DeCaIon™

ULTIMATE SOLUTIONS FOR COOLING WATER MANAGEMENT

PATENTED!

- Without descaling chemicals, biocides, and corrosion inhibitor
- Carbon Emission Reduction in compliance with ESG

ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026
Certificate Number: 9565-Q15-001
ISO 9001:2015

bizSAFE 3

CE
CE No. AK 50394764 0001

Revolutionary Approach to Cooling Water Management through Patented Chemical Free DeCaIon™

DeCaIon™ (DCI)

DeCaIon™ (DCI) is a revolutionary approach to eliminating scale, preventing corrosion and bio-fouling automatically in cooling water systems. Through applied electro-chemistry and an intelligent controller, DCI removes water hardness from cooling systems without the need for hazardous chemicals. The innovation provides a green technology solution to scaling and corrosion in large building HVAC systems and industrial chiller circuits. The DCI system removes existing scale deposits and prevents further scale formation by driving a non-spontaneous redox reaction which precipitates $CaCO_3$ and $Mg(OH)_2$ at the cathode. The main culprits of scaling, Ca^{2+} and $Mg^{2+,}$ can then be dumped off the recirculating cooling water. SiO_2 is also removed by co-precipitation. The system operates continuously so design heat transfer efficiency is maintained at all time. The requirement for routine shut downs is reduced considerably and the periodical chemical descaling is no longer required. Water blow-down quantities are also substantially reduced.

No More Hazardous Chemicals

Conventional method uses eco unfriendly 100% chemical approach. But scale deposits still build up on heat exchanger tubes, pipes and cooling towers which will then require hazardous chemical cleaning and waste disposal. The blow-down containing chemicals from cooling tower pollutes the waterways. On the other hand, pseudo-scientific Non-Chemical Devices yield unsatisfactory results.

This compromised situation cannot be solved by continuing the same practice. This is why eco-friendly **DeCaIon™ (DCI)** System enhanced by **CataGreen™ (CG)** is now introduced to circumvent the problems of the above approaches.

Heterotrophic and Legionella bacteria can now be consistently controlled within the limits.

Before DCI
Treatment-tube side

9 days after DCI
Treatment-tube side

The Ultimate Solution to Scaling, Corrosion and Fouling Problem

DCI empowered by CG, removes scales by electrolysis according to:

- $Ca^{2+} + HCO_3^- + OH^- = CaCO_3 + H_2O$
- $Mg^{2+} + 2OH^- = Mg(OH)_2$

The main scaling culprits in water system i.e., Mg^{2+} and Ca^{2+} are dissolved from the pipes, heat exchanger and cooling tower, deposited on cathodes, dislodged, and blown down automatically. Disinfectant is also produced. Anti-scalant, biocides and corrosion inhibitor are no longer needed. CataGreen™ and DCI act in concert to provide a **CHEMICAL FREE APPROACH!** In addition, hard, glass-like SiO_2 scale can now be removed and prevented.

What does DCI do?

- DCI dissolves and removes existing hardness and silica scales and prevents future occurrence continuously.
- DCI + CG enhances the overall performance by preventing bio-fouling effectively. Heterotrophic and Legionella Bacteria shall be less than 100,000 cfu/ml and 10 cfu/ml respectively.
- DCI removes Dissolved Oxygen and reduces ORP.
- DCI creates an alkaline environment to control corrosion and, also to increase Silica solubility.

Awards Winning Technology

ASEAN ENERGY AWARDS 2023

ASEAN ENERGY EFFICIENCY & CONSERVATION BEST PRACTICES AWARDS 2023

WINNER

ENERGY EFFICIENT BUILDING - SPECIAL SUBMISSION - APPROPRIATE TECHNOLOGY

We are honored to receive this award on the Awarding Ceremony held at Bali, Indonesia on 25th August 2023 in conjunction with 41st ASEAN Ministers on Energy Meeting and ASEAN Energy Business Forum 2023 in Singapore.

