

# BARNSTUDIO MECHANICAL ROOM HIGHLIGHTS

*The systems that people most often ask about...*

## Zehnder HRV System Heat Recovery Ventilation

The Zehnder 200 (HRV) system ensures optimal indoor air quality and comfortable living for energy-efficient (tight) construction. With a maximum capacity of 125 cfm, this system has been certified at 92% efficiency by the Passive House Institute.



The BARNSTUDIO installation was quick, and when complete it was "balanced" by Jim Harmon (Building Performance Center), who said it was super close to factory specs! Well done to the designers and to Steve Robertson, who did the install in just over a weekend! This installation has six supply (fresh air) and six return (inside air) ducts. It is whisper quiet inside the house. Because of the heat recovery component there is no heat loss bringing in outside air.

It was the BARNSTUDIO designers choice to compensate for a very tight building envelope and promote a healthy interior environment with an HRV system. The blower door test result = 1.02 ACH<sub>50</sub>. (Building Performance Center)



## Sanden Heat Pump & Water Heater

A typical installation below, not something you want to see near the front door! The BARNSTUDIO installation to the right.



The Sanden SANCO2 Heat Pump/Water Heater is a highly energy efficient alternative to traditional electric or gas water heaters. It absorbs heat from the outside air to heat water – saving energy, saving money (70% less electricity) and reducing greenhouse gas emissions. All while keeping the interior absolutely quiet; ideal for Passive Houses and other airtight homes.

The CO<sub>2</sub> refrigerant uniquely used in the SANCO2 system has an extremely low global warming potential; and CO<sub>2</sub>, a natural refrigerant, does not deplete the ozone layer.

It is a flexible 2-part system. The tank is installed indoors and the heat pump outdoors (up to 50 feet away) with only water piping connections required between the two.

The BARNSTUDIO installation was the first UL listed Sanden heat pump water heater installed in the US, purchased from SMALL PLANET SUPPLY. Used here for both radiant (in floor) heating and domestic hot water.

A happy touch: the City of Vancouver BC has reached out to INCLINEDSIGN for the use of their heat pump "bench" design (the heat pump is fully contained within the Corten steel and wood bench outside the door...)

## Rainwater Catchment Prefiltration, Storage and Filtration

*The key to freshness is how clean can you get the rainwater, before it goes into the rainwater storage tank.*

