



TURBU FLOW

주택에 사용 시 장점 및 기대 이익

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복합건물 및 주택 등 용수 배관에 터브플로 설치 시 장점 및 기대 이익

1. 터브플로의 기본 기능 및 성능

1.1 제품의 성격

세계최고, 유일한 무염수, 무화학, 무동력 연수기입니다.

- 식수 안전성 검증 문서
 - ① 수질검서성적서 (중앙생명연구원)
 - ② AS NZS Certificate
 - ③ WARS
 - ④ Standard Specification for Public Housing Framed Construction
(호주 주택청 법규)

1.2 차별화 기능

냉수 및 온수, 스팀 등 물을 공급하는 배관의 스케일 방지 및 제거 기능이
독보적이며 탁월합니다.

- 관련 문건: 스케일 방지 성능 테스트 리포트
 - ① CAD TEST REPORT_영문(+번역)
 - ② Anti-scale Water Authority of Western Australia
 - ③ Enviro Test Labs Report

- 적용 사례

특히 오래된 건물 배관의 경우 육안으로 녹물 출수가 확인되지 않아도 스케일의 수준에 따라 통상적으로 1~3일 내외의 녹물이 출수 되고 맑은 물이 유지됩니다. 스케일이 심한 경우에도 테스트 사례는 8일 동안 녹물이 출수 되었고 9일차부터 맑은 물이 정상적으로 출수 되었고 이후 지속적으로 맑은 물이 유지되었습니다. 위의 실증 사례는 육안으로 확인 가능합니다.

1.3 부가 기능

배관의 바이오필름 방지 및 제거 등 살균 성능이 탁월합니다. 특히 수온 70 °C 이상에서는 99.99999% 수준의 멸균 성능을 발휘합니다.

● 관련 문건: 살균소독시험

① KHIDI (보건복지부 한국보건산업진흥원) 살균소독시험

② TANCS사 Summary of disinfection times_영문(+번역)

1.4 유지관리의 차별성

영구적인 수명 및 고장발생 없음, 관리 불필요 (평생 무상AS)

내부 알로이코어는 비철금속과 광물질이며, 외부 하우징은 STS 316 재질을 사용하므로 건물의 수명보다 더 깁니다.

2. 가정에서의 이익 및 기대효과

2.1 인간이 건강한 삶의 유지하기 위한 기본적인 조건은

- ① 맑고 신선한 공기,
- ② 미네랄 등 영양소가 풍부하게 함유된 깨끗한 물,
- ③ 균형 잡힌 영양식
- ④ 규칙적인 활동 및 운동
- ⑤ 충분한 수면을 대표적으로 들 수 있습니다.

우리나라의 상수도 공급 수질은 매우 좋으며, 정수기 보다는 터브플로를 설치하여 물의 부작용을 완벽하게 제거하고 좋은 물을 음용 하는 것이 바람직합니다. 정수기 사용은 필터를 사용하는 것이므로 바람직하지 않습니다.

2.2 가정에서 터브플로 사용 시 직접적인 이익과 기대효과는 다음과 같습니다.

환경 보호와 에너지 절감, 자산 보호, 건강에도 도움이 됩니다.

- 주택의 혈관인 배관을 스케일이 축적되지 않는 상태로 보호하여 신속 상태로 영구히 유지시킵니다. 주요 자산인 주택을 건강하게 보존합니다.

- 식수, 세탁수, 샤워수 등 가정에서 사용하는 모든 물이 무화학, 무약품으로 살균된 아주 부드럽고 더욱 촉촉한 연수로 공급됩니다.

- 동절기 및 사계절 온수공급을 위해 가동하는 보일러의 열교환기 스케일 축적을 방지하여 에너지를 절감하고 보일러 수명을 혁신적으로 3배 이상 연장합니다.

- 물을 사용하는 가전제품 사용 시 장점

- ① 세탁기

우수한 연수사용으로 세탁력이 향상됩니다.

따라서 세탁시간을 단축할 수 있으며, 세제 사용량도 줄일 수 있습니다. 세제를 덜 사용함으로 헹굼 결과도 좋아져 피부 건강에도 좋습니다.

특히 터브플로로 처리된 물은 살균력을 가지므로 속옷 및 아기옷 세탁 시 살균효과는 덤입니다.

골칫거리인 정기적인 세탁조 오염제거를 위해 칼곤 등 화약약품을 사용하지 않아도 되며, 세탁조 또한 늘 청결한 상태가 유지됩니다.