ASEAN Energy Award 2023 in Bali

ASEAN Energy Award 2023 by SGBC

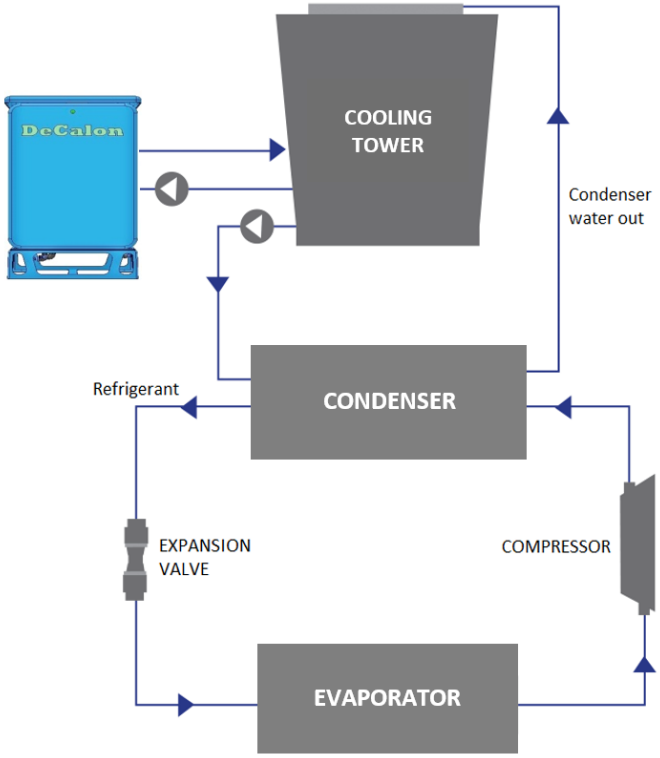
Industrial Chiller / HVAC System

Scale removal in condensers and cooling towers, by DCI, reduces energy, water, maintenance, and chemical costs. In addition, higher product yield and quality can be realized due to more efficient cooling.

A significant improvement in heat transfer in HVAC System yields a lower condenser approach temperatures and provides a higher chiller efficiency.

Easy to use Automation

- The intelligent controller auto regenerates and maintains electrode performance
- Auto Scale Dislodge and Discharge
- Auto Conductivity Control
- Auto Amperage Control
- Communication Capabilities

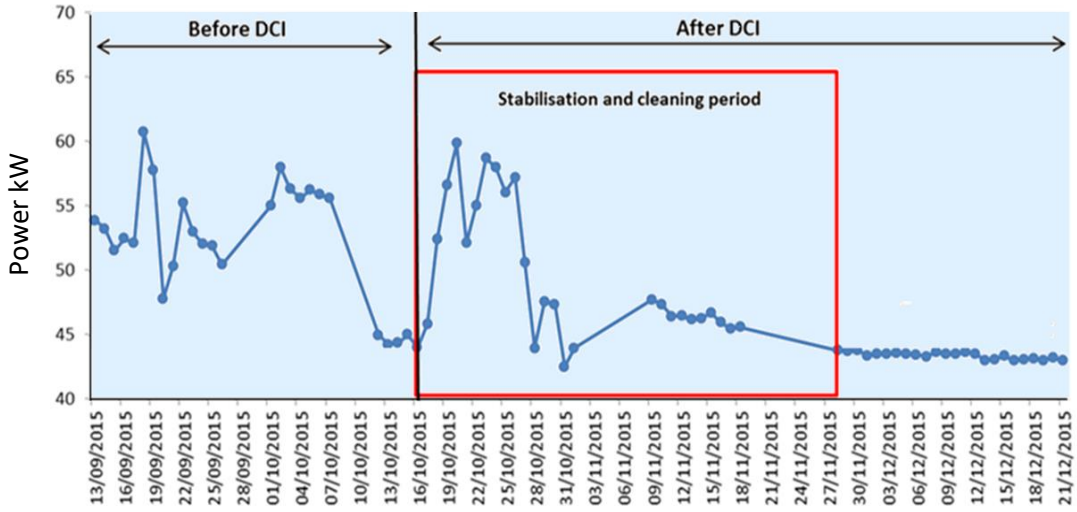


Site Performance: Some examples amongst others

SIMTech-A*STAR Singapore

An independent party, SIMTech-A*STAR Singapore (Website: www.a-star.edu.sg) was engaged to evaluate the performance of DCI (Case Study Code: I15-E-125W). The followings were prepared and presented by them.

