



WEST COAST WATER SOLUTIONS

A decorative graphic on the left side of the slide consisting of white lines and circles on a blue gradient background, resembling a circuit board or a stylized tree structure.

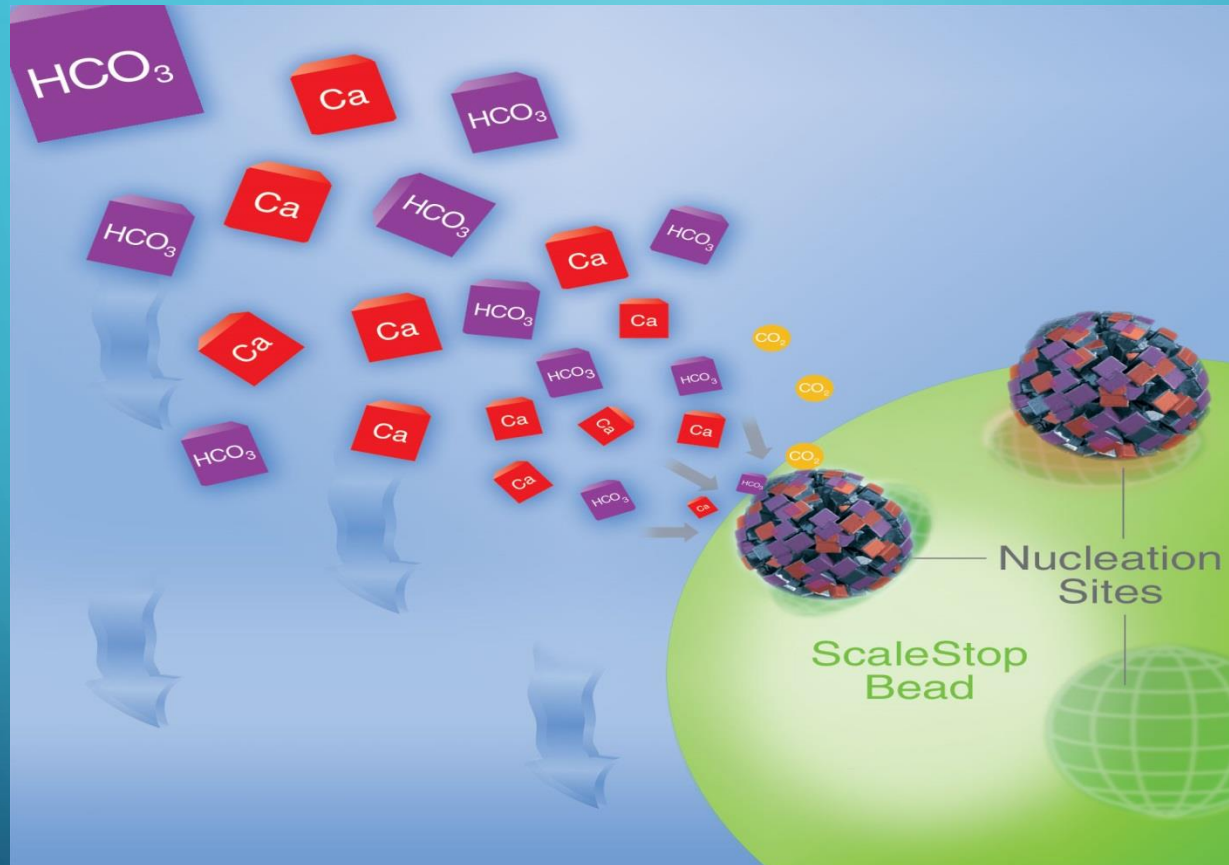
Template Assisted Crystallization

**A No Salt, No Chemical, Non-
Backwashing, Zero-Discharge
Alternative to Softening**

Technology Breakthrough

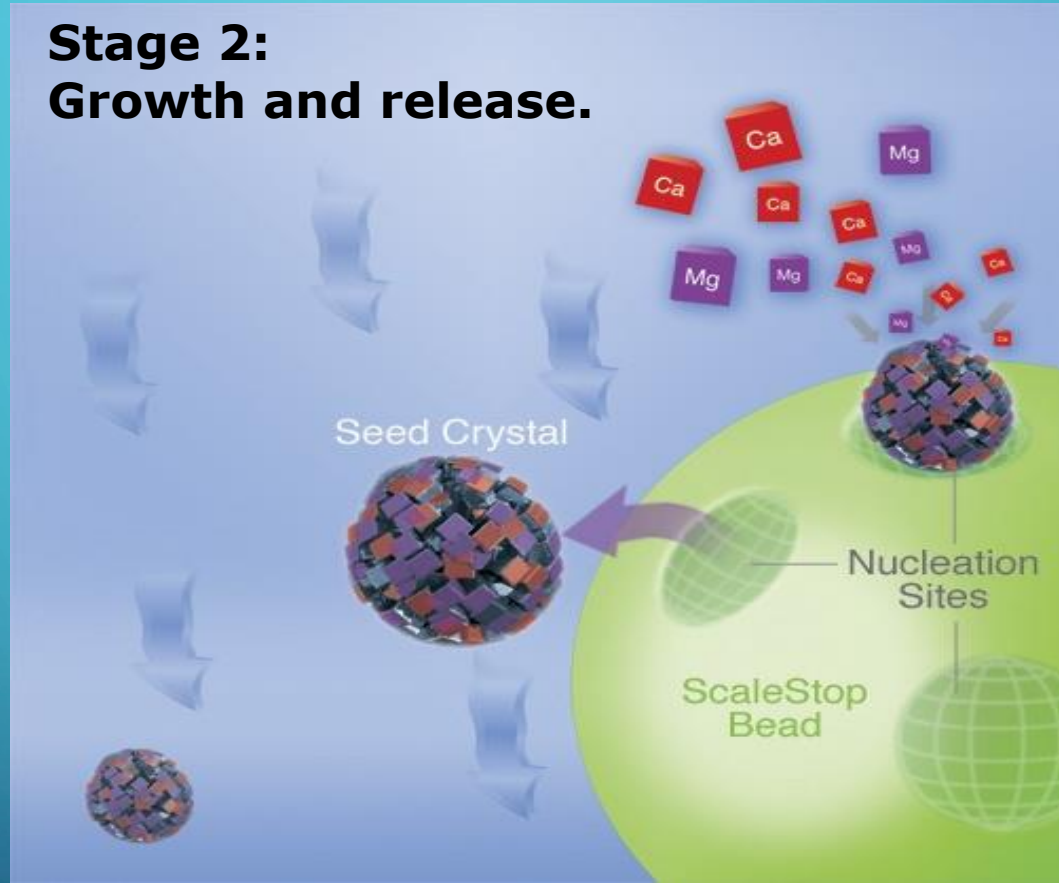
- Recently recognized as a new technology, Template Assisted Crystallization (TAC) offers the first proven effective *and* consistent chemical-free scale prevention method.
- TAC technology converts hardness minerals into harmless, inactive microscopic crystals.
- TAC – Registered Trademark

HOW TEMPLATE ASSISTED CRYSTALLIZATION WORKS

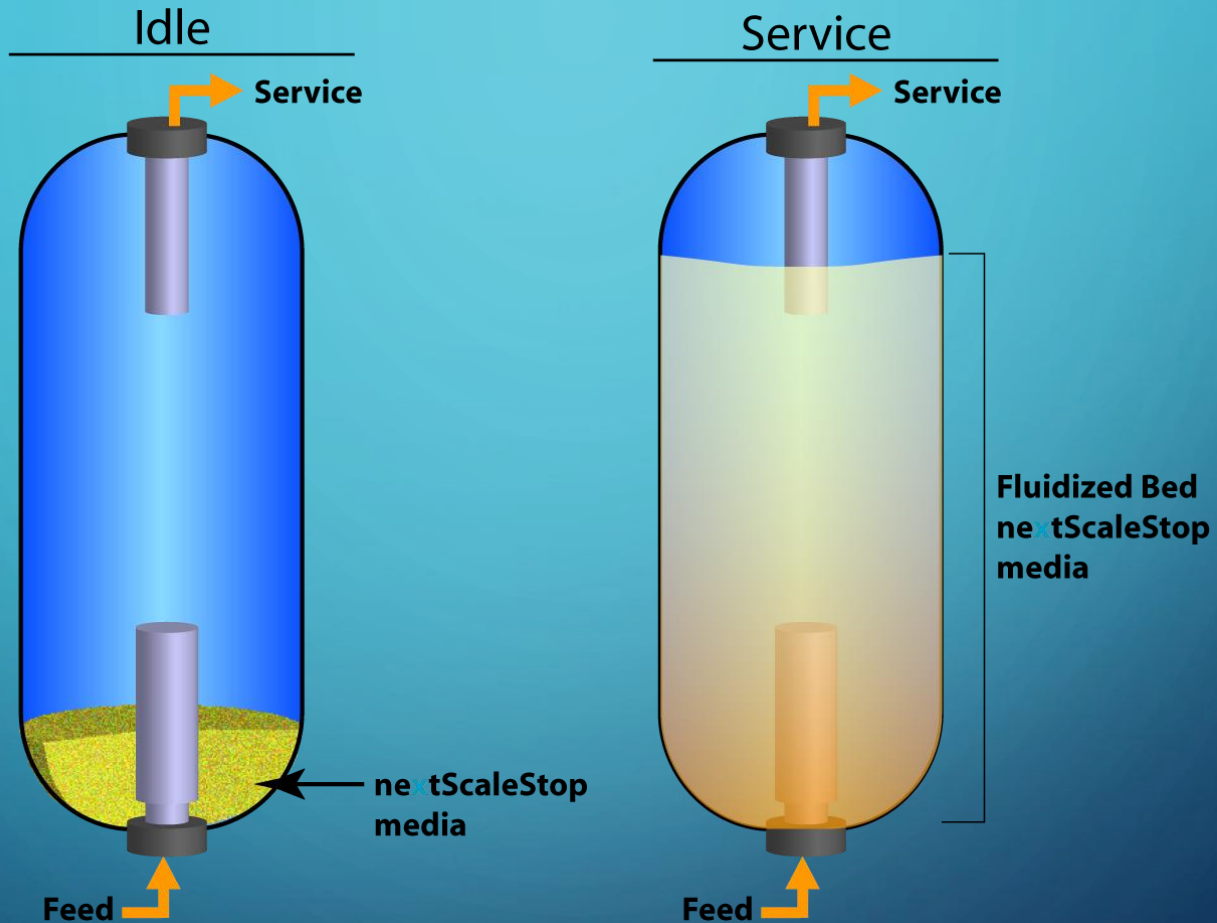


HOW TEMPLATE ASSISTED CRYSTALLIZATION WORKS

Stage 2: Growth and release.



ANTI SCALE SYSTEM CUTAWAY



ANTI SCALE ADVANTAGES

- **Consistent scale control performance**
- **No salt or chemicals required**
- **Residential and commercial applications**
- **Economical and efficient**
- **Maintenance free**
- **Retains “Beneficial Minerals”**
- **No discharge**
- **Compact**

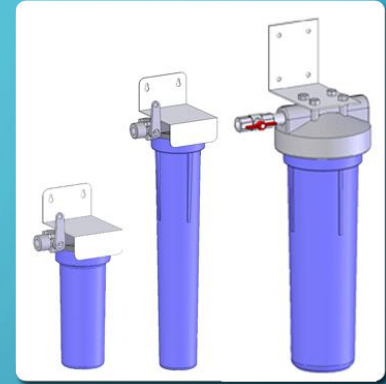
FOOD SERVICE

- **Convection Steamers and Combi-ovens**
- **Flash Steamers – Easier to clean only.**
- **Proofer Ovens**
- **Coffee Brewers**
- **Espresso Machines**
- **Post Mix**
- **Dishwashers – Chemical compatibility**

CARTRIDGE TYPE POU SYSTEMS

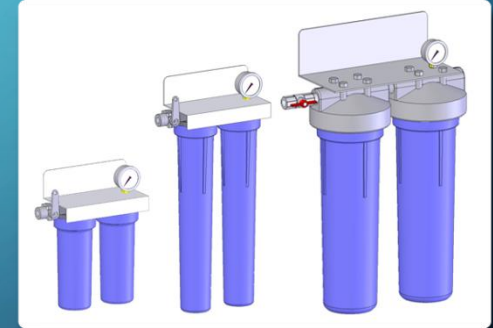
ScaleStop Only

(1, 2 & 4 GPM systems)



ScaleStop and Carbon Systems

(1, 2 & 4 GPM systems)



COMMERCIAL, HOSPITALITY AND AGRICULTURAL POE WATER TREATMENT

- **Piping systems – scale prevention**
- **Boilers - scale prevention**
- **Cooling towers – scale prevention**
- **Tankless water heaters – scale prevention**
- **Solar heating systems – scale prevention**
- **Injection molding equipment – scale prevention**
- **Distiller heating chamber – scale prevention**
- **Irrigation system spray head – scale prevention**
- **Humidifier / evaporator – scale prevention**
- **Misting systems – scale prevention**

TANK TYPE POE SYSTEMS

Size	Service Flow
NSS 744	10 gpm
NSS 844	12 gpm
NSS 948	16 gpm
NSS 1054	20 gpm
NSS 1252	30 gpm
NSS 1465	50 gpm
NSS 1665	75 gpm



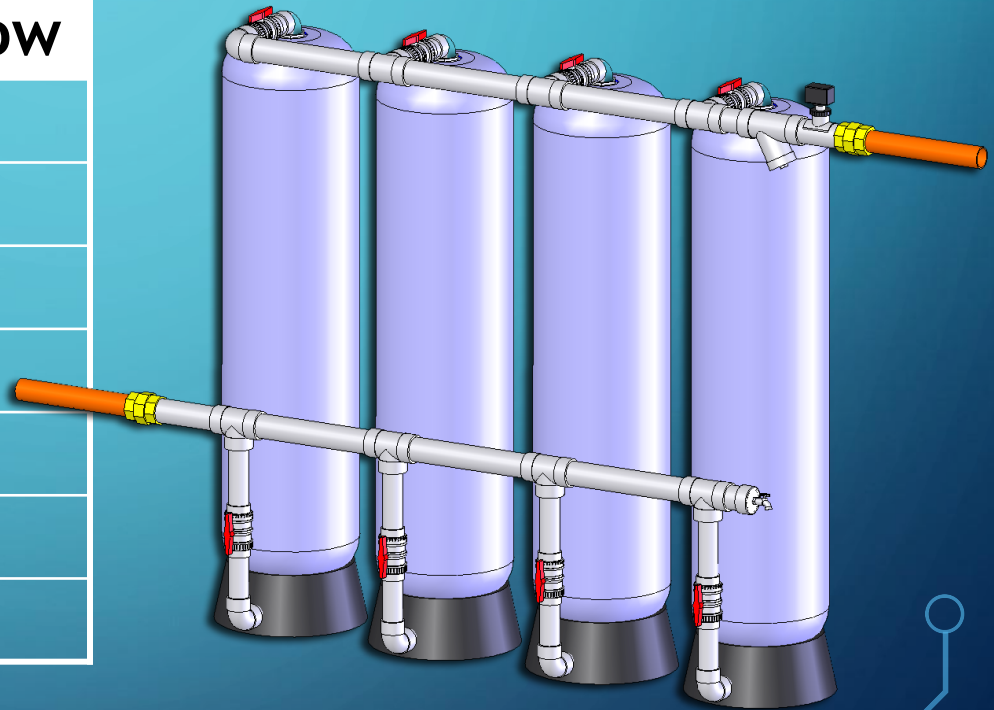
NSS 1054



NSS 1665

HIGH FLOW POE SYSTEMS

Size	Service Flow
NSS 2x1465	100 gpm
NSS 2x1665	150 gpm
NSS 3x1665	225 gpm
NSS 5x1465	250 gpm
NSS 4x1665	300 gpm
NSS 5x1665	375 gpm
NSS 6x1665	450 gpm



The background is a blue gradient. In the corners, there are white line art elements resembling circuit boards or neural networks, with lines and small circles connecting them.

CASE STUDIES

RESTAURANT EQUIPMENT

CONCORDIA ESPRESSO MACHINES

Background

Location	Lombard, IL and Tucson, AZ.
Hardness	High
Water Usage	Low
Equip. History	Cuno systems with WAC H form resin prevented scale but caused corrosion/pitting of solenoid valve.

Anti Scale Data

Inspected @ 6 months and 12 months.	No scale accumulation. No Corrosion
Other:	Concordia is now private-labeling anti scale and providing it with all of their equipment



RESTAURANT EQUIPMENT

GROEN COMBI-OVEN, MODEL HY12YE

Background

Location	Sheraton-Albuquerque Convention Center
Hardness	35 grain/gal
Water Usage	Approx. 200 gpd
Equip. History	Chemical de-scaling required every 3-4 weeks. Annual boiler replacement.

Anti Scale Data

Inspected @ 9 months	No scale accumulation. Boiler operating perfectly.
11 months.	Water level probe coated with crystals causing probe malfunction. The crystals were removed by wiping with a rag. Five minutes service time. 5 years consistent performance.
Other:	The service company involved calls One Flow the "Miracle Filter". They are now installing One Flow on all of their equipment.



TANKLESS WATER HEATERS

BRADFORD WHITE/ RINNAI 199,000 BTU COMMERCIAL

Background

Location	Middleville, MI
Hardness	28 -31 grain/gal
Water Usage	Approx. 200 gpd ASHRAE Protocol 4 people
Equip. Settings	2 Systems set at 190 degrees to accelerate testing. One Treated, one Control

Test Data

Control unit	Drop in efficiency noticeable after one week. Complete system shut down due to scale at 2 weeks.
3 Months	Second Control unit fails after 2 weeks. Anti Scale treated system shows no measurable efficiency loss.
Ten Months	After second control unit failed in the same time period as the first. No further controls were tested. The Anti Sale protection remained operating and efficient for 10 full months in this very demanding test (22 times longer than the control).



interior



exterior

REVERSE OSMOSIS

PRETREATMENT, EL CAJON, CA

Background

<i>Location</i>	<i>El Cajon, California</i>
<i>Hardness/TDS LSI/Stiff Davis</i>	<i>15 grain / 485 mg/l .33 / .66</i>
<i>RO Config</i>	<i>6 - 4040 elements - 45% recovery Model # RO10800G-FL</i>
<i>Equip. History</i>	<i>Installed May 2006. Produces 5000 gallons of permeate per day.</i>

Anti Scale Technology Data

<i>Permeate TDS</i>	<i>6 ppm, (98.7 %rejection)</i>
<i>Permeate Flow</i>	<i>6 gpm, unchanged from start-up</i>



HOTEL CASE STUDY-1

EMBASSY SUITES HOTEL

Background

Location	Tempe, AZ
Hardness	12 grains
Problem	Constant scale buildup led to regular boiler failures, inconvenient downtime and expensive service requirements.
Solution	The domestic hot water supply has been treated with Anti Scale for the past 6 years



HOTEL CASE STUDY-1

EMBASSY SUITES HOTEL-CONTINUED

OCT-06-2006 13:32 From:MC SERVICE 8055793405 Tel:408 3564068 P.1/1

ARIZONA BOILER CO., INC.
8282 N. 75th AVE.
PEORIA, ARIZONA 85345
(603) 979-3301
(603) 979-3666 FAX

INVOICE

DATE	NUMBER
04/19/06	0615748-IN

CUSTOMER ACCT# E550
INVOICE DUE 5/19/2006
FOR JOB Q610
JOB LOCATION
PURCHASE ORDER # GREGG JOSEY

OUR TERMS ARE 30 DAYS
ON ALL OPEN ACCOUNTS.
All other invoices are due
upon receipt.

received
4-22-06

EMBASSY SUITES
ATTN: ACCOUNTS PAYABLE
4400 S. RURAL RD.
TEMPE, AZ 85282

Quality Service From Arizona's Largest Since 1960

DESCRIPTION	QUANTITY	PRICE	UNIT	GROSS AMOUNT
TOTAL CONTRACT	0.00	625.400	EA	625.40

OUR SERVICE TECHS REMOVED HEADS & O RINGS FROM RBT 8800 SERIES BOILER. THEY INSPECTED THE TUBES FOR ANY SIGNS OF WATER CORROSION OR SCALE BUILD UP. FOUND TUBES TO BE IN EXCELLENT CONDITION WITH NO SCALE BUILD UP. REPLACED O RINGS WITH NEW RBT8800 O RING KIT. RE-INSTALLED HEADS & PIPING. TURNED BOILER ON, CHECKED FOR ANY SIGNS OF LEAKING. NO LEAKS FOUND, BOILER IN OPERATION, TAXES INCLUDED IN QUOTE.

PLEASE REMIT TO:
8282 N. 75th AVE
PEORIA, AZ 85345

PLEASE READ IMPORTANT INFORMATION
Fast due invoices are subject to a service charge of 1.5% monthly/18% per annum.
We reserve the right to collect any fees from the customer which may be charged to our company by a collection agency or attorney. You are liable for all sales taxes on this invoice unless we have an exemption form from you.
RETURN POLICY: Shipping is non-refundable, in stock items are refundable at a 25% restocking fee. Special order parts are non-refundable.

Shop Online @ www.azboiler.com

INVOICE TOTALS

GROSS:	625.40
RETENTION:	0.00
TAX:	0.00
TOTAL DUE	625.40

Boiler Inspection

After 9 months of continuous operation and no service. The chief engineer had boiler tubes inspected.

Quote from service company. "Boiler tubes were spotless, 100% free from any scale deposits." Boiler inspector said "it would not be possible for tubes to be this clean if not for a water softener.."

Obviously it is not a softener but it did effectively eliminate this scale problem.

HOTEL CASE STUDY-2

EMBASSY SUITES, 205 ROOMS

Background

Location	Napa, CA
Hardness	5 grains
Problem	Water Softener, Hot only, failed. Needed Replacement.
Test Info	Decided to install economical Anti Scale on domestic water supply. After just 2 months, Chief engineer said that old calcium scale deposits in guest room sinks and faucets were dissolving and for first time remaining clean.



HOTEL CASE STUDY-2

CONTINUED

Paul Kieger Company
Three Generations of Service
 Contractor's License No. 620477
 1286 Park Pacific Avenue
 Pacifica, CA 94044
 Phone: (650) 269-4522
 Fax: (650) 359-4927

Invoice
 Invoice Number: 5594
 Invoice Date: 07/11/2006
 Terms: Due on receipt

Bill To:
 Bruce Stanley
 W.C. Service Company, Inc.
 4580 Pico Angeles Avenue, Ste E
 Simi Valley, CA 93063-3471

Job Location:
 Embassy Suites -Maga

Quantity	Item	Description	Rate	Amount
1	Lab	The Paul Kieger Company, at the request of W.C. Service Company, Inc. inspected and installed new scale on the heat exchanger for the (1) Kiegele Domestic Air water boiler. Upon inspection the Paul Kieger Company found the following conditions: 1. No iron deposits 2. No mineral build up 3. No scale or any other types of deposits on the scale of the exchanger. We recommend this unit be re-inspected in approximately 3 to 6 months to check for scale or other deposits.	25.00	25.00
1	Lab	Boysen paint	650.00	650.00
		Sales Tax (7.75%)		32.09
		Total		\$677.09
		Payments/Credits		\$0.00
		Balance Due		\$677.09

This invoice is subject to a service charge of 1.5% per month, current percentage of 1.5%, which is assessed by law on all balances over 30 days past due. Payment is required to pay all amounts due on or before the date of this invoice to avoid the assessment of an additional charge.

Printed On: 07/11/2006

Boiler Inspection

After 1 month the Chief Engineer requested inspection of the 1.6 MBTU boiler.

Inspection results:

No iron deposits.

No Mineral build-up.

No Scale or other types of deposits on internals of heat exchanger.

Recommend inspection in 3 to 6 months.

Now more than 5 years of consistent performance

HOTEL CASE STUDY-4

EMBASSY SUITES 146 ROOMS. "NEW"

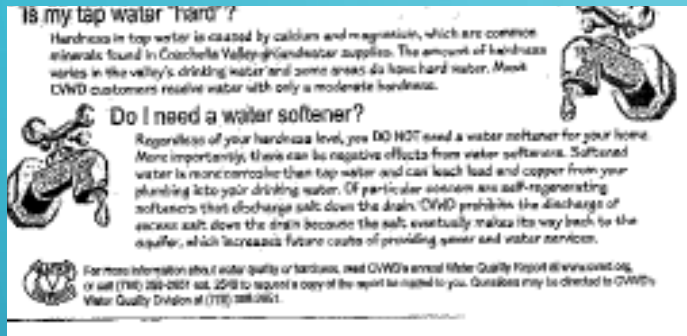
Background

Location	La Quinta, CA
Problem	Commercial Softener Ban
Before Opening	22 Exchange tanks required changing 2 X month. \$1200+
Decision	Ordered Anti Scale system for entire water supply. Substantial savings and Regulatory compliance



HOTEL CASE STUDY-4

CONTINUED



Coachella Valley Water District

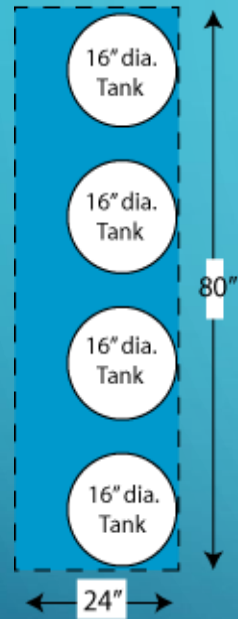
Letter issued to all users bashing Softeners

A commercial softener ban is in effect for this area, however, this document was targeted at residential users.

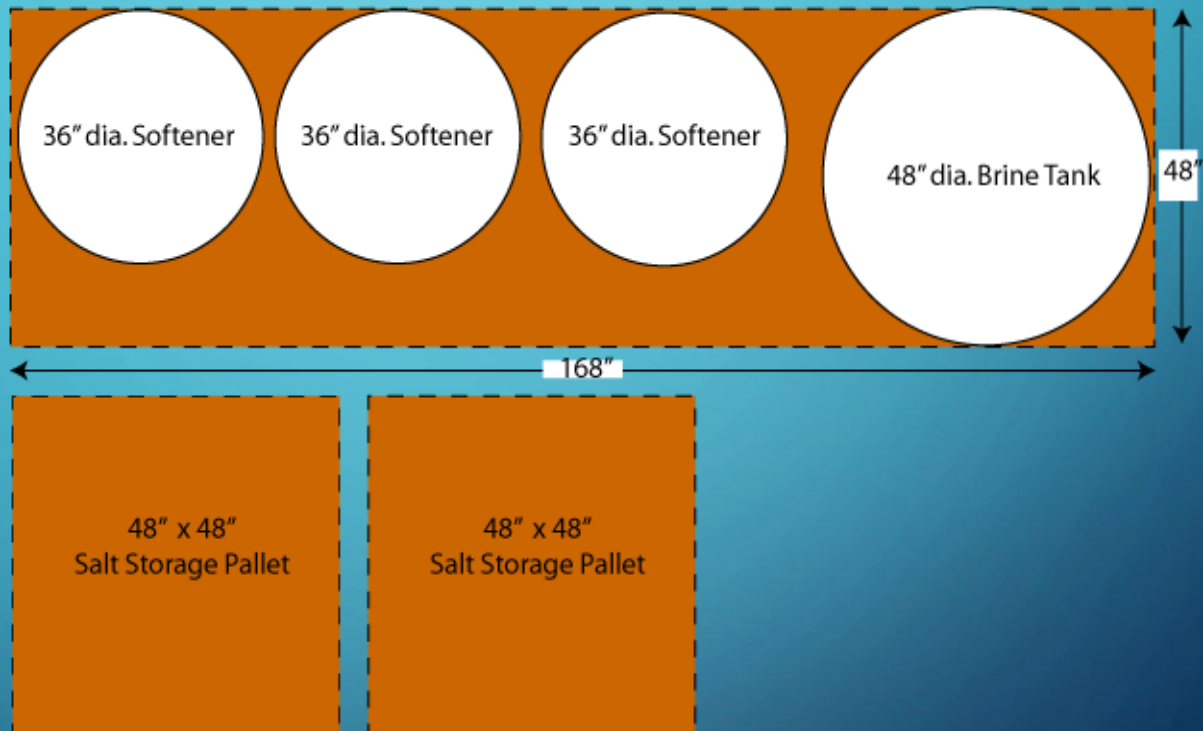
Now many states are banning softeners nationwide

COMPARISON: ANTI SCALE VS. CONVENTIONAL SOFTENING (SPACE REQUIREMENTS)

TAC System
(4) 16x65" Tanks



Conventional Softener
(3) 36x72" Tanks, (1) 48" Brine Tank



COMPARISON: ANTI SCALE VS. CONVENTIONAL (300 GPM SYSTEMS)

	Total Area	Salt Usage (lbs)*	Salt Cost*	Waste Water Volume
Anti Scale	13.33 ft2	None	Zero	None
Softener	88.00 ft2	64,285	\$7713	??? "not green"
Usage and costs are annual. Assumes 15 grain water, 1 million gallons per month, 2800 grains/lb of salt, salt cost 0.12/lb delivered.				

INSTALLATION ADVANTAGES

DID THEY FORGET TO TELL YOU THE SIZE OF THE SOFTENER?



SCALE STOP INSTALLATION PHOTOS



THIRD PARTY TECHNOLOGY VERIFICATION: DVGW W512

Water Technology Center
Karlsruhe Water Laboratory
Karlsruhe, Germany



3. Analytic Results

Table 2.1 First Test Series (Plant 1 and 3 are untreated)

Ca ²⁺ + Mg ²⁺ (mol)	Plant 1	Plant 2	Plant 3	Plant 4
Heating coil	0.414	0.001	0.455	0.001
Container Walls	0.622	0.000	0.691	0.000
Residual >500 µm	0.180	0.011	0.121	0.000
Total	1216	0.012	1267	0.001

Table 2.2 Second Test Series (Plant 2 and 4 are untreated)

Ca ²⁺ + Mg ²⁺ (mol)	Plant 1	Plant 2	Plant 3	Plant 4
Heating coil	0.001	0.448	0.001	0.470
Container Walls	0.001	0.513	0.001	0.579
Residual >500 µm	0.002	0.189	0.000	0.172
Total	0.004	1.150	0.002	1.221

$$\text{Effectiveness Factor} = \frac{M[\text{Ca}^{2+} + \text{Mg}^{2+}]_{\text{untreated}} - M[\text{Ca}^{2+} + \text{Mg}^{2+}]_{\text{treated}}}{M[\text{Ca}^{2+} + \text{Mg}^{2+}]_{\text{untreated}}} = 0.996 \text{ (99.6\%)}$$

DVGW is the German Technical and Scientific Association for Gas and Water.

W-512 is the standard for testing Physical Water Treatment devices for scale prevention.

On this rigorous test, The original Anti Scale achieved an efficiency rating of 99.6% for scale prevention

EVALUATION OF ALTERNATIVES TO DOMESTIC ION EXCHANGE WATER SOFTENERS

BY DR. PETER FOX AND MARA RAMOS ASU

TIM THOMURE AND WONTAE LEE HDR

APRIL 2011



RESULTS -TEMPE TAP - UNTREATED



TEMPE TAP – ELECTROMAGNETIC



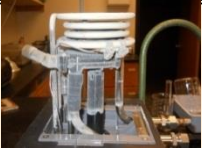



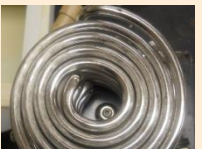
TEMPE TAP – ELECTRICALLY INDUCED PRECIPITATION



TEMPE TAP – TEMPLATE ASSISTED CRYSTALLIZATION

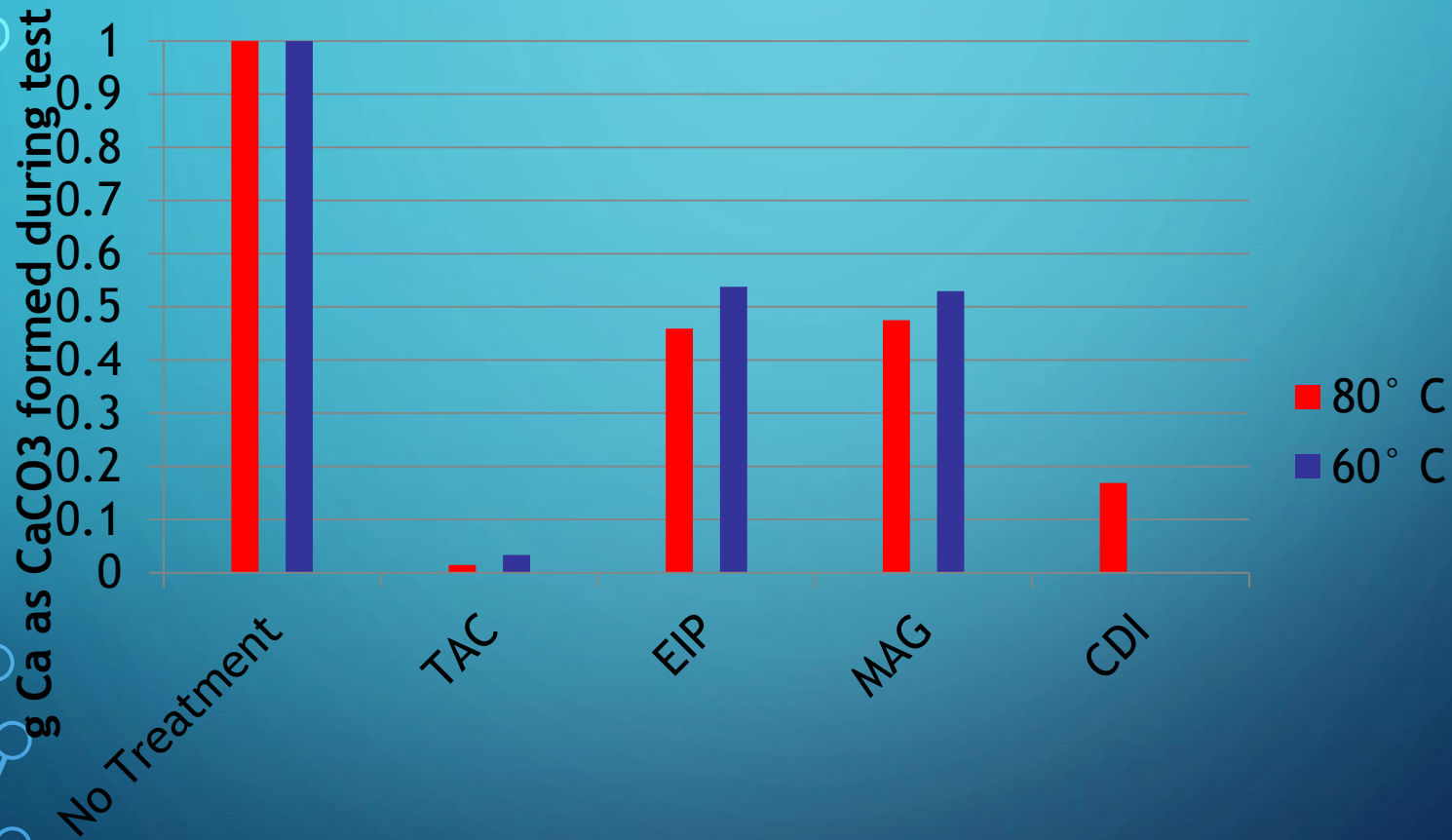


RESULTS

Water Type	Treatment device used	Scale scraped off of heating element (g)	% Ca in scale formed	Ca formed in solid scale precipitate (g Ca)	Scale from bath and heating element dissolved with HCl (g Ca as CaCO ₃)	Total calcium formed during test (g Ca as CaCO ₃)	Photo of heating element with scale
Tempe tap water	No Treatment	-	NA	0.00	8.36	8.36	
	TAC	0.00	NA	0.00	0.12	0.12	
	EIP	0.68	34.88	0.24	3.60	3.84	
	MAG	1.44	34.88	0.50	3.47	3.97	
	CDI	0.00	NA	0.00	1.41	1.41	

Results

Scale Collected for Tempe Tap Water Tests



RESULTS WITH TEMPE TAP WATER

- **Anti Scale Template Assisted Crystallization worked best, 97%+**
- **Capacitive Deionization worked well enough to pass DVGW test**
- **Both Electromagnetic treatment and electrically induced precipitation reduced scale formation but not enough to pass any reasonable test.**

WATER MARKET: REGULATORY PRESSURES

Assembly Bill No. 334

CHAPTER 172

An act to amend Section 116786 of the Health and Safety Code, relating to water.

[Approved by Governor August 3, 2003. Filed with Secretary of State August 4, 2003.]

LEGISLATIVE COUNSEL'S DIGEST

AB 334, Goldberg. Water softening and conditioning appliances. Existing law authorizes a residential water softening or conditioning appliance to be installed only if certain conditions are met.

Existing law provides, notwithstanding the above authorization, that a local agency may, by ordinance, limit the availability, or prohibit the installation, of residential water softening or conditioning appliances that discharge to the community sewer system if the local agency makes certain findings and includes them in the ordinance.

This bill would revise the findings that the local agency is required to make and include in the ordinance under this provision.

The people of the State of California do enact as follows:

SECTION 1. Section 116786 of the Health and Safety Code is amended to read:

116786. (a) Notwithstanding subdivision (b) of Section 116785, a local agency may, by ordinance, limit the availability, or prohibit the installation, of residential water softening or conditioning appliances that discharge to the community sewer system if the local agency makes all of the following findings and includes them in the ordinance:

(1) Limiting the availability, or prohibiting the installation, of the appliances is a necessary means of achieving compliance with waste discharge requirements issued by a California regional water quality control board. In determining a necessary means of achieving compliance, the local agency shall assess both of the following:

(A) The technological and economic feasibility of alternatives to the ordinance.

(B) The potential saline discharge reduction of the ordinance.
(2) The local agency has adopted and is enforcing regulatory requirements that limit the volumes and concentrations of saline discharges from nonresidential sources in the community waste disposal system to the extent technologically and economically feasible.

95

California, Legislation Banning Softeners SB1006, AB334

“Local agencies may regulate water softeners by ordinance to limit or prohibit the use of a water softener if an independent study that shows such regulation is a “necessary means” of achieving compliance with the water reclamation requirements or the master reclamation permit issued by a California regional water quality control board.”

WATER MARKET: REGULATORY PRESSURES



World Health
Organization

Nutrients in Drinking Water

Water, Sanitation and Health
Protection and the Human Environment
World Health Organization
Geneva

World Health Organization, Report on Nutrients in Drinking Water,

“We conclude that hard water is good because it contains nutrients valuable in themselves and because these nutrients can decrease impact of toxic elements in the environment. To minimize heart disease risk, the ideal water should contain sufficient calcium and magnesium to be moderately hard. No effort should be made to eliminate trace elements such as copper and iron where these elements are in short, dietary supply.”

WATER MARKET: REGULATORY PRESSURES



World Health
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Nutrients in Drinking Water

Water, Sanitation and Health
Protection and the Human Environment
World Health Organization
Geneva

World Health Organization,
Report on Nutrients in Drinking Water,
“Lower cardiovascular death rates were found in populations where the water supply contained relatively high levels of water hardness or calcium and magnesium compared to populations in areas with low levels. This protective effect was found for populations throughout the world, especially when country-wide studies were conducted.”

THE “GREEN” SOLUTION



- **Economical**
- **No salt or chemicals**
- **No Energy usage**
- **No Discharge**
- **Virtually No Maintenance**
- **Compact**