- ② 식기세척기

주부들의 수고를 덜어주는 식기세척기 사용 시 바닥면에 하얗게 축적되는 칼슘의 축적을 원천적으로 방지합니다. 아무리 좋은 물을 사용하여도 식기세척기 오염을 방지할 수 없습니다. 따라서 자주 청소를 하지 않으면 식기세척기는 반드시 오염됩니다.

- ③ 정수기

가정에서 사용하는 직수 정수기의 구조는 필터와 배관으로 이루어져 있습니다.

따라서 2가지를 관리해야 합니다.

주기적인 필터의 교환과 정수기 내부 배관의 살균입니다.

물이 지나가면 반드시 칼슘, 미네랄 등 광물질로 인해 반드시 스케일이 축적되고, 바이오필름이 발생합니다.

스케일은 제품의 수명을 단축시키고 건강에 해로운 녹물 등이 출수됩니다. 바이오필름은 세균이 증식하는 집으로 이용되고 세균은 건강에 치명적입니다.

터브플로를 이용하면 필터교환주기가 2배 이상 늘어나며, 바이오필름 생성을 방지하고 살균합니다. 따라서 세균이 증식할 수 없습니다.

④ 가습기

가습기의 경우 살균제 파동이 있었습니다. 가습기의 경우도 물탱크의 바이오필름 생성과 세균의 증식 문제입니다. 따라서 터브플로로 처리된 물을 사용하면 모두 해결됩니다.

- 주방 수전 꼭지 내부의 스케일 침전을 방지하고 좁은 관 내부의 바이오필름 방지로 깨끗한 물로 야채와 과일을 세척하고 설거지를 할 수 있습니다. 아울러 야채 및 과일의 잔류농약도 쉽게 씻어낼 수 있습니다. 싱크볼의 경우에도 세제와 설거지로 인해 얼룩 등 오염이 발생합니다. 게을리할 경우 얼룩 등 오염 제거가 용이하지 않습니다. 이 또한 터브플로 설치로 해결할 수 있습니다.

- 욕실관리 및 샤워 수

샤워기주름관의 경우 해외 및 국내에서도 폐질환에 치명적인 균이 발생한다고 보고되었습니다. 이 또한 터브플로 설치로 해결할 수 있습니다. (전용 제품인 샤워소프트를 추가 설치하면 더욱 안전합니다)

또 하나 욕실의 골칫거리가 남아 있습니다. 바로 샤워부스 또는 샤워파티션, 벽면 타일의 비누테 및 백테 오염 및 축적입니다. 이 또한 터브플로 간단하게 해결됩니다.

첨부한 아토피 등 피부질환 개선 사례를 확인할 수 있습니다.

- 비데

비데의 경우 위생기기로 분류됩니다. 배변 후 청결유지와 여성 위생관리를 위해 모든 가정에 보급되고 있는 실정입니다. 그러나 아이러니하게도 우리의 건강을 위협할 수 있는 위험기기입니다. 근래에는 살균장치가 적용된 고급형도 보급되고 있습니다만 이는 근본적인 대책이 아닙니다.

이외에도 소변냄새 등 변기내부 청소를 위해 친환경 이름을 달고 판매가 되고 있지만 화학적인 가공은 피해갈 수 없습니다. 2차적인 환경오염을 유발시킵니다.

이 또한 터브플로 설치로 해결해야 합니다.

- 터브플로로 처리된 물을 지속적으로 사용하여 샤워를 하면 의학계에서 불치병으로 분류된 아토피 증세를 완화하며 치유에 매우 큰 효과가 있습니다.

- 정원수 관리 등 채소, 식물 및 화초 재배에도 효과가 있습니다. 식물의 영양 흡수율을 높여 생육을 촉진시키고 건강하게 가꾸고 기를 수 있습니다.

심지어 바닷물도 터브플로를 거치면 식물재배에 이용할 수 있으며 식물이 염해로 고사하지 않습니다.

- 주택 내의 물과 접촉하는 모든 시설과 설비, 수전 기구의 스케일 축적을 방지하여 고장을 예방하고 수명을 연장시킵니다.

THE PERFECT HARDWATER SOLUTION

WHOLE HOUSE

A single Whole House Softerwater Conditioner installed on the main water line of your home, will deliver the best hard water solution on the market! For an added 'insurance policy', take protection to the next level with a flexible range of options. This simple, three-level guide shows how you can achieve the ultimate in hard water treatment...

- no moving parts
- no power source needed
- maintenance free
- eco-friendly
- chemical, salt & additive free
- lifetime warranty*
- never needs replacing



First, always start with a Whole House Softerwater Conditioner for your size home so that all incoming water is treated. The size you choose will depend on the number of bathrooms you have. *Even if you only install this option, the results will be better than any other hard water treatment available today!*

Then, apply specific protection to each major appliance or piece of equipment, including: swimming pools, hot water systems, showers, dishwashers, washing machines and evaporative air conditioners.

Finally, install a Softerwater Conditioner on your kitchen cold tap or existing water filter system (single-point or whole-house) to fill and protect small appliances such as kettles, coffee machines, steam mops, irons etc - plus enjoy softer water for drinking and cleaning!

RENTING? there's a range of options that you can easily install and remove - so your hard water solution always goes with you, for life!

Always start with a Whole House unit then add more to suit your needs and budget...

	GOOD	BETTER	BEST	RENTING
Whole House (to suit your home)	✓	✓	✓	
Swimming Pool Pump	✓	✓	✓	
Hot Water System (Electric, Gas, Heat Pump)		✓	✓	
Solar Water Heating System		✓	✓	
Evaporative Air Conditioner		✓	✓	
Shower/s		✓	✓	✓
Dishwasher			✓	✓
Washing Machine			✓	✓
Kitchen Tap or Water Filter System			✓	✓

Every additional unit is a protection "boost" - delivering greater peace of mind AND greater savings on maintenance, repairs and replacement of appliances and equipment in and around your home.

For a 'no-obligation' hard water solution tailored to your specific needs and budget, talk to your local agent or email: info@softerwaterconditioners.com

there is only one perfect solution

Australian Owned & Manufactured Since 1980 | Globally Distributed



THE PERFECT **HARDWATER SOLUTION**

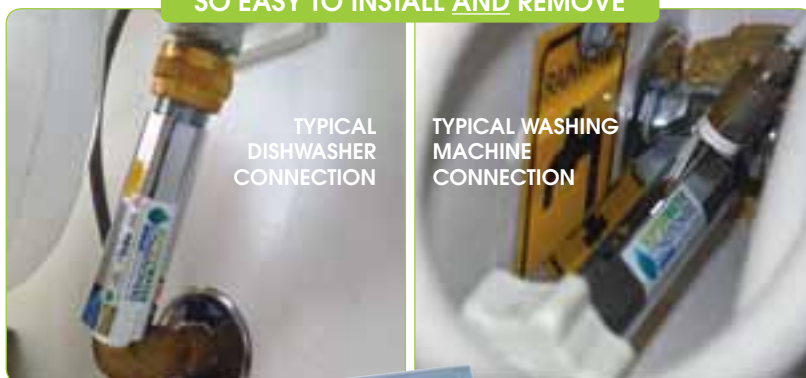
APPLIANCES

waterspots on glasses and dishes?
towels not as soft as they should be?
frequent appliance descaling?

Hard water is not only inconvenient, it could be costing you thousands in premature repairs and replacement of dishwashers, washing machines, coffee machines, kettles, steam mops - in fact any appliance that uses water. **There is an easy solution...** Softerwater conditioners will ensure you get the best results from your appliances and eliminate hardwater damage, for ever!

- save money on your weekly shopping bill by using significantly less washing powder, fabric softener, detergent and rinse aid
- your washing machine will work more efficiently, using less energy and detergents with softer towels and clothes than ever before!
- spotted glasses and dishes will be a thing of the past
- no more descaling of the coffee machine and other appliances
- **MOST IMPORTANTLY:** your appliances will last longer, the way they were intended - so no costly replacement surprises at the worst possible time.

SO EASY TO INSTALL AND REMOVE



TYPICAL
DISHWASHER
CONNECTION

TYPICAL WASHING
MACHINE
CONNECTION



Model: APP20MF
PREMIUM & STANDARD
OPTIONS AVAILABLE



no moving parts

no power source needed

maintenance free

eco-friendly

chemical, salt & additive free

lifetime warranty*

easy installation

highly cost effective

never needs replacing

take it with you when you move

**there is only one
perfect solution**

Australian Owned & Manufactured Since 1980 | Globally Distributed



*standard conditions apply. visit our website for details

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www.softerwaterconditioners.com

THE PERFECT **HARDWATER SOLUTION**

for a **GLOBAL PROBLEM**

Hard water is an increasing global issue and affects every area from homes to heavy industry, large to small business and government departments. If you live or work with hard water (and most of us do), you will ultimately experience a range of costly and inconvenient issues.



premature & unexpected failure

higher maintenance & repair costs

higher energy costs

more time cleaning

higher cleaning agent costs

reduced efficiency

itchy skin & scratchy laundry

hot water system failure

shower & plumbing blockages

costly down-time

high warranty costs

there is only one perfect solution

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W WaterMark
ATS 5200.103
Cert. No. 23165

WRAS APPROVED PRODUCT
Cert. No. 1210336

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SOFTERWATER CONDITIONERS
BY TURBU-FLOW Solving hard water problems around the world!

www.softerwaterconditioners.com



Technical Data

- General Information—Engineers Explanation
- Descriptive Molecular Information
- Report—Bernard Daigle Ph. D. Chemistry
- Homeswest Report
- Water Authority of Western Australia Report

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GENERAL INFORMATION - *Engineer's brief explanation of operation and design*

The TURBU-FLOW is designed with several elements of special foundry-blended metals, six from the cathode end of the scale and six from the anode end. The foundry mixes these groups of minerals in a highly technical process, to the respective temperature groups in order to allow the best galvanic action when water passes through the device by velocity and turbulence, thus giving a definite cathode-anode reaction.

In operation, scale particles tend to 'lattice' together because of their sharp protruding crystalline structure. These crystalline structures can and do 'lattice' together in such quantities as to become massive enough to become a deposition or precipitant. Most scale problems, which industrially or commercially cause insulation problems within shell and tube equipment, are a direct result of this type of behaviour.

One of the operational principles of the TURBU-FLOW is a surface chemical reaction between the crystalline particles which exist in the water and the metal alloy in the sides. The TURBU-FLOW has several elements which cause a high degree of turbulence to occur in the water flow, and provides a more pronounced exposure and contact of the crystalline particles with the metal alloy in the core.

The sharp crystalline structures, after passing over the first element or 'fence' start to be broken down into a series of thread-like colloids. When water swirls back together after passing over the element by velocity and turbulence, the thread-like series of colloids are dispersed into light individual colloidal particles. Several key occurrences have taken place which bring about this colloidal formation:

- The core of special elements obviously provides an immediate galvanic site upon which the ions can deposit.
- The particles are attracted and repelled possibly several hundred times before clearing the core of elements.
- All scale particles may not come into physical contact with the core; however since electrons are being captured from the water into the core and dispersed from the core back into the water, there is a very definite cathode-anode reaction occurring.
- Nuclei have been introduced into the system as a result of this cathode-anode reaction and provide a more attractive site around which the scale particles can attract, as opposed to matter continually precipitating onto the walls of the piping or equipment. The scientific name for this phenomenon is more readily known as 'epitaxial nucleation'.

By fitting a correctly-sized TURBU-FLOW system, scale and some types of corrosion will be prevented. The TURBU-FLOW system:

- Resists the deposition of calcium carbonate and in almost all cases returns it to solution as soluble calcium bicarbonate.
- Removes dehydrated calcium carbonate (scale) from boiler tubes by causing it to dissolve; in some cases, it flakes away.
- Stops the deposition of gypsum and brings it back to solution.
- Retards the corrosive action of iron sulphide and iron oxide.
- Stops deposition of free sulphur and in most cases brings it back to solution.
- Eliminates or greatly retards the corrosive action of hydrogen sulphide upon metal, specifically steel.
- Stops the deposition of salt, and in all cases brings it back into solution.
- Inhibits the formation of some algae.
- Works effectively in either hot or cold water supplies.
- Will reduce maintenance, increase working efficiency and stop scale build-up in:

processing equipment

evaporative air conditioners

hot water systems

boilers

heat exchangers

general pipe work and hot water ring mains

cooling towers

evaporators

DESCRIPTIVE MOLECULAR INFORMATION:

Water is solvent to a large variety of crystalline minerals. The presence of these minerals in water necessitates some type of chemical treatment in order to avoid scaling problems which usually occur in boilers, cooling towers, heat exchangers, evaporators, etc. The figures shown represent calcium carbonate particles (magnified 12,000 times) in the various stages of treatment by TURBU-FLOW.

FIGURE 1 shows that the crystalline structure of scale is sharp and protruding and due to this condition, accretion and deposition results.

Scale particles have a tendency to mesh together due to this sharp protruding crystalline structure. As shown in the figure, the crystalline structures mesh together to such a degree that they can cause a massive deposit of precipitant. Most scale problems, which industrially or commercially cause insulation problems within shell and tube equipment, are a direct result of this type of behaviour. Obviously, operational efficiency is greatly reduced when this scale build-up occurs.

One of the principles by which the TURBU-FLOW operates is a surface electro-chemical reaction between the crystalline particles which exist in the water and the special alloy elements in the core of the TURBU-FLOW.



FIGURE 1

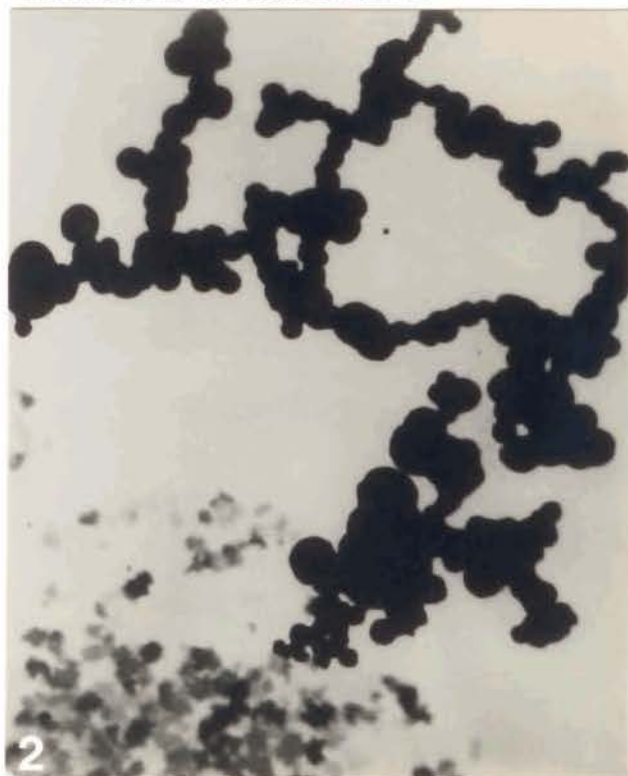


FIGURE 2

FIGURE 2 shows the beginning of a dramatic change in the structure of the mineral particles from being sharp and protruding to smooth and rounded, which lessens the meshing effect. The design of the core of the TURBU-FLOW causes violent turbulence to occur in the water flow. This turbulence provides a more pronounced exposure and contact of the crystalline particles with the alloy elements in the core. The sharp crystalline structures, after passing over the first element, start to be broken down into a series of thread-like colloids. When the water swirls back together after passing over all surfaces of the TURBU-FLOW, the thread-like colloids are dispersed into fine, less massive individual colloidal particles, which repel each other (electrostatically) and do not adhere to the piping. See FIGURE 3.

Several key occurrences have taken place which bring about this colloidal formation:

1. The core obviously provides an immediate galvanic site upon which the mineral ions can deposit.
2. The particles are attracted and repelled possibly several hundred times before finally clearing the core.
3. Not all scale particles will physically come into contact with the core: however since electrons are being captured from the water into the core and dispersed from the core back into the water, there is a pronounced cathode-anode reaction occurring.
4. Nuclei are introduced into the system as a result of this cathode-anode reaction, and provide a more attractive site around which the scale particles can attract, as opposed to continually precipitating onto the walls of the piping and/or equipment.

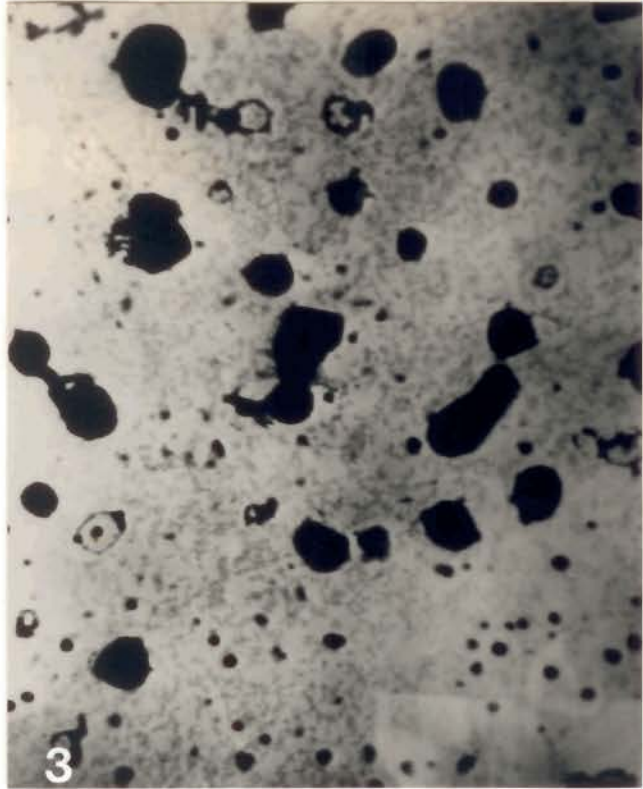


FIGURE 3

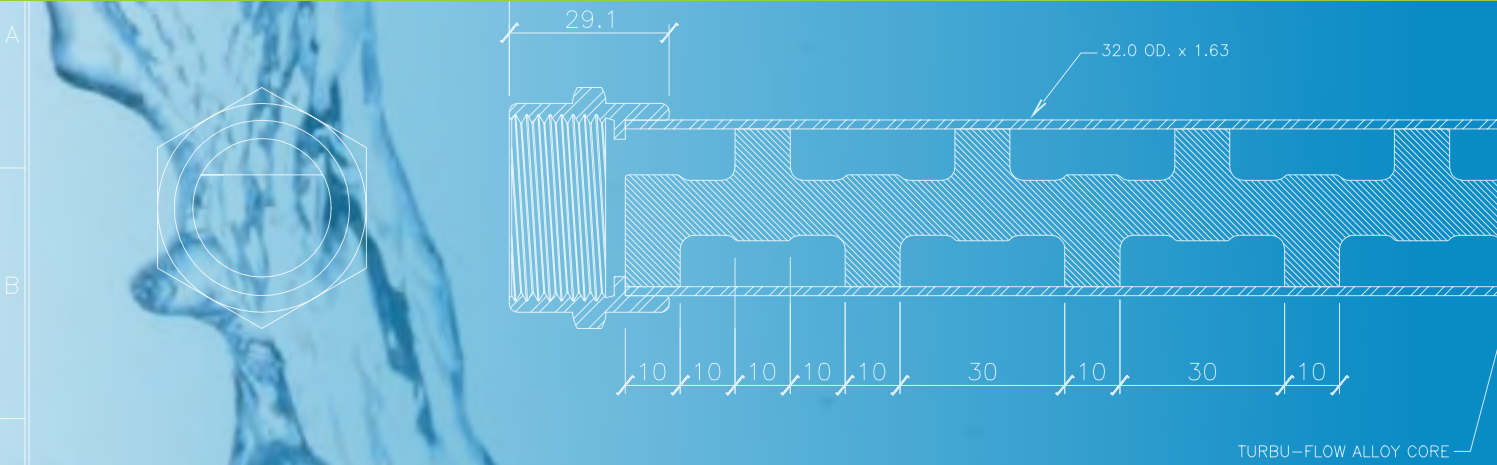


FIGURE 4

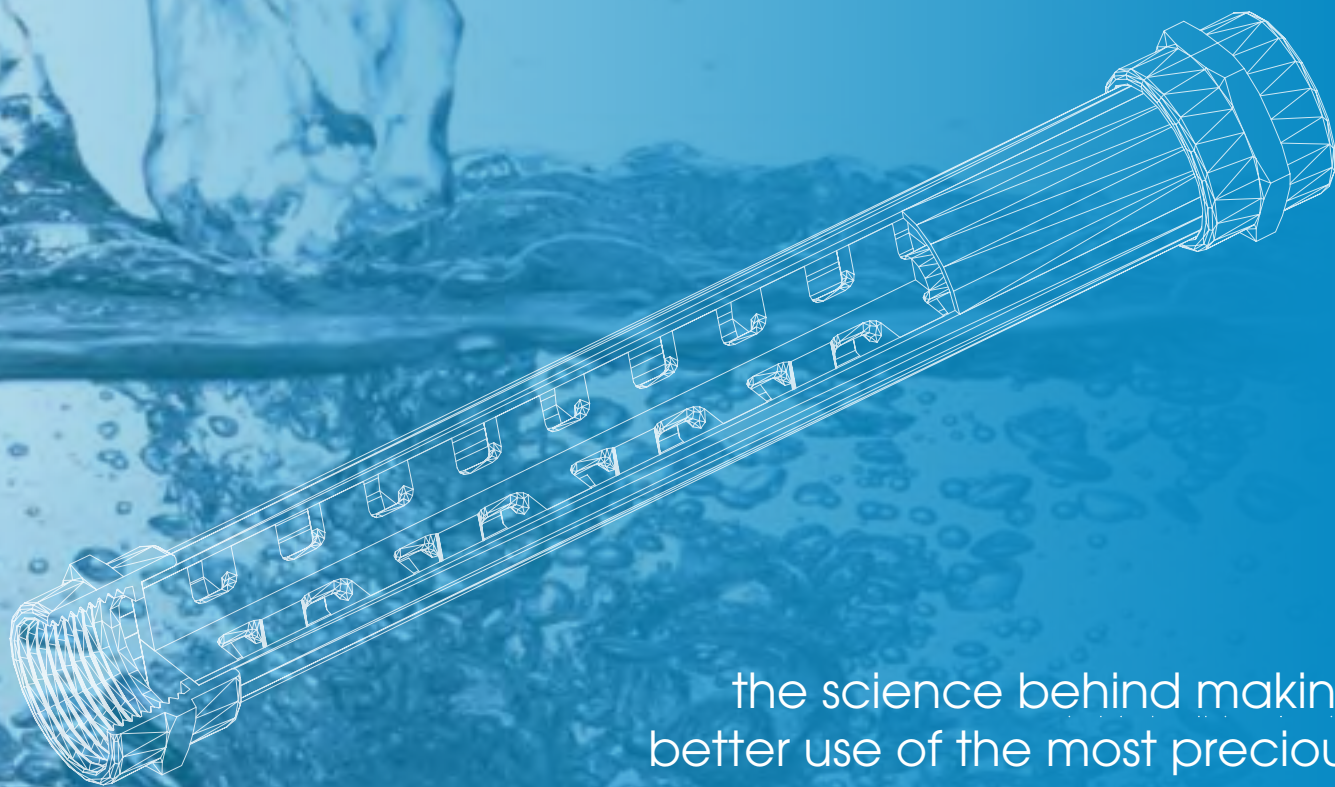
On any system where evaporation or steam generation is occurring, concentration of solids has to be effectively dealt with. Therefore, it is possible that a super-saturated state of colloidal particles could exist if not blown-down, or bled off properly. The photo in FIGURE 4 indicates the physical appearance of such colloidal particles which settled out of super-saturated state into a form of soft sludge, which can easily be washed out of the system by normal water pressure. The strongest chemical available on the market today can handle only approximately 1200 parts per million of total hardness for any given system. By contrast the TURBU-FLOW will handle up to, but not exceeding 3500 parts per million of total hardness before becoming overloaded.

THE PERFECT HARDWATER SOLUTION

technical INFORMATION



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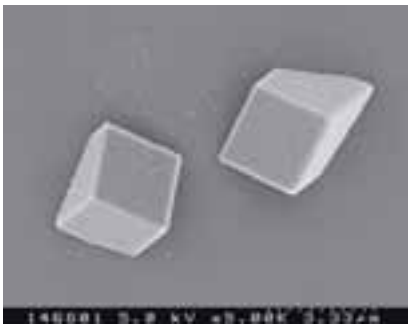


**SOFTERWATER
CONDITIONERS**

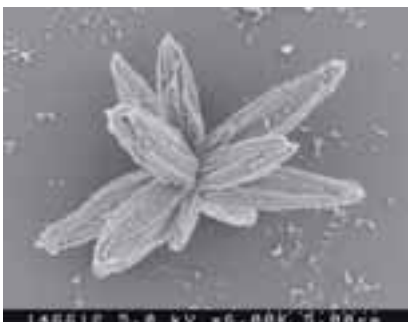
BY TURBU-FLOW Solving hard water problems around the world!

the Chemistry

1. Blended in a specialised foundry process, each alloy core is made up of a number of dissimilar metals scientifically selected from the anode and cathode galvanic scale. The alloy is not a sacrificial anode (ie; does not need replacement).
2. On contact with water thousands of intense galvanic electrochemical reactions occur along the length of the alloy core.
3. Minerals are attracted to these galvanic sites as they flow through the system.
4. The electrical charge or zeta potential of the minerals in the water is reduced allowing the minerals to aggregate and form nano sized colloids which remain in suspension rather than precipitate on pipes and associated equipment.

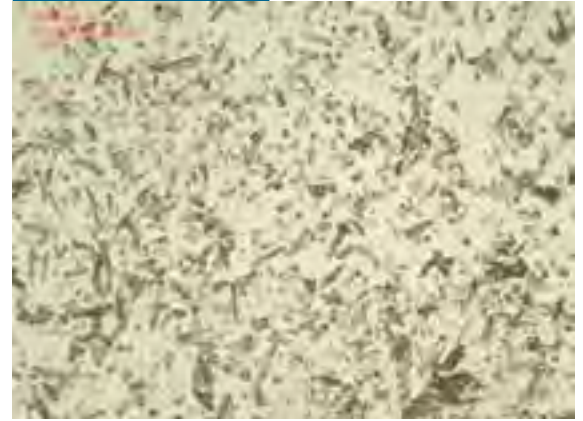


Minerals with high zeta potential (negative or positive electrical charge) are electrically stabilised, repel each other and precipitate on pipes and equipment.

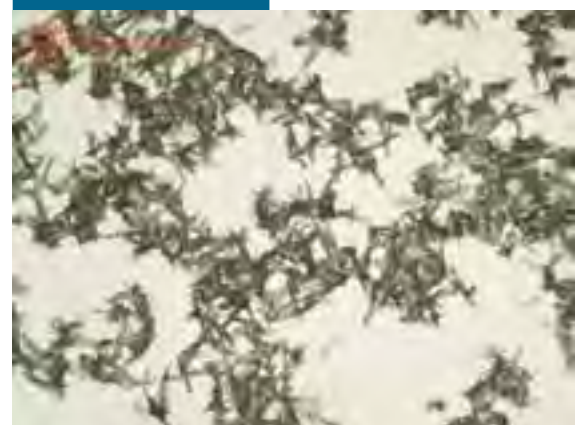


Colloids with a low zeta potential tend to aggregate and remain in suspension rather than precipitate on pipe and associated equipment.

RAW WATER



SOFTERWATER



Zeta potential is considered to be the electric potential of the minerals in water.

Softerwater lowers the Zeta potential of water by a factor of almost 2.

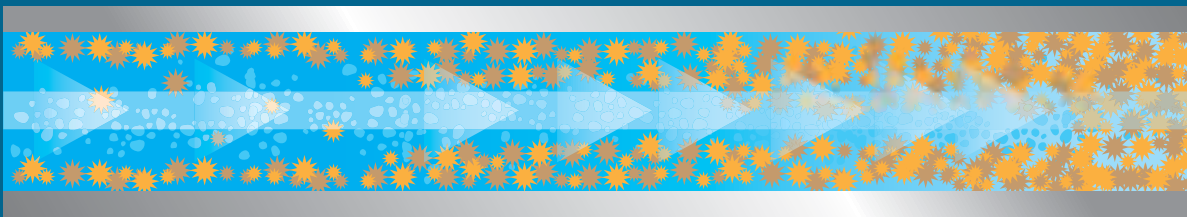
thePhysics

1. Each alloy core has been designed and engineered for a specific flow range.
2. Each core has offset discs so that there is no direct route for the water to travel. There is a definite water alloy contact.
3. Water velocity is increased as water is squeezed through the disc apertures and on through the chambers along the length of the core.
4. High and low pressure areas are developed either side of each disc.
5. Extreme turbulence is generated in each chamber along the length of the core.
6. The increase in water velocity and turbulence combine and create a mechanical washing action which prevents minerals building up on the core.



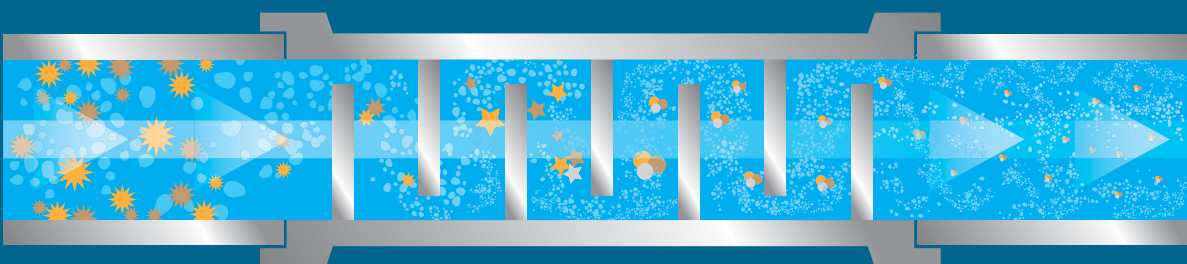
A SIMPLIFIED LOOK AT OUR SOPHISTICATED TECHNOLOGY

STANDARD WATER SYSTEM



Scale-causing minerals have a high electrical charge, repel each other and “stick” to pipes and equipment causing costly hard water problems.

WITH SOFTERWATER CONDITIONER



The softerwater alloy produces a turbulent mineral-attracting galvanic action reducing the electrical charge of minerals. Non-sticking nano sized colloids are formed and flow through the system in suspension significantly reducing hard water problems.

the Results + Advantages

Nuclei are introduced into the system providing an attractive site for minerals to combine as nano sized colloids which remain in suspension and flow through the system rather than precipitating on pipes and equipment. These subtle changes to the electrical charge of the minerals in water have significant effects on reducing down stream costly hard water problems!

- Softer, "wetter" water!
- Reduced hard water problems!
- Investment in capital equipment is protected!
- Reduced scaling and corrosion issues!
- Soaps, detergents and shampoos mix and lather better with softer water!
- Laundry items feel softer!
- Swimming pool water is clearer, softer, backwashing is reduced, scum lines are more easily cleaned away, salt water chlorinators work more effectively, there is no scale build up, black spot disappears and chemical usage is reduced!
- Water with a lower surface tension is more easily absorbed into the ground, reducing surface crust and runoff improving plant and crop health.
- Able to irrigate with brackish water

"We are always happy to share more information about this exciting technology. If you have a question or would like to arrange a meeting, please send us an email. We look forward to hearing from you"

Earl Mathieson CEO

business@softerwaterconditioners.com

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**softerwater
conditioner**
for every water
carrying system!



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