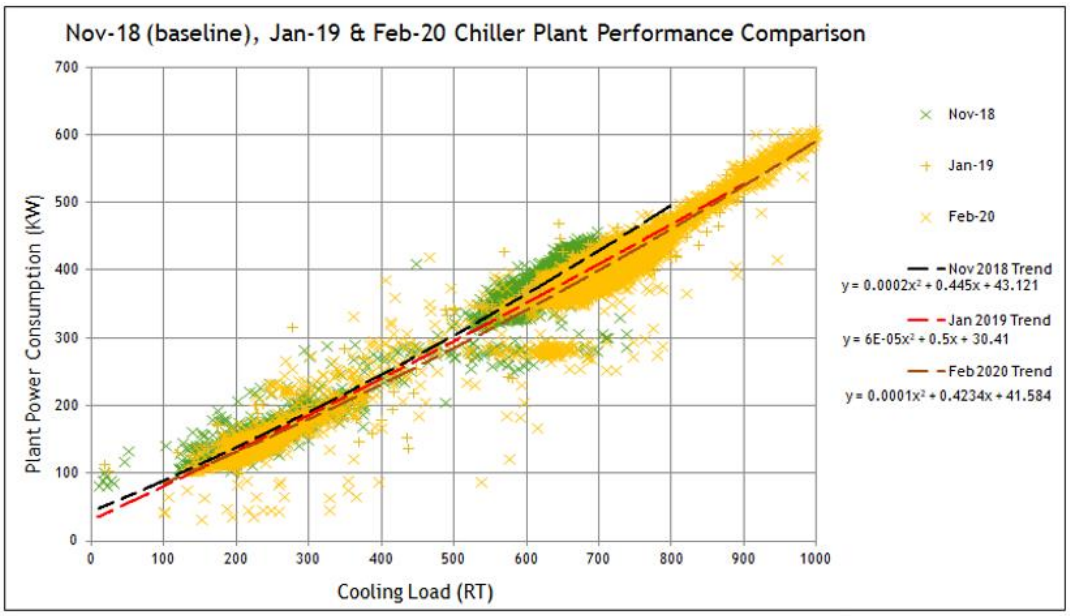
Total Power Consumption of the 2 Cooling Packages (WCPU)



Power Saving : 17.5%

Keppel Bay Tower Singapore

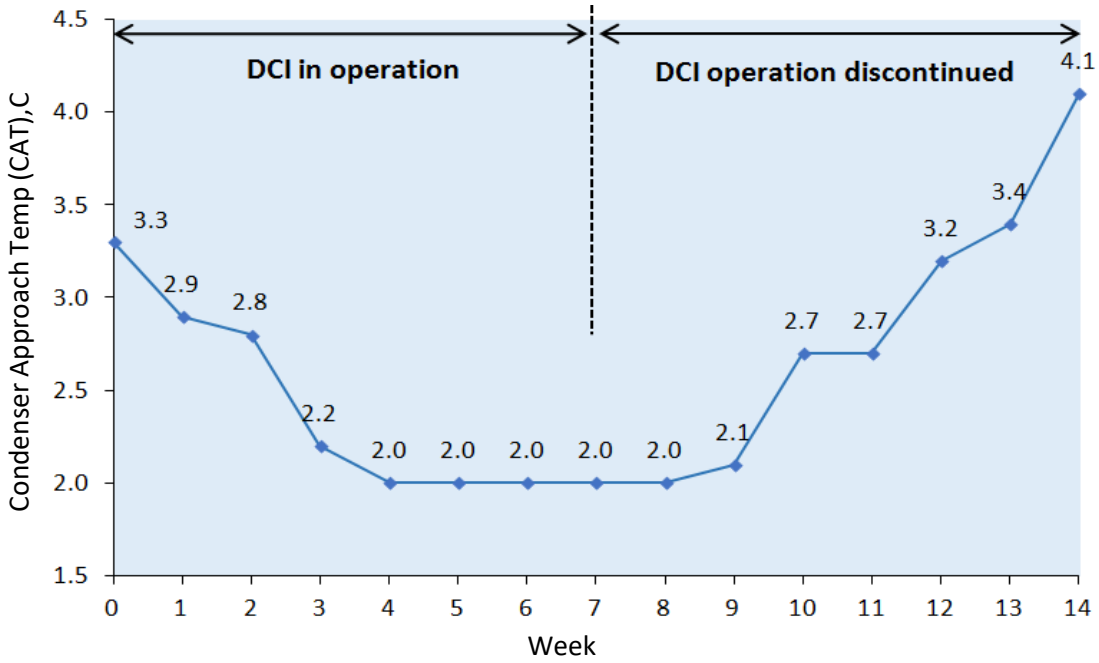
Environmental & Water Technology Centre of Innovation (EWTCOI) was engaged to evaluate the performance of DCI system independently.



