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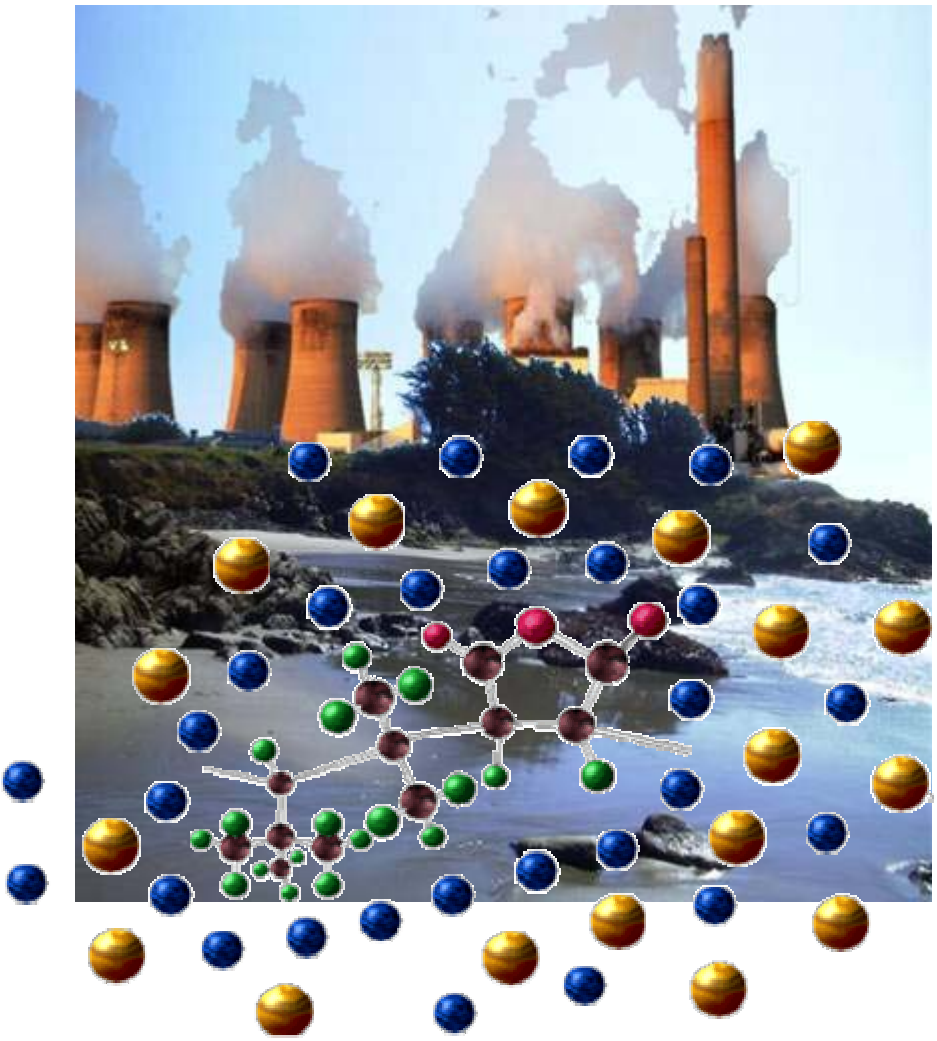

NEW GENERATION SCALE INHIBITORS

Water Services LTD

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Water Services Ltd PRESENTS HERE the 21st century water treatment chemicals, and especially:

