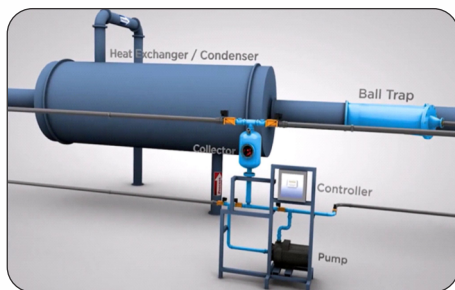
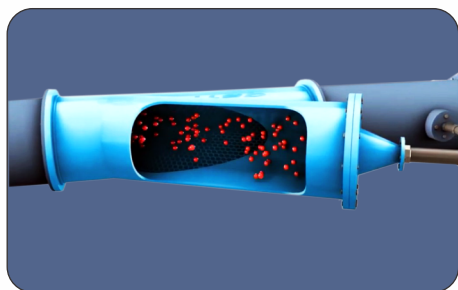
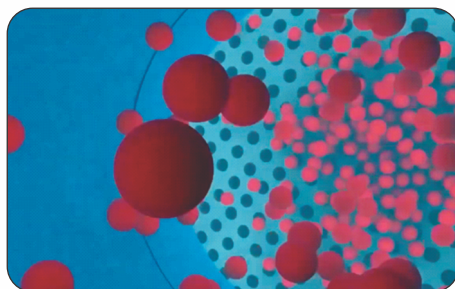




**DYYNARO TECHNOLOGIES**  
"CONSERVE TO PRESERVE"

**OLCTCS**

# On-Line Condenser Tube Cleaning System



Dyynaro Technologies provide customized service solutions for facilities owners to address operating performance, energy efficiency, and environment concerns.

Dyynaro's On-Line Condenser Tube Cleaning System (OLCTCS) provides customized solutions for Water Cooled Condensers / Shell & Tube Heat Exchangers for Chiller, Vapour Absorption Machine in HVAC in Pharma, Dairy, Hotels, etc, and industries like Power Plant, Cement, Paper, Sugar, O & G, and Petrochemical sector, etc.

Dyynaro's OLCTCS is an efficient and reliable way for keeping Water Cooled Condensers / Shell & Tube Heat Exchanger continuously clean and the key to keeping it's operating at peak efficiency.



Heat Exchanger  
Cleaning

Heat  
Recovery

Innovative  
Cooling Tower Technologies

Remote  
Monitoring

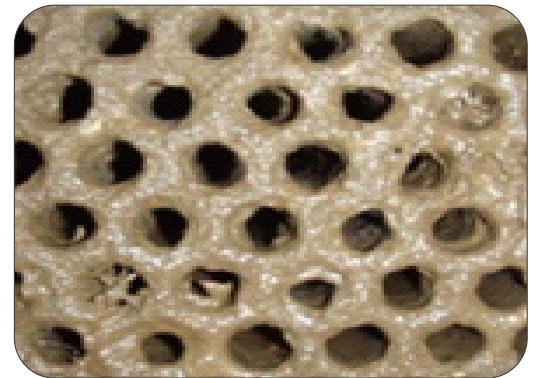
### Keep your HVAC system's heat exchanger working permanently at maximum efficiency

Water-based cooling systems inevitably suffer from fouling at the tube inner wall surface of the heat exchanger, leading to a reduction in efficiency that leads to increased energy use and higher operating costs. Research shows that just a 0.6mm scale layer on condenser tubes reduces chiller heat transfer efficiency by 34% and increases energy consumption by 21%.

The Dyynaro Technologies On-Line Condenser Tube Cleaning System (OLCTCS) is a unique hydro-mechanical cleaning system that operates continuously to keep heat exchanger tube inner wall surfaces completely free from fouling and optimized heat transfer rate.

