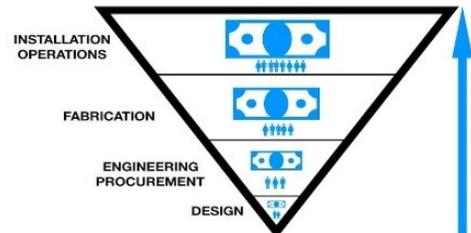


Mizzler® – Technical & Component Specification

INTRODUCTION

When designing Mizzler®, as with other products we have developed or are in development, the team prides itself on always utilizing the **upside-down pyramid of design**. A system developed and championed by the renown mechanical engineer Bill Nye - the science guy.



1 POWER COLLECTION AND STORAGE

Mizzler® produces its own power and has zero interconnection with the air conditioning or refrigeration system. It utilizes a small yet well designed, zero maintenance, 30W photovoltaic solar panel to collect the sun's free energy, to continuously charge the system's battery. The solar panel is provided with a 0° to 90° mounting bracket, suitable to be installed on virtually any wall surface or building eaves, avoiding the need for any roof penetrations. *The sun was always the problem. Today, however, we utilize it as the solution.*

The system's power is then provided by a 20Ah lithium-ion battery, manufactured using the latest technology available in battery production. Inside the Mizzler's IP67 rated control center, the solar PV and the battery are linked together and communicate via the system charge controller. This safeguards the battery from over-charge or depleting to damaging levels, thus ensuring both components' lifespan last well beyond the warranted period.

2 WATER COLLECTION AND STORAGE

Mizzler® only uses harmless, chemical free water in its process. This water is generally collected from the system's condensate discharge and available precipitation. Collecting the condensate water can be accomplished by redirecting the condensate line to the system's recycling/collection pan. Rainwater is naturally collected as it falls onto the AC and the recycling pan. However, in areas of lower rainfall, redirecting a rain gutter (with a leaf/debris filter) to the pan is a viable option as well.

All water entering the recycling pan is filtered through the multiple, UV rated, carbon coated (washable) filter points situated throughout the recycling pan's surface.

Additionally, at the stage of manufacture, antimicrobial additives are infused into the recycling pan that make it resistant to microbial growth. The antibacterial and anti-mold properties have an expected lifespan of 15-years+. These properties are therefore present on both the outside and the inside of the recycling pan. For AC systems whereby the evaporator coil produces excess levels of 'slime' (i.e., aluminum coils), it is recommended that the owner adds one Calgon Purcool Green® every 12-months. One of these tablets is included with the initial Mizzler purchase.

3 MEASURE AND CONTROL

Keep it simple. Well protected components, designed to save water.

As the condensing fan of the AC or refrigeration system powers on, The Mizzler's IP67 rated turbine (affixed to the condenser grill) utilizes the airflow to create a small power stream. This power initiates an internal relay, opening the power supply from the battery to power the pump. This power supply is then potentially intercepted by two further components. Firstly, the ambient thermostat, which is also situated inside The Mizzler's control center, continuously measures the ambient air temperature. Assuming the reading is above the set point, it will allow power flow to the recycling pan float switch. The float switch measures the pan water volume. If the volume is sufficient, it will finally allow the pump to operate.

These checks are all completed by the system in milliseconds.

4 WATER COOLING PROCESS

Supplied with the system are four mizzling head units. One for each side of the condenser, or for horizontal air flow systems, they can be installed top to bottom in a horizontal configuration (see install manual).

The heads are manufactured from 6065 anodized aluminum, utilizing push to connect fittings and flexible 3/8" tubing to connect to the recycling pan and subsequently the pump. The heads are simply and easily connected to the AC or refrigeration condenser using (supplied) UV-rated zip ties.

The brushless, submersible pump is bespoke designed for use with Mizzler® technology and will pump c.60 liters of water per minute over the condenser coils; therefore, recycling and filtering the whole water supply several times during each operation. The pump boasts an expected lifespan run time in-excess of 60,000 hours, which in most cases would be the equivalent of to a lifetime expectancy of 20+ years.

TECHNICAL FAQ's

Q: *If this is a fixed loop, water cooling system, how is the heat removed from the water?*

A: First and foremost, this is not a fixed (closed) loop cooling method in the true sense of the meaning, simply because the water flow is open during the water supply process on the condenser coil. As such, there are multiple points in The Mizzler's process whereby the heat is removed from the water supply.

Firstly, as would be expected, there is a level of dissipation as the water hits the coils of the condensing unit. The level of dissipation is dictated by the ambient air temperature and coil/refrigerant temperature during the process. This water is then, in most cases, replaced by condensate water (which is generally below 60°F) from the evaporator coil and/or rainwater.

Moreover, as air is drawn across the coils, heat is being absorbed and expelled away by the condenser's fan.

Additionally, the recycling pan is not insulated. Therefore, when the condenser is off, in the unlikely event that the water has risen above ambient air temperatures, the water now has the opportunity to naturally cool. Furthermore, the tank is designed to allow continuous overflow, allowing fresh water to be filtered in, and existing water to drain out, e.g., during heavy precipitation periods.

Finally, the ambient air sensor in the system's logic control dictates The Mizzler's operation. This is generally set to below night-time ambient air temperatures, and as such the water benefits from long periods of downtime on a daily basis, allowing it to cool and replenish water lost to dissipation.

Q: *Why do you need the turbine relay? Why not just have a temperature switch sensor on the suction line?*

A: In short, time lag. It is true that this process would indeed work to operate the system. However, there would be a time lag from the when the condenser kicks on to when the suction line reaches the right temperature. More importantly, when the compressor switches off, the suction line will remain cold for some time, meaning The Mizzler® would continue to operate when not required—therefore wasting both battery energy and water.

Q: *Why do you need the solar panel and battery, why not just power it directly from the condenser?*

A: Our focus was to develop a system that we could claim, with no amount of 'greenwashing', is: 100% renewable, and in many countries can claim renewable incentives; a system that had no interconnect to the condenser, therefore avoiding potential manufacturer warranty issues; and, a system that could run independently on its own low voltage power, therefore avoiding high voltage safety and certification regulations. *We achieved all of this.*

All the above said, we recognize there will be cases where a solar panel just cannot be installed, therefore the Mizzler® can be wired directly from grid supply, with no requirement for the solar panel or battery, which are replaced by the addition of a transformer supplied by the installer. Terms & conditions apply.

Q. *Can Mizzler® be detrimental to the condenser life?*

A: No. In fact, the opposite. As we know, the condenser is already manufactured to weather the elements. Mizzler® actually helps it to function more efficiently and keep it clean, (especially in coastal, salty environments.) Thus, it likely extends the life of your condenser, and almost certainly extends the life of the compressor.

Q. *Will it not work on any specific system?*

A: Mizzler® will work on any brand and model of standard, air-cooled split system (condenser, with air handler in separate location).

Q. *Does it require a lot of maintenance?*

A: Not at all. If the system is in a region that has a deep-freeze season, there is a drain out, weatherization process to survive the winter. Other than an annual maintenance cleaning, that's about it.

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