New generation scale inhibitors

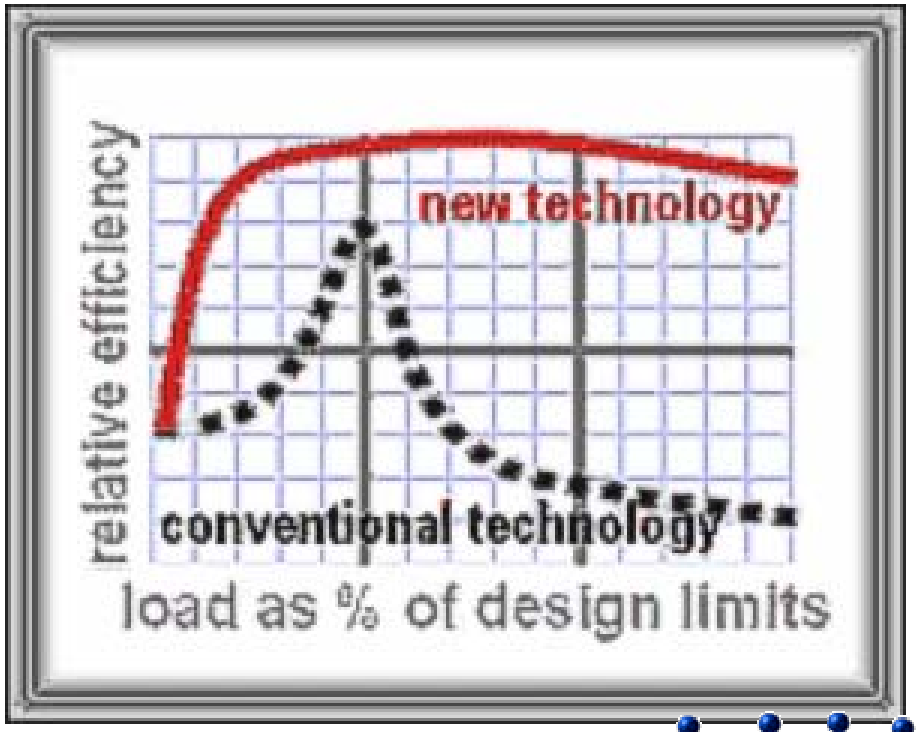
The new age scale inhibitors, against the conventional non stoichiometric ones, present :

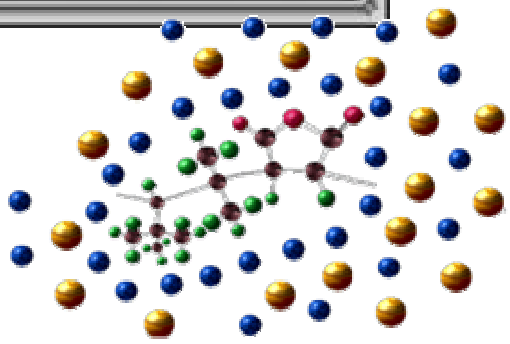
1. Far more higher efficiency.
2. Faster scale inhibiting properties development, as the operational load increases from zero to the maximum design load (p.e. ASME Standards) .
3. Unsignificant capability loss, when operating load overpasses the product design limits, up to 300%.

The different approach of reaction between the conventional and the new technology non stoichoiometric scale inhibitors is presented at the following chart

Above difference is due to new design of polymeric chains, equipped with functional groups, presenting sequestering and crystal distortion capabilities, within the same polymeric molecule.

The total reaction is of non stoichiometric type.





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WS® 8640
Scale inhibitor

Use

WS® 8640 is a synergistic blend of maleic acid polycarboxylates copolymers and organic sequestering agents..

It is recommended for deposit inhibition in industrial water systems like recirculating cooling systems, cooling towers, waste water streams facing deposition problems etc.

Almost mineral scales can be inhibited by WS 8640 like Calcium Carbonate, Calcium Sulfate, Iron and Manganese based
scales, CaF2 etc.

Technical characteristics

WS 864X' products have been designed to protect unstable cooling water systems.

It is a mater of **new generation chemicals**.

We characterize as unstable the cooling systems, where the cooling load fluctuates more than 25%, between minimum and maximum yearly operating.

Normally such a system presents low inertia to absorb those load variations, and additionally the total water volume is low (normally below 10.000 cubic meters).

The unstable systems are normally operating in elevated pH, high concentration factor. Common problems are hard scale deposition, moderate corrosion, frequent acid cleaning requirements, microbiological control upsets.

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Features

WS® 8640 is a very concentrated, synergistic blend resulting in low dose rates and normal use cost.

It is Chlorine stable, but not Chlorine Dioxide resistant.

Under such conditions WS 8641 should be preferred.

WS® 8640 is suitable for use in waters containing high solids amounts.

WS® 8640 has low Phosphorous content, making its use acceptable in environmentally sensitive areas.

Feeding

Continuous feeding at 5-25 ppm of **WS® 864**0 is recommended for most applications. However, optimum dosage will depend on the nature and severity of fouling and the operational parameters of the cooling system.

WS® 8640 is an acidic material and therefore corrosion resistant feeding equipment should be used.

When application occurs to unstable or load fluctuating cooling water system, analog feeding device is recommended.

