

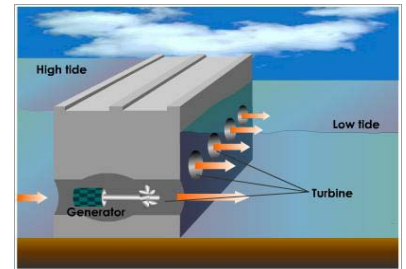
SEWAGE

The Ultimate Renewable Energy Source



International
Wastewater Systems

International Wastewater Systems



The world continues to search for new and sustainable ENERGY sources.



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“Energy can neither be created nor destroyed, it simply changes from one form to another.” – Isaac Newton



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Exiting from Buildings
Beneath sidewalks
Beneath roadways
Flows ENERGY

ABUNDANT
ACCESSIBLE
RENEWABLE

SEWAGE



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Caption: Workers restore a sewage pipe built in 1905. The wastewater running through here hovers around 65 degrees. King County wants to harness that heat energy to use in buildings. (Photo: Ashley Ahearn)



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350 billion Kw-Hrs worth of hot water are discarded annually through drains in North America according to the US Department of Energy.

Typical Sources :

- Laundry
 - Dishwasher
 - Shower / Bath
 - Cooking
 - Process



...DOWN THE DRAIN

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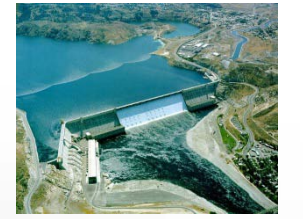
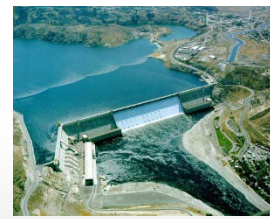
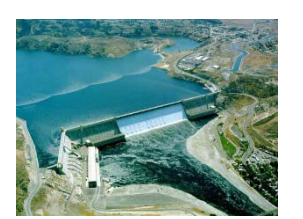
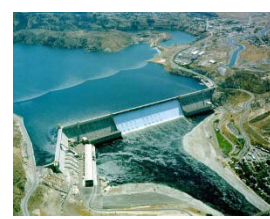
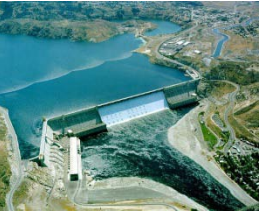
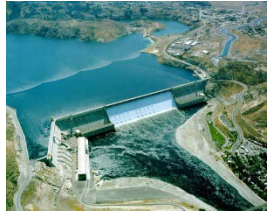
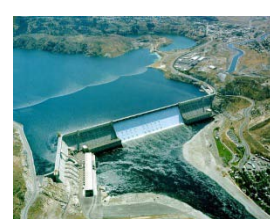
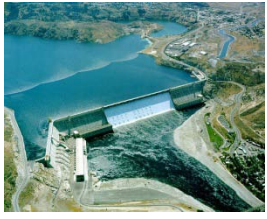
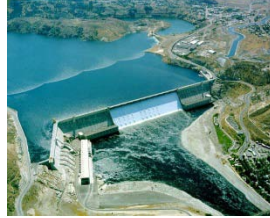
Context



Grand Coulee Dam
Columbia River Washington State
Commenced in 1933
Completed in 1942
Addition in 1974
6809 MW Capacity
21,000,000,000 Kw-Hr Annually
Largest generation facility in USA



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**Bob Klug - Seattle
City Light and Power**



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Value of ENERGY in sewage water

