

ET Summit 2021

Presented by



Emerging Technologies for Heat Recovery for Hot Water Delivery



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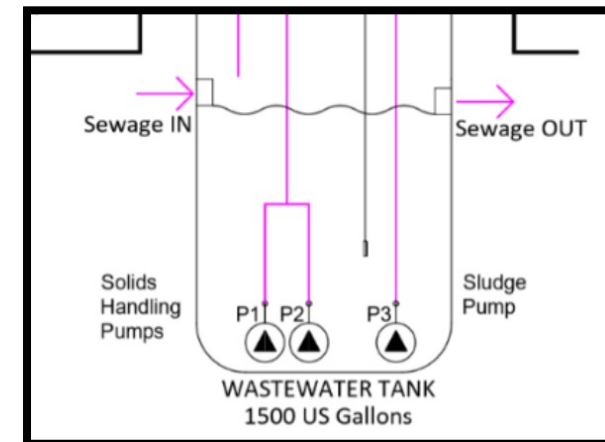
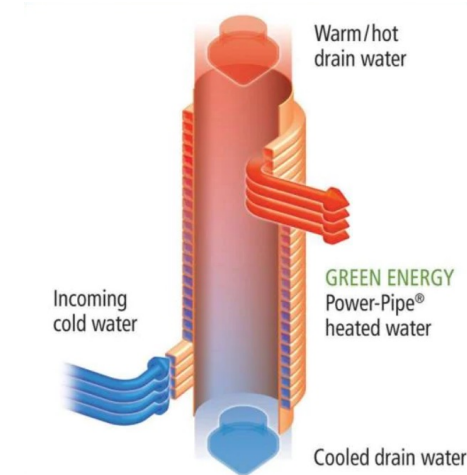
Electric Power Research Institute (EPRI)

What is waste heat recovery?

- Waste heat recovery is the action of capturing unutilized heat from one process, typically via a heat exchanger, and transferring it to another process for reuse
- Examples sources of waste heat:
 - Industrial combustion exhaust (e.g., furnaces, kilns)
 - Radiative losses from equipment (e.g., data center, air conditioners)
 - Hot water dumped down the drain

Drain/Sewer Heat Recovery Technologies

- Residential
 - Power-Pipe, ThermoDrain, EcoDrain
- Multi-family/Commercial
 - HUBER, SHARC Energy



Incubatenergy 2020 Project Overview

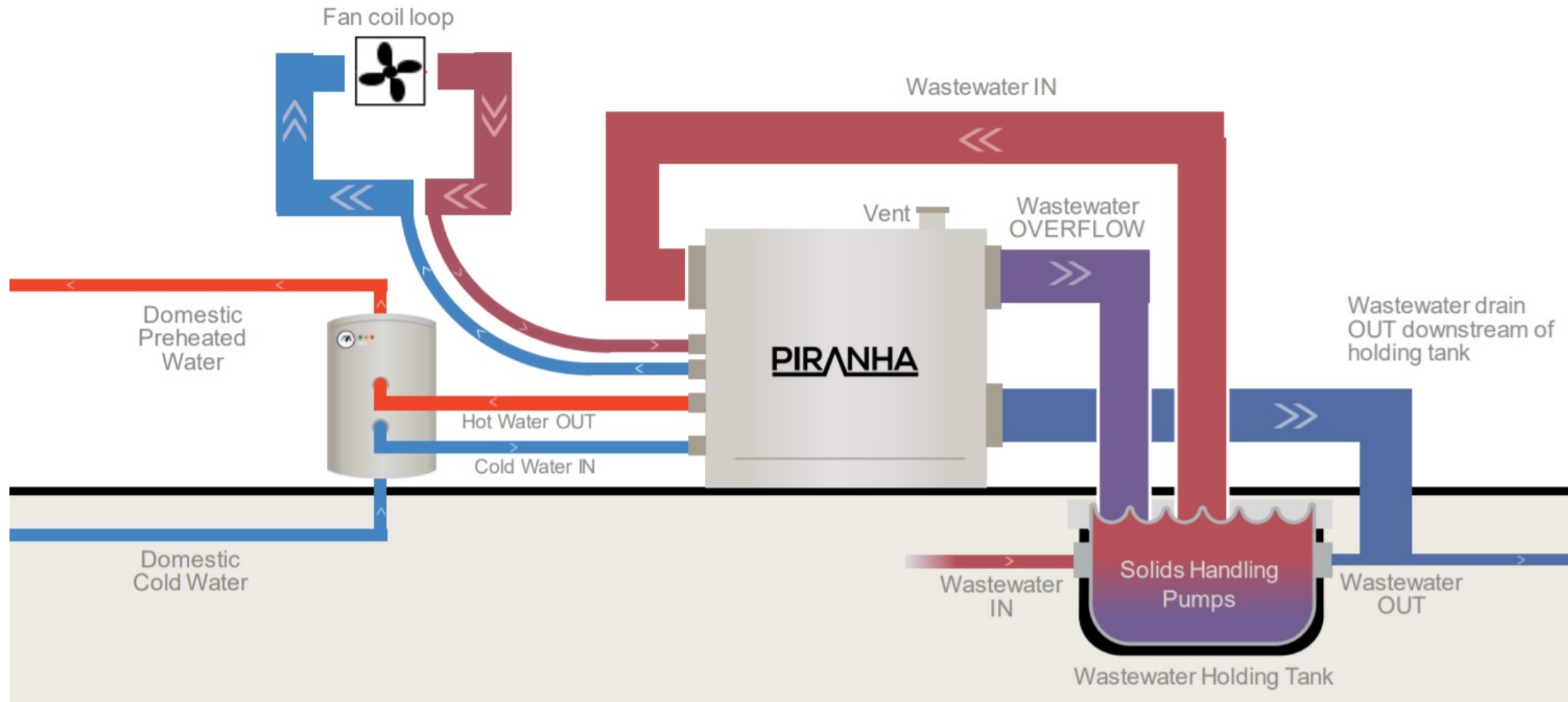
- Assess the performance of the SHARC Piranha T10 HC system
 - Heat capacity of 120,000 Btu/h
 - Refrigerant was R513A (GWP of 573)
- Seven35 Building in North Vancouver, British Columbia
 - Average daily hot water use of 2,000 gallons



How PIRANHA Works

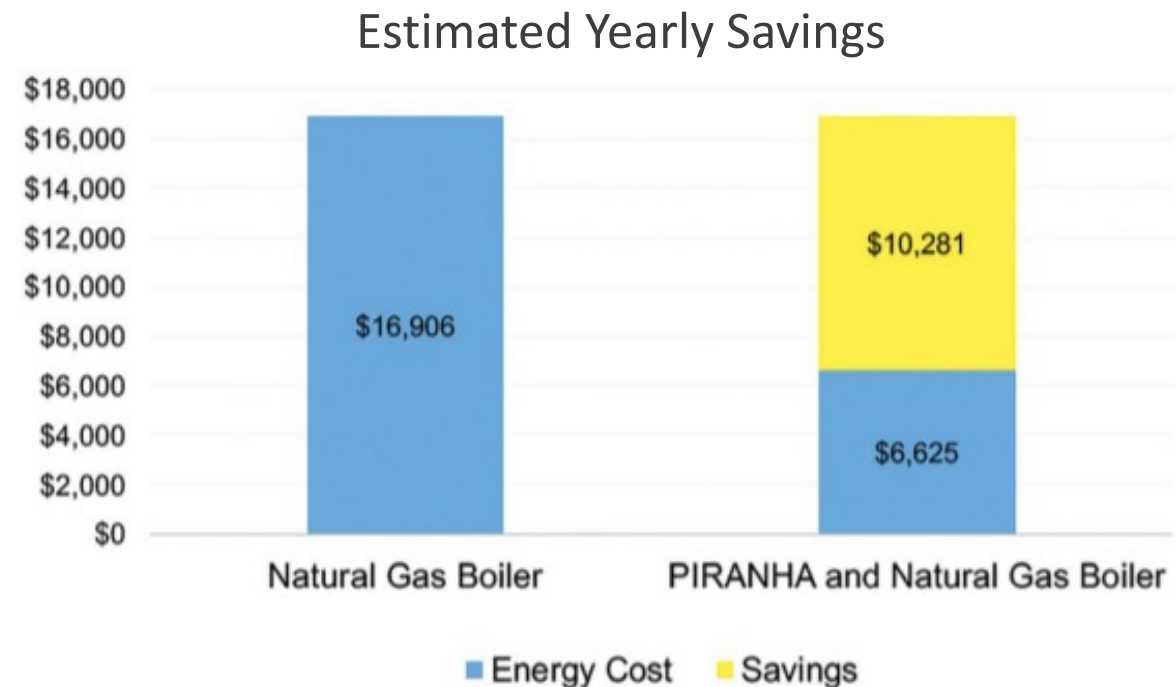
*Energy Recovery
(Heating)*

Typical Above-Grade PIRANHA HC Installation



Project Results

- The Piranha T10 HC was able to produce 100% of the building's hot water at 140°F
- Average coefficient of performance (COP) of 3.7 and average runtime of 13 hours/day.
- Estimated annual savings of over \$10,000 at this site.
 - Savings will vary by location due to energy prices
- Approximately 95% GHG emission reductions due to BC Hydro's clean electricity



Potential Applications for Waste Heat Recovery

Multi-family

- 50–350-unit apartments/condos
- Student housing
- Senior/assisted living
- Community housing

Commercial

- Hospitals
- Laundromats
- Micro-breweries & distilleries
- Hospitality

Remaining Research Questions

- Cost effectiveness versus air-source heat pumps by climate zone
- Building compatibility and installation costs
- Technology classification for incentives
- Long-term maintenance

The Incubatenergy project was funded in part by the California Emerging Technologies Program.

For more information, contact Jerine Ahmed at Jerine.ahmed@sce.com.

The project report can be found at <https://skipsolabs-epri.s3.amazonaws.com/uploads/content/8ee4c6c457be85f7458a062a21e8fa67289928ad.pdf>

Thank you!



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