Application limits

WS® 8640 can be freely used under extremely severe and difficult operating conditions, in hard or soft, city, ground or surface or even in recycled waste, even in sea water make-up systems.

Can be used in pH values up to 9,4, hardness presence up to 2000 ppm as CaCO3, and specific conductance above 50.000 microsiemens.

Under such extremely conditions, please contact us as to define the proper application dosage.

Need more details? Contact us!

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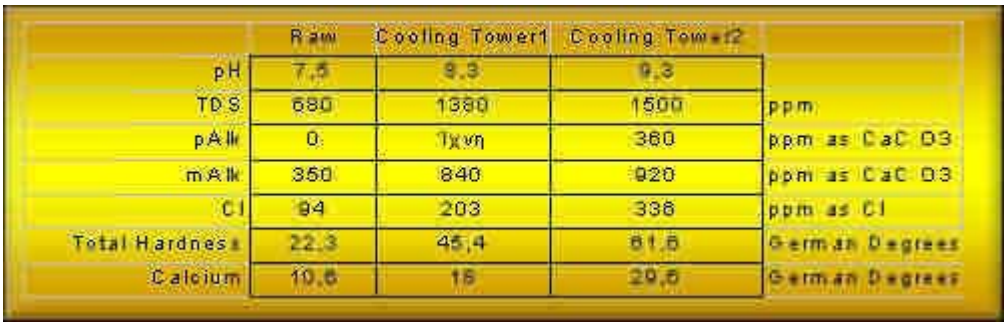
Reference 1



	Raw	Cooling Tower1	Cooling Tower2	
pH	7,5	9,3	9,3	
TDS	680	1380	1500	ppm
pAlk	0	Τχνη	360	ppm as CaC O3
mAlk	350	840	920	ppm as CaC O3
Cl	94	203	336	ppm as Cl
Total Hardness	22,3	45,4	61,6	German Degrees
Calcium	10,6	16	29,6	German Degrees

Conventional scale inhibitors cannot be effective over pH 8,8 and total alkalinity values over 400 ppm without acid feed. The total hardness of more than 1000 ppm as CaCO3 is also prohibiting.

- Use of **WS® 8640** at 25 ppm.

Temperature and pressure decrease is observed on the Freon circuit in both systems , after 25 days of application.

Reference 2

	MU	Cooling Towe
TDS	180	1377
pH	8,2	9,3
pA	0	125
mA	85	515
Cl	10,5	178,5
Total Hardness	0,2	3,2
Calcium	0,1	1,6

Concentration factor estimated as about 16

Maximum temperature (skin temperature) : about 700 °C

Shut down requirements every three weeks for repairs of damaged internally cooled devices.

On-line chemical cleaning under weekly basis. (Hydrochloric acid injection).

- Use of **WS® 8640** at 50 ppm.

No shut-down for three months period. No acid injection at the same time.

Feeding of **WS® 8640** was interrupted for treatment efficiency confirmation.

Necessity for shut-down was arise seven days after the interruption of the treatment.

Reference 3

Cooling tower operating with sea water make-up.

	Make up water	Cooling Tower
pH	7.4 – 7.9	8.9 – 9.4
p-ALK as CaCO3 ppm	nil	100 - 140
M-Alk „ „	400 - 450	650 - 900
T.Hardness „ „	6000	9000 - 10000
Ca. Hard „ „	1250	1900 - 2000
Mg.Hard „ „	4750	round 8000
Chloride as Cl ppm	18000	32000 - 36000
Sulfate	800	1700- 2000

Need more details? Contact us!

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Why use WS®8640 in your cooling system.

- Protect your cooling tower circuit from deposits and corrosion. Eliminates acid cleaning, production losses and maintenance requirements.
- Limited monitoring requirements and zero system adjustments.
- Simultaneous scale and corrosion inhibition.
- Conservation of water due to high cycles of operation (normally 16).
- We can use quite any available water source, including hard, ground, surface or clarified waste water.
- Minimal personnel attention. Absolutely safe.
- All organic, non polluting at all product, safe for the personnel, the plant and the environment.
- Negligible cost.