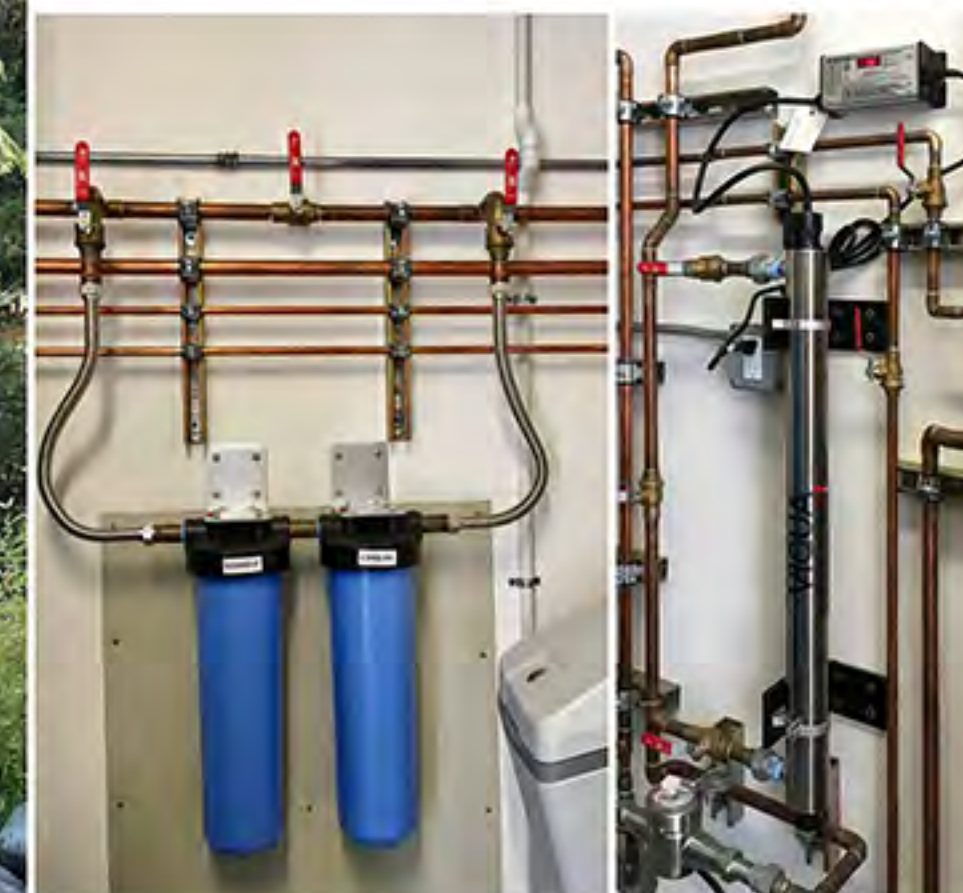


Start the chain of events by keeping the roof and gutters as clean as you can...not so easy here on the 'Reef with the black silt that gets blown up from the bluff, and pine needles ad infinitum! The BARNSTUDIO has oversized gutters, a pre-filtration tower with a mesh debris basket, and a 35-gallon first flush column (1.2" PVC pipe) with a rising ball for level control. So the first 35 gallons off the roof with any contaminants, doesn't go into the rain tank.

Thanks to this prefiltration system, the BARNSTUDIO raintank filled to the top last January thru March, with exceptionally clean water.

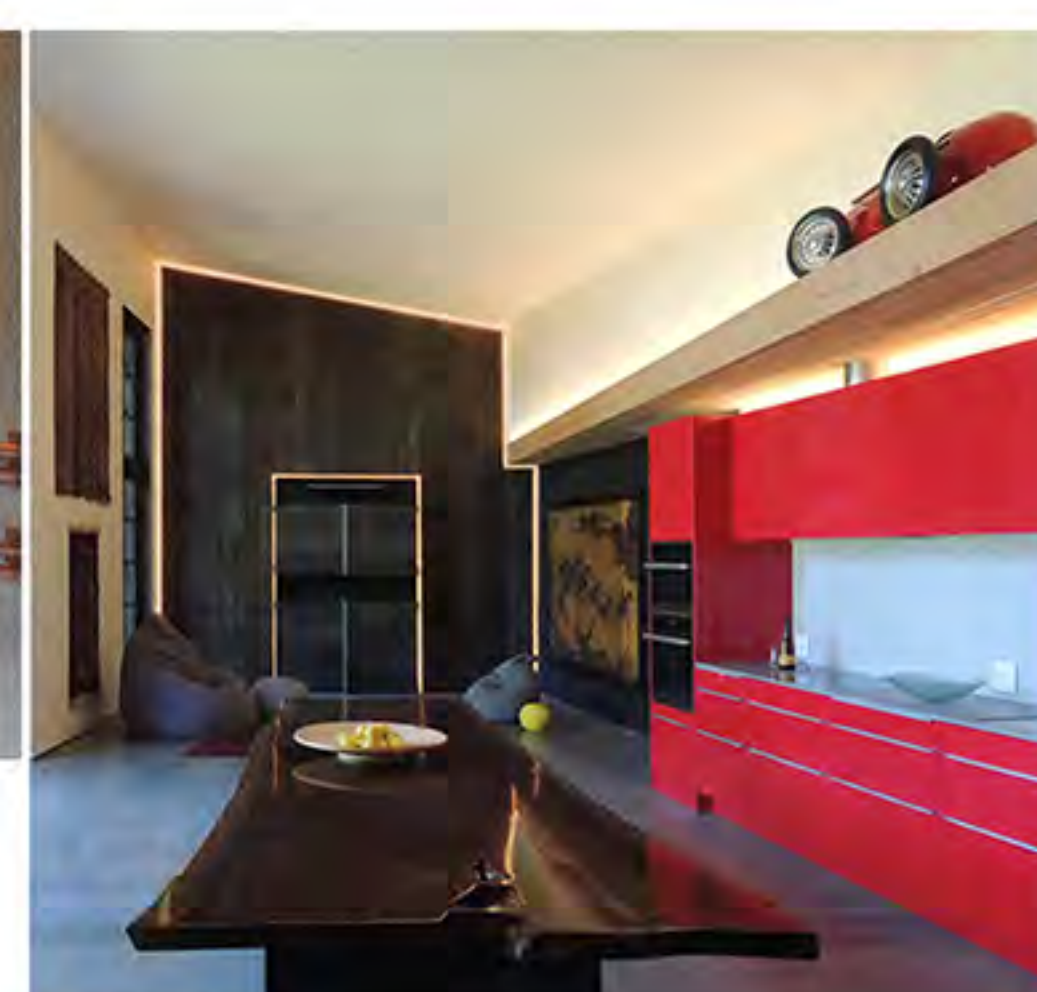
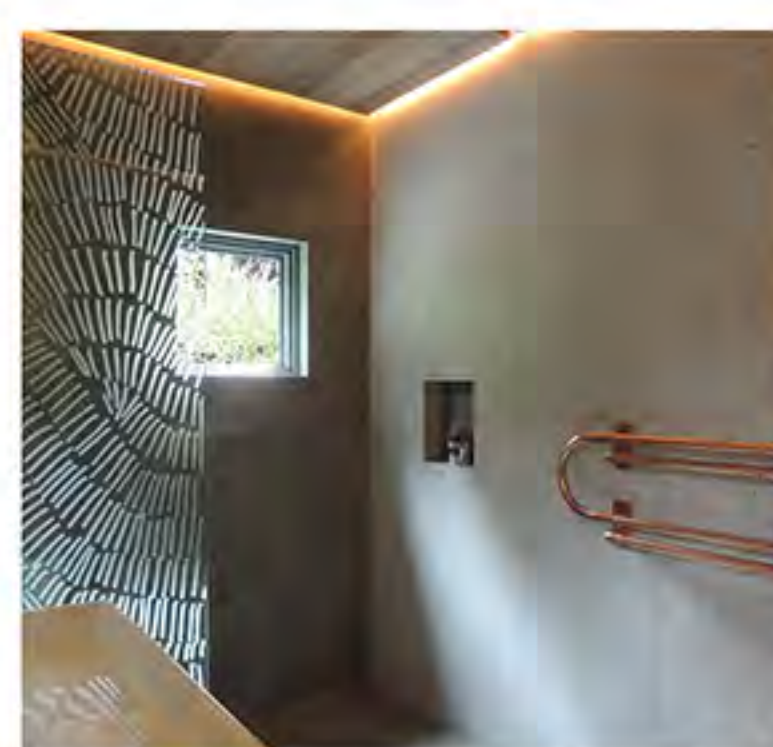


In the mechanical room there are two 5 micron filters (sediment & carbon) and a UV bulb in line just before the water goes into the house for consumption.



Code also requires the UV filter to have a warning alarm.

The rainwater collected on the roof is great for landscaping, and after the filtration it's also great for drinking!



## LED Lighting and Central Driver Panel

Though not uncommon in the commercial world, centralized LED driver installations were not something the electrical inspector was familiar with in residential construction. At first he wanted a field UL certification but later was satisfied with specs provided by the driver manufacturer, MAGNITUDE. And the reality is that little or no heat is noticeable in the panel after all the LED lights were on at max setting for 24 hours!

The obvious benefits with a centralized LED lighting driver panel are lower cost of LED lighting installation, and lower maintenance costs. The lighting is controlled via a Crestron PYNG system (right panel in image)

Because many electrical contractors are not yet experienced in design & installation of LED systems, LED lighting design needs to be well planned and specced out in detail in the building plans to be successful.