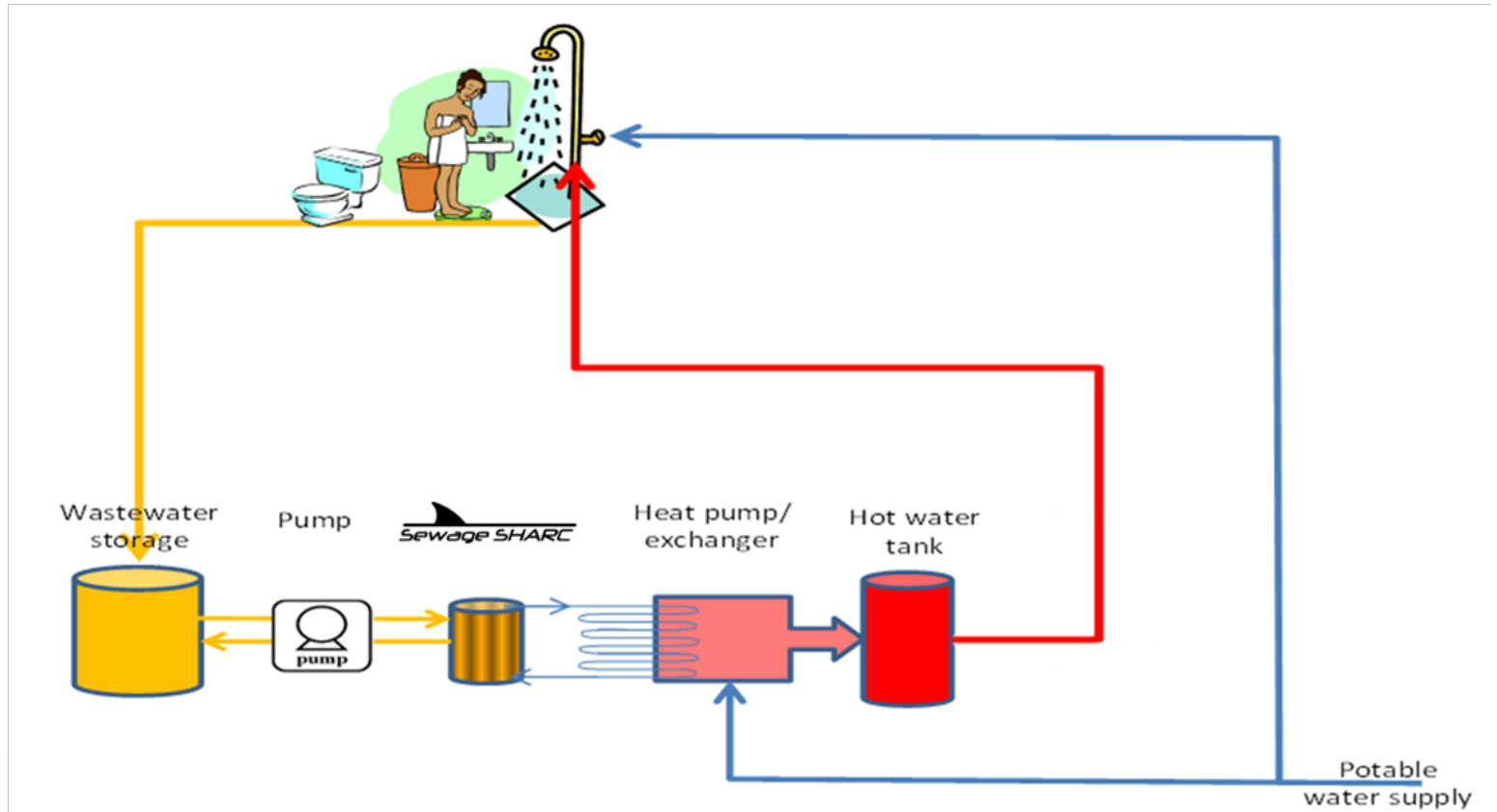
♻️ USDOE 350,000,000,000 Kw-Hrs Annually

♻️ Average electrical cost \$0.10 / KwH

♻️ \$35 billion worth of energy can be recovered



How Sewage SHARC Systems Work...



Sewage SHARC Systems

- ♻️ Sewage is a reliable and ever-increasing “free” energy resource.
- ♻️ IWS Sewage SHARC systems provide a non-intrusive means of using the energy available in sewage.
- ♻️ IWS Sewage SHARC systems offer a cost-effective and environmentally-friendly means to augment building heating, cooling, and domestic hot water systems.



Facts About Wastewater...

- ♻️ Wastewater has an average temperature of 70°F (or 21°C) when exiting buildings.
- ♻️ The average person in North America uses 375 liters (or 100 gallons) of water daily.
- ♻️ 20-50% of a buildings energy requirements go out via the sewer everyday.



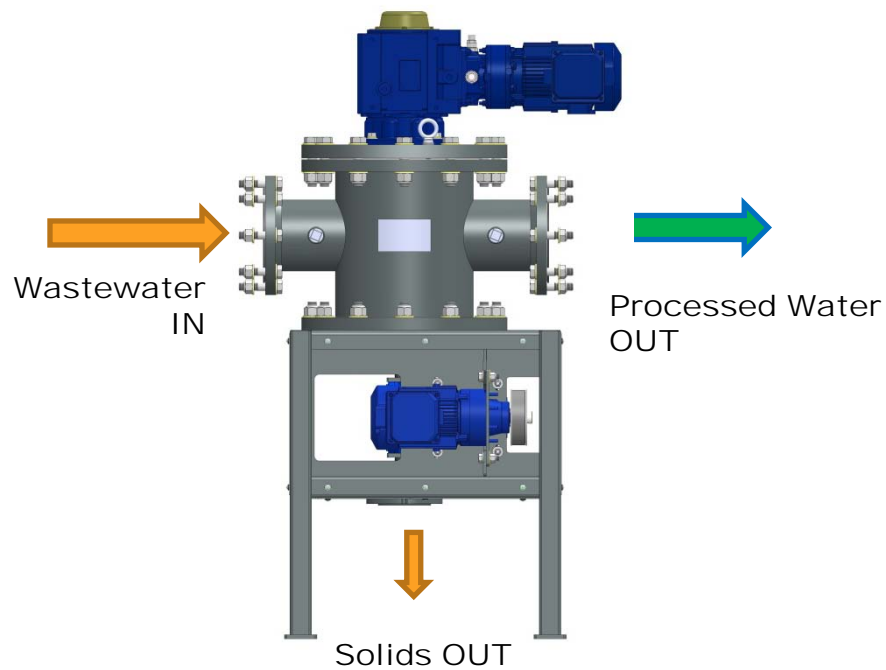
Sewage SHARC

The major challenge in recovering heat from waste water is maintaining reliable, trouble-free, long term operation.

The IWS Sewage SHARC provides the most effective way to deal with that challenge.



Sewage SHARC



Sewage SHARC

Facts About the Sewage SHARC...

- ♻️ **The Sewage SHARC HP option can operate with COP's of up to 5.0 in heating mode.**
- ♻️ **The Sewage SHARC HP option operates at EER's in excess of 20 in air conditioning mode.**
- ♻️ **The Sewage SHARC typically offers one of the shortest paybacks of any alternate energy system available in the market.**



Sewage SHARC Features

- ♻️ Clog proof /w optional automatic back flush
- ♻️ Available in HX or HX/Heat Pump applications
- ♻️ Fully automated DDC w/ optional BACnet interface
- ♻️ Wireless or Ethernet connection for data retrieval
- ♻️ Factory maintenance and warranty service
- ♻️ Instantaneous calculation of COP and GHG savings



Sewage SHARC Benefits

Cost Effective

- ✓ Energy savings and Primary energy cost reduction 30-85%
- ✓ Return on investment typically 3 to 7 years (Non-GEO)
- ✓ Return on investment can be immediate (GEO)

Environmentally Friendly

- ✓ Independence from fossil fuel energy sources
- ✓ CO² emission reduction 30-85%

Customer Friendly

- ✓ Easy to install and operate
- ✓ Hassle-free, low-cost maintenance
- ✓ Long life cycle of reliable operation



Sewage SHARC Benefits

- ♻️ Scalable Energy available at point of use
- ♻️ Reduce energy usage, CO₂ and GHG emissions
- ♻️ Works with existing infrastructure
- ♻️ Virtually Infinite energy supply
- ♻️ No unsightly rooftop equipment (SOLAR/WIND)
- ♻️ Increased reliability of source energy
- ♻️ Qualifies for additional LEED credits
- ♻️ Odorless Sealed system



Sewage SHARC Applications

- ♻️ **District Energy Systems**
- ♻️ **Condominiums**
- ♻️ **Public Facilities**
- ♻️ **Schools & Sport Facilities**
- ♻️ **Aquatic Centers / Swimming Pools**
- ♻️ **Commercial Buildings**
- ♻️ **Industrial Complexes**
- ♻️ **Shopping Centers**



Sewage SHARC Systems in action

The 60-unit Seven35 in North Vancouver developed by Adera Capital Corp. is Canada's first multi-family project designed to LEED **Platinum** and **Green** Building Gold. One of its sustainable features is IWS' Sewage SHARC for its residents' hot water supply.

Per Adera Development president Norm Couttie, Seven35 is the first waste-water heat-recovery project among private multi-unit developments in North America.

(BIV Magazine)




Sewage SHARC

Sewage SHARC Systems in action

The Sail project is a new 172 unit condominium project. It is our largest installation so far and is the highlight of a sustainable community plan at the University British Columbia.

The SHARC produces hot water and contributes to heating the building via radiant floor heating.



Sewage SHARC Systems in action

Inside mechanical room at Adera's SAIL project at the University of British Columbia - Vancouver, BC



Waste Heat Recovery Systems

The False Creek Energy Centre in Vancouver is the first large-scale system for wastewater heat recovery in North America. Its exhaust stacks have been transformed into public art. \$ 45M publically funded project completed 2010.



Compatible Technologies

IWS Impact on Geo-exchange Systems

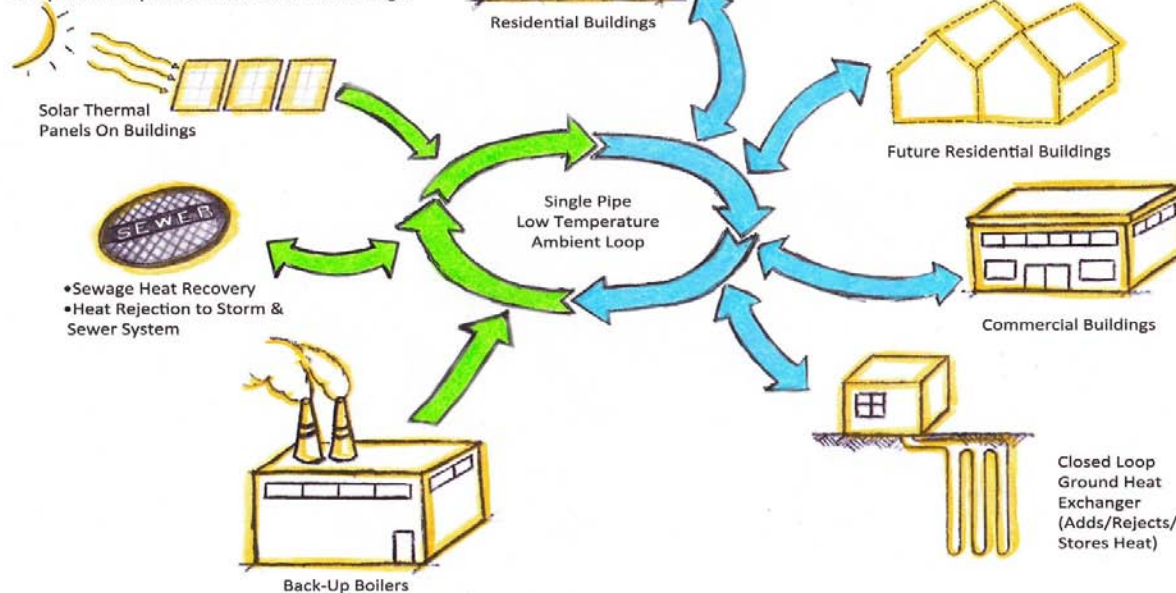
- ♻️ **Reduces drilling requirements 30-50%**
 - 30-50% of the total building energy usage can be recovered from leaving sewage
- ♻️ **Reduce land mass requirements**
- ♻️ **Reduce project payback periods**
- ♻️ **Loop temperatures:** higher in heating & lower in cooling
- ♻️ **Yields Higher heating COP's**
- ♻️ **Yields Higher cooling EER's**



District Energy Systems

Ambient Loop District Energy System

- Simpler, more flexible, more reliable and robust than conventional dual-temperature district energy systems.
- Less capital cost than conventional DES
- Provides flexibility for DES growth; ideal for phased developments
- Ideally suited for multiple sources of renewable low grade heat sources that can also be added incrementally
- Compliments capture of waste heat from sewage.



New Buildings Designed With:

- High performance envelope
- Water-to-water heat pumps connected to ambient loop for heating & cooling & DHW
- Energy & water metering
- Solar thermal on roof tied into building heating & ambient loop.



Sewage SHARC Installations

- ♻️ **Seven35 (60 townhouses) North Vancouver, BC - May 2012**
- ♻️ **Gateway Municipal Theater (50,000 sqft) , Richmond BC - April 2013**
- ♻️ **Sail Condos (172 unit) University British Columbia, Vancouver, BC - Oct 2013**
- ♻️ **District Wastewater Treatment Facility , Sechelt, BC - July 2014**



Upcoming projects

- ♻️ **Seattle Arena & District Energy - WA**
- ♻️ **Fairmont Water Works - Philadelphia, PA**
- ♻️ **Condo/Office Towers (GEOTHERMAL) - Halifax, NS**
- ♻️ **Harmony Village (900 T GEOTHERMAL) – Toronto, ON**
- ♻️ **Canyon Springs (108 unit residential)- Vancouver, BC**
- ♻️ **The Park (38 storey tower) - Burnaby, BC**



Overview & Re-Capping...

The Value Proposition

- ♻️ **70 F discarded water represents a solid business opportunity**
- ♻️ **IWS facilitates reliable and significant energy exchange with discarded water**
- ♻️ **Your imagination will make you money**



What we do...

- ♻️ **System Design**
- ♻️ **Feasibility studies**
- ♻️ **SHARC System Manufacturing**
- ♻️ **Technical Support**
- ♻️ **Service**



About Us



International
Wastewater Systems

- ♻️ **International Wastewater Systems is a team of professionals dedicated to the widespread implementation of Sewage SHARC systems as an alternate energy source. With over 100 years of combined experience in alternative energy projects we are positioned to achieve this goal.**
- ♻️ **It is our mission to provide products of the highest quality and customer service second to none.**




Sewage SHARC

Contact Us



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