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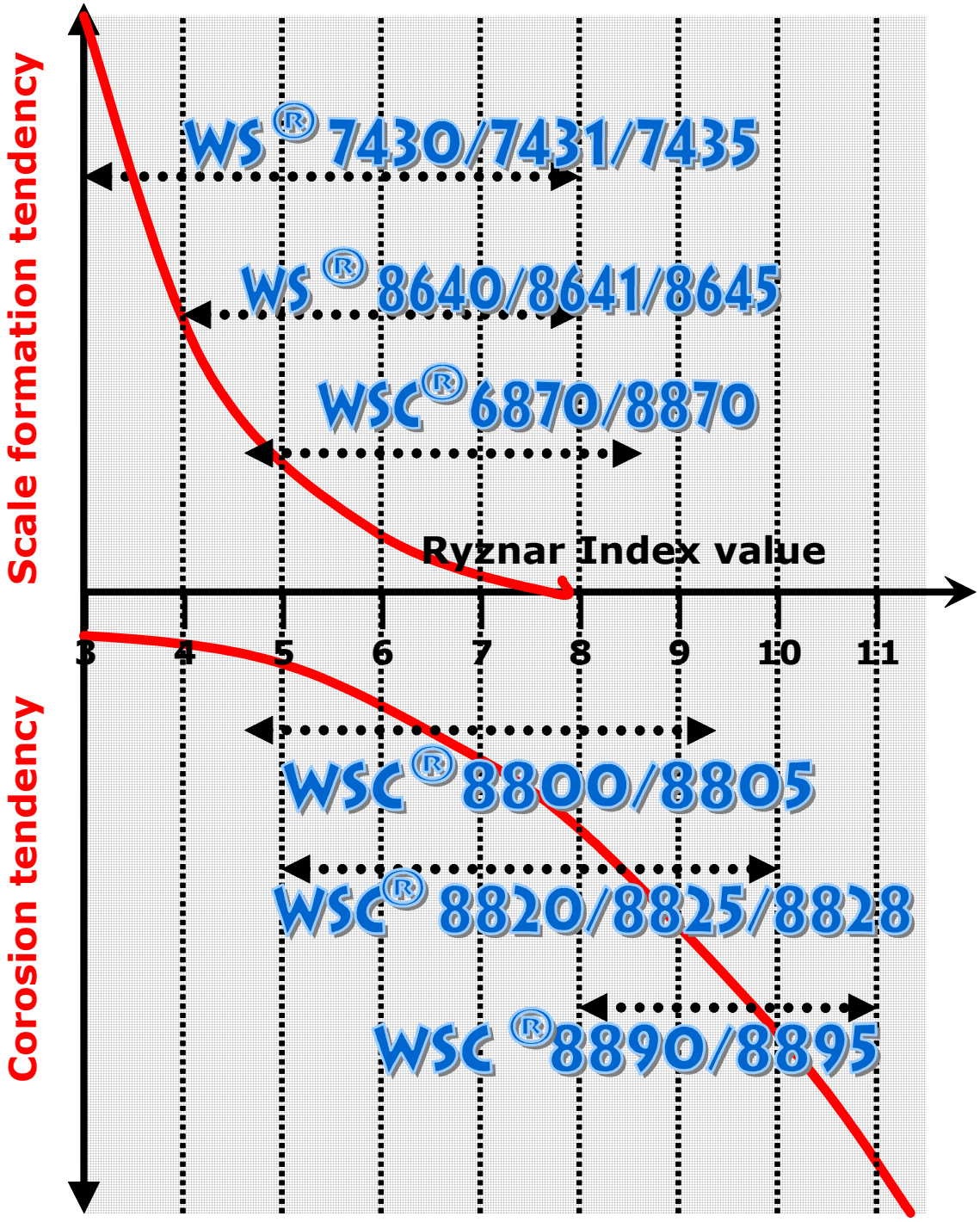
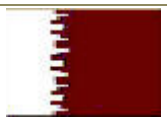
Cooling water

selection of scale/ corrosion inhibitor



Water Services LTD

Our representatives:

Country	Company
 Malta	TFC LTD Triforce Ltd., 42, Lord Byron Str., Naxxar NHR06 MALTA
 India	AFWTPL Aqua Filsep Water Treatment Pvt. Ltd.
 Iran	ربدت ؛قسدنه
 Egypt	Egyptian Oil & Gas Services
 Jordan	ALGHANEM TRADING & CONTRACTING CO LTD.
 Qatar	MARS
 Saudi Arabia	

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