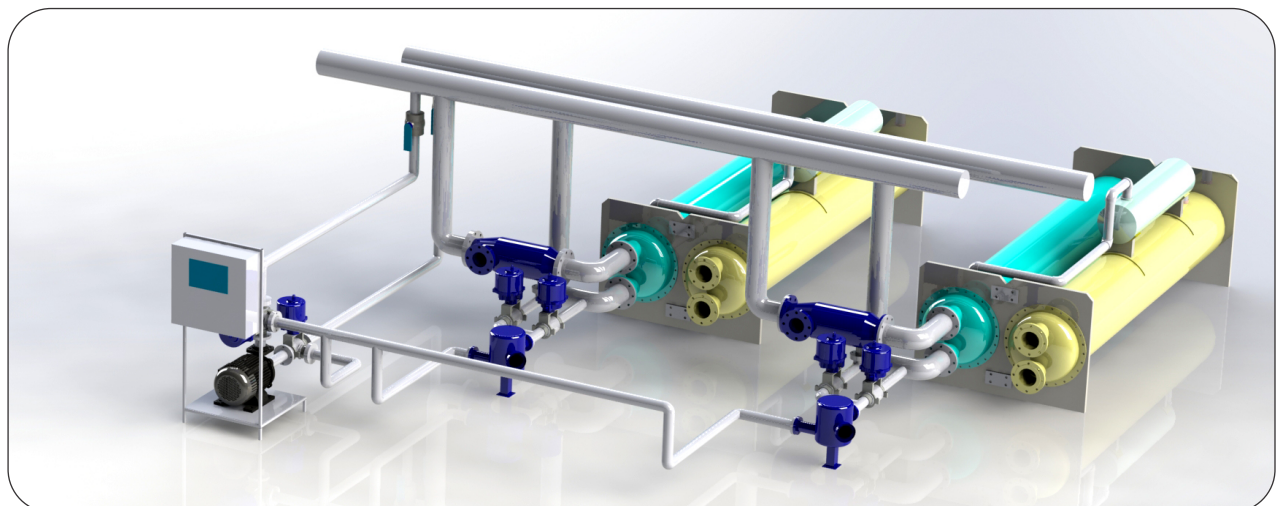
The result: operating capacity and efficiency are constantly maintained at peak levels, reducing overall energy consumption, and saving up to 30%. And there's no need for periodic shut-down of the HVAC system for costly and time-wasting chemical cleaning and huge production loss due to shut-down can be saved.

### The Problem of fouling in the heat exchanger



"Fouling" is an undesirable pile deposit formed inside condenser tubes, sometimes described as thermal resistant on the heat path in the condenser.

The thermal resistance is proportional to the thickness of the deposit and is in inverse proportion to the thermal conductivity of this deposit. In the past, cleaning a condenser involved long shutdowns, harmful chemicals, and ongoing expenses.

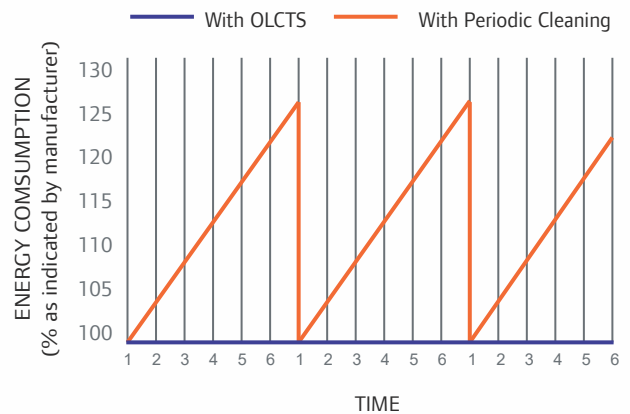


## Dyynaro's On-Line Condenser Tube Cleaning System (OLCTCS)

### The Benefits :

- **Improved Operating Efficiency:** The chiller continuously operates at optimum efficiency, leading to lower energy use, consequent cost reduction, and savings up to 30%.
- **Extended Chiller Life Cycle:** Increasing return on investment, because the compressor never operates beyond its design limits and because condenser tube fouling is eliminated.
- **No Chiller Downtime:** The On-Line Condenser tube cleaning system keeps the condenser tubes permanently clean while the chiller is operating.
- **Low cleaning system operating costs:**  
The sponge balls used in the On-Line Condenser Tube cleaning system are the only consumables needing to be replaced at periodic intervals of 3 months.
- **Lower water treatment costs:** water treatment is only required to prevent scaling of ancillary equipment, leading to cost savings of as much as 50% of the cost of chemicals used for water treatment.
- **Environment friendly:** The On-Line Condenser Tube Cleaning System uses no chemicals means zero chemicals.