Energy Savings	: 7.10%
*Nov-2018 (Baseline-No DCI) @ 70% load	: 0.619 kW/RT (Baseline)
*Jan-2019 @ 70% load after 2 months	: 0.584 kW/RT, Power Saving = 5.65%
*Feb-2020 @ 70% load after 14 months	: 0.575 kW/RT, Power Saving = 7.10%
Water Savings	: 81.4%
COC	: 39
Corrosion	: Mild steel = 1.18 mpy, Cu = 0.03 mpy

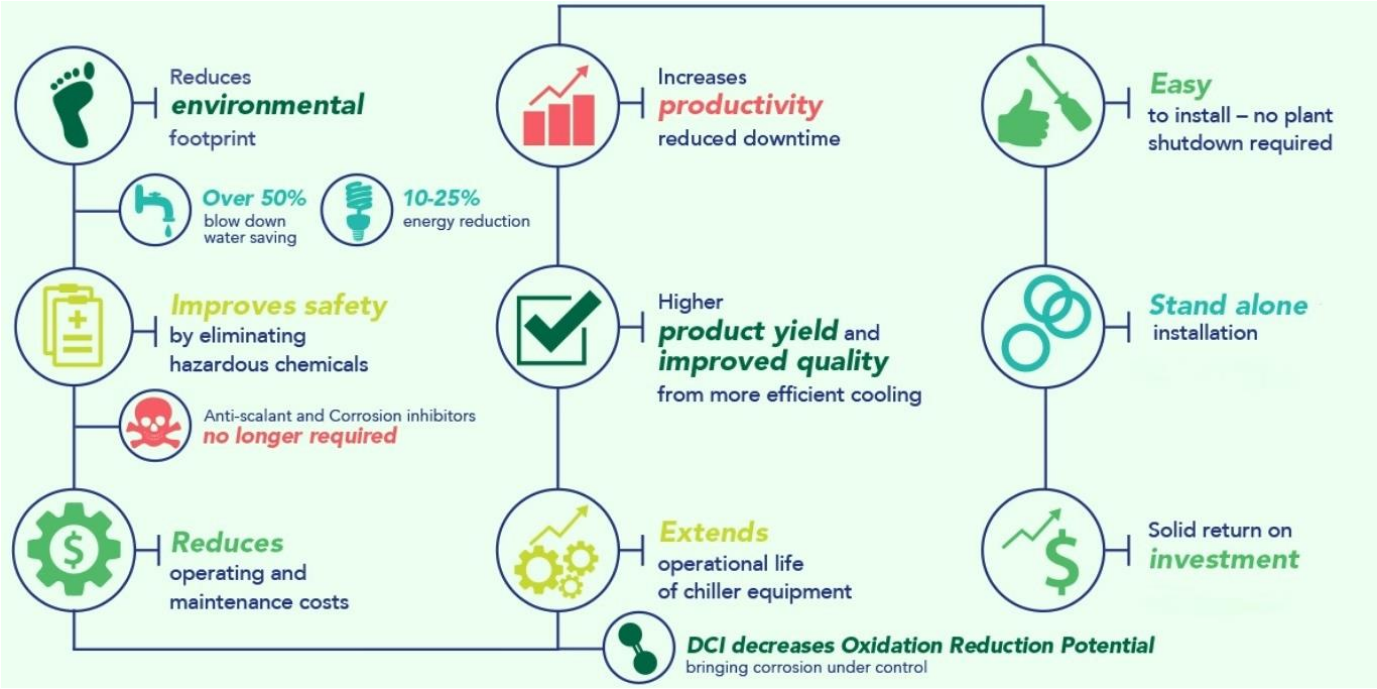
A Syrup Factory in Malaysia

Condenser Approach Temperature increased when DCI operation was stopped after seven weeks.



Power Savings	: 16.9%
Water Savings	: 88%

Benefits of DeCalon™ (DCI)



General Specifications

Dimension (mm) – overall	W = 700 D = 380 H = 1300
Weight	~55kg
Max Power Consumption	~600W
Max Operating Amp (DC)	15 A auto adjustable
Housing Enclosure	IP54
Pipe & Fittings for Pump	PVC
Housing, Material of Construction	FRP
Max Flow	2.25m³/h
Operating Pressure	1 bar
Input Power Source	Single Phase AC 110/240V, 50/60Hz

Specifications subject to change without notice.

For more information, please contact:

Innovative Polymers Pte Ltd (Manufacturer)
Tel: +65 6844 0805
www.decaion.com.sg

Mr. Mark Choo / Mr. B.K. Ng
Mobile: +65 8581 2974/ +65 9819 5194
Email: mark.choo@innovativepolymers.com / bk.ng@innovativepolymers.com

Our Distributor: