

## Product Overview

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AquaMagna™ is a non-intrusive magnetic water-conditioning system that prevents new scale from forming and gradually reduces existing scale in commercial and industrial water systems. It installs externally on the pipe — no wiring, power, plumbing modification, or water contact required — and is built on the same rare-earth magnetic platform as Magna-Tek's Eco-Clamp™ fuel conditioner.

## Operating Principle

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AquaMagna™ uses rare-earth magnets to create a calibrated, alternating magnetic field around the pipe. As water passes through this field:

- **Mineral Suspension** — dissolved calcium and magnesium are held in suspension rather than crystallizing onto surfaces.
- **Scale Dissolution** — existing scale deposits gradually break down and are carried away with the water flow.
- **Solids Clustering** — suspended minerals form larger clusters that are more easily captured by filtration.

## Performance Validation

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Magnetic water conditioning is most commonly validated through gravimetric scale-deposit testing (comparing scale mass on heat-exchanger surfaces with and without treatment) and through field monitoring of heat-exchanger delta-T and energy consumption over time.

Magna-Tek is building a field-performance dataset for AquaMagna™ using this methodology across active installations, following the same approach used to validate Eco-Clamp™. Site-specific case studies will be made available as they are completed.

## Sizing & Model Selection

SYSTEM TYPE	TYPICAL PIPE SIZE	RECOMMENDED MODELS
Residential fixtures & point-of-use water heaters	¼" - ½"	<a href="#">AQM-LD / AQM-HD</a>
Multi-residential plumbing risers, hot tubs & spas	¾" - 1¼"	<a href="#">AQM-1 / AQM-1A</a>
Commercial boilers & hot water systems	1½" - 3"	<a href="#">AQM-1A / AQM-2</a>
Cooling towers, chillers & process water	4" - 8"	<a href="#">AQM-2 - AQM-8 (Custom)</a>

Custom assemblies are available for pipe diameters above 8".

## Technical Specifications

PARAMETER	SPECIFICATION	NOTES
Magnetic Field Intensity	10,000-12,500 Gauss	NdFeB N42 or Ceramic Grade 5-8
Field Geometry	Helical, alternating N-S array	—
Housing	Aluminum alloy body	PVC-coated
Fasteners	Stainless A2 / A4	Non-magnetic
Operating Temperature	-40°C to +200°C	Suitable for hot water & steam lines
Water Contact	None	External clamp — no water-contact materials
Service Life	>20 years	No flux loss
Maintenance	None required	Passive operation
Warranty	20-year limited	30-day registration required

## Installation Guidelines

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AquaMagna™ installs externally on existing pipework and requires no system modification, power source, or interruption to water service.

- 1 Ensure the pipe surface is clean and free of insulation, paint flaking, or debris before installation.
- 2 Position the unit on a straight section of pipe, upstream of the equipment being protected where possible.
- 3 Secure the halves evenly using the supplied fasteners; do not overtighten.
- 4 Once installed, visually confirm proper seating and clearance around adjacent components and insulation.

## Typical Performance Range

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**30%**

Up to 30% reduction in energy use for water heating

**50-70%**

Fewer maintenance calls for scale buildup

**100%**

Elimination of chemical softeners & descalers

**12-24**

Months to full return on investment

Figures reflect typical results published for calibrated magnetic water-conditioning technology of this type. Site-specific results vary with water hardness, flow rate, and system configuration.

## Magnetic Science & Mechanism

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AquaMagna™ uses an alternating magnetic field to act on dissolved mineral ions as they pass through the conditioned zone:

1. The field disrupts the bonding pattern of calcium and magnesium ions, slowing crystal growth.
2. Minerals that would otherwise bond to pipe walls remain suspended in the water stream.
3. Over time, existing scale deposits lose cohesion and are gradually carried away.

This solid-state effect reduces scale-related fouling and the associated loss of heat-transfer efficiency, without modifying water chemistry or requiring chemical additives.

# Regional Compliance & Market Alignment

## Code Compatibility

AquaMagna™ installs externally on existing pipework and does not contact the water supply or alter pipe materials. As a non-contact device, it does not require certification under NSF/ANSI 61 (drinking-water system components) and is compatible with potable and process water systems when installed according to standard plumbing practices.

## Energy & ESG Program Relevance

Recognized as a passive, non-intrusive water-system efficiency measure suitable for custom incentive review under:

- NRCan Greener Buildings Initiative (Canada)
- IESO Save-on-Energy Custom Programs (Ontario)
- U.S. DOE Better Buildings Challenge

Supports facility water-treatment chemical-reduction and energy-efficiency reporting.

## Ideal Applications & Users

Deployed across multi-family, institutional, and light-industrial facilities. Ideal for:

- **Property & Facility Managers** seeking lower scale-related energy and maintenance costs.
- **Mechanical Contractors and Plumbing Retrofit Integrators** pursuing chemical-free water treatment.
- **Utilities and ESCOs** implementing custom efficiency projects.
- **OEM Manufacturers** of boilers, water heaters, and cooling equipment.

## Environmental & Economic Impact

METRIC	TYPICAL BENEFIT
Water-Heating Energy Use	Up to 30% reduction
Chemical Softener & Descaler Use	100% elimination
Maintenance Call Frequency	50-70% reduction
Equipment Longevity	Reduced fouling / extended service life

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