### Heat exchanger Energy Consumption

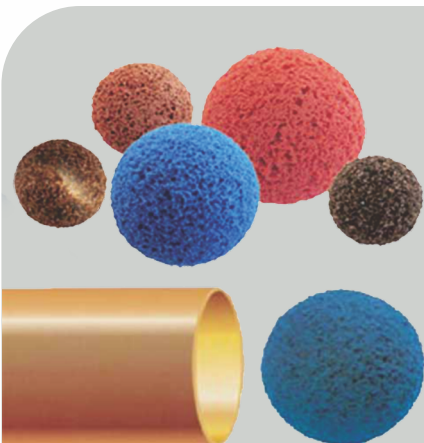


The area bounded by the orange line represents the potential power conservation (up to 30%). This is a significant saving considering that HVAC accounts for approximately 60% of the total electrical consumption of a large building.

Dyynaro has developed a remarkably simple system in which recycled cleansing balls are flushed through the cooling system via a natural water flow, ensuring that unwanted deposits and residue are cleaned before fouling occurs.

With the installation of Dyynaro's OLCTCS, the internal surface of the cooling tubes are guaranteed to remain clean, resulting in improved heat transfer and reduced energy consumption.

The OLCTCS is equipped with a fully automatic PLC based control panel and works continuously while the heat exchanger is operational, eliminating the need for inconvenient shutdowns or costly maintenance.



### How The OLCTCS works

The Dyynaro Technologies' On-Line Condenser Tube Cleaning System features specially developed sponge balls, which are injected into the chiller condensing water flow to provide continuous tube cleaning while the chiller is in operation. The system is quick and easy to install – around 4 hours on a new installation and around 1 day on a pre-existing installation. It is delivered fully pre-programmed, with settings that can, where necessary, be simply and quickly changed to cater to varying water qualities.



## Dynaro Technologies Services "Your Trusted Service Partner"

Dynaro's commitment doesn't over after selling the products, but we provide excellent after sales service support to the peace of mind to our valuable clients. Our technical team is competent to detect any problem and rectify the same promptly.

Dynaro service also includes to advice our client, how to enhance your cooling and heating system to increase their substantial performance. Dynaro's reliability services reduce the risk of breakdowns, improve operation, and extend equipment life.

Dynaro service proposes cost effective ways to optimize the energy efficiency of your existing system and generate immediate savings.

Dynaro service experts can advise the client the various cost effective ways to optimize the performance of the existing system and on how to save energy and eliminating the use of chemicals for water treatment for comfort and safe occupational health environment.



Reliability



Energy



Environment

### Check out our other environment-friendly technologies

- COLTCS – Condense On Load Tube Cleaning System
- iCEMS – intelligent Chiller Energy Monitoring System
- Innovative Cooling Tower Technologies



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"CONSERVE TO PRESERVE"

17, Shivanand, Jashodanagar - Vatva Road,  
Vatva GIDC, Ahmedabad – 382445, Gujarat, India  
☎ +91 91068 10461 ✉ info@dynaro.com 🌐 www.dynaro.com

Dynaro Technologies optimizes the performance of heat transfer equipment around the world. A business of Dynaro Technologies, the leader in creating and sustaining safe, comfortable, and energy efficient environments, Dynaro Technologies offers a broad portfolio of advanced controls and cooling systems, comprehensive services, and parts. For more information, visit [www.dynaro.com](http://www.dynaro.com).

Dynaro has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.



Produced on recyclable paper, using environmentally friendly  
print practices that reduce waste.

## Rely on Dynaro Technologies



We are always there to help and support for any of our services and product. We are just a call away and technical support will assist you shortly. We are also expanding our footprints in India, Middle East, Europe, and other countries.

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- Knowledge of the history of your equipment and controls
- In-depth expertise in servicing your equipment and controls
- Access to the latest technology and support

### Dynaro Technologies Service Products

- Installation Support and Assembly Supervision
- Startup Services and Guaranteed Performance
- Performance Check, Inspection and Maintenance
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- Energy Audits
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