST - OCTOBER

Duct work and fabrication completed; AWG installed onsite at MGM Grand



Pilot Timeline: Testing Phase

NOVEMBER 2023

Confirmed the AWG can produce “new” water by capturing evaporation from the cooling tower (“first drop”)

DECEMBER 2023

Gathering early data on water production and energy consumption

Q1 2024

Continue gathering data and explore opportunities to reduce overall energy consumption



AS OF DECEMBER 2023

Now that the AWG is successfully installed at MGM Grand, we are able to gather data on water production and energy consumption.

Key Takeaways:

1. The concept works! We are producing new water.
2. It will be important to continue testing through next year so that we understand the water production capacity during warmer months.
3. Energy costs per gallon of water produced are relatively high. We will need to explore solutions to reduce our consumption.



UNANSWERED QUESTIONS

As we gather data, there are a few unknowns that we will need to monitor and account for.

1. How does the AWG perform in high heat?
2. How does the AWG perform in freezing temperatures?
3. Does the energy cost per gallon increase or decrease in warmer temperatures?
4. How long will the custom fabrication last?



END



PILAR HARRIS

Senior Director

Sustainability, CSR & Government Relations

pilar@f1lasvegasgp.com

WATERGEN AWG SPECS

GEN-L

Specifications

Water generation capacity	Up to 6,000 liters / 1,585 gallons a day
Electricity supply	EU: 400 Vac, 50 Hz, 3 Phases US: 480 Vac, 60 Hz, 3 Phases
Water generation efficiency	350 Wh/liter
Dimensions (LxWxH)	2.85m x 2.23m x 2.64m / 112" x 87.8" x 103.95" (Height size considered with legs)
Weight	2,630 kg / 5,800 pounds
Energy consumption	Nominal 60 kW/h, Peak power up to 90 kW/h
Air filtration	Sub-micron barrier filter that eliminates <2.5 particulate matter
Water purification	Multi step filtration cascade of water certified filters set, followed by a germicidal UV lamp. Vital minerals balance the water pH to achieve high purification and tasty drinking water.

ESTIMATED MONTHLY WATER PRODUCTION

Estimated GEN-L Water Production in
Cooling Tower - Gallons

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
GEN-L Production average GPD	1,493	1,493	1,493	1,493	1,493	1,493	1,493	1,493	1,493	1,493	1,493	1,493
GEN-L production per month Gallons	46,270	41,793	46,270	44,778	46,270	44,778	46,270	46,270	44,778	46,270	44,778	46,270

Assumptions:

- Cooling Tower temperature consistent @ 104°F and Relative Humidity @ 95%
- GEN-L requires ~21,200 CFM (600 cubic meters/minute)

Water production = 205,000 Gallons



ESTIMATED DAILY WATER PRODUCTION: GALLONS/DAY

GEN-L Water Production: Gallons/Day

°F/%RH	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	99%
59°F	11	40	74	106	185	251	317	529	728	741	767	794	820	926	966	1005
68°F	32	79	119	198	265	317	582	741	767	780	833	899	939	979	1019	1045
77°F	66	185	206	278	344	754	776	833	873	899	913	966	1005	1032	1098	1190
86°F	190	212	291	370	767	794	860	886	913	939	979	1045	1151	1177	1217	1270
95°F	251	304	529	780	833	873	913	926	947	992	1071	1190	1212	1230	1283	1425
104°F	370	542	794	847	886	926	952	966	1005	1085	1204	1239	1361	1411	1465	1520
113°F	556	807	860	899	939	966	1019	1047	1139	1223	1373	1444	1561	1573	1587	1594

