

Pristine Water...

Defender[®]

by Neptune-Benson[™]



The Responsible Choice for a Sustainable World.

Trust our experience.

Respected & Installed Worldwide

There can only be one industry leader – and in the world of aquatic technology, Neptune-Benson is it. Over more than half a century, the science of water filtration has evolved steadily, with dramatic surges in the last two decades. Our mettle has been tested, but every time the bar is raised, we gain momentum.



With the introduction of the ground-breaking Defender® regenerative media filter, Neptune-Benson has reached another level of excellence. The Defender® filter is simply the most efficient filtration system available today. With over 1 billion gallons of water saved (and counting) the Defender® has proven to be a cost-effective solution to a more sustainable future.

Fueled by a remarkable track record, the pioneering spirit that launched our success back in 1956 still blazes. No one has introduced more ground-breaking products, developed more exciting technology, or helped bring more visions to a sparkling reality. **Today, we offer the Defender® – the responsible choice for a sustainable world.**



"Great Wolf Resorts is committed to protecting the environment by managing our natural resources. Defender filters have helped us in that commitment by significantly reducing water consumption. We strive to provide a healthy environment for our guests and are proud to have Neptune-Benson as one of our partners in this endeavor."

Franceen Gonzales
Vice President, Risk Management and Aquatics
Great Wolf Resorts



"The Defender system was key to achieving over 1 million gallons of annual water savings for the LEED Platinum East Portland Community Center Aquatics Addition. And, its proven record for ease of maintenance was reassuring to our whole project team."

Eric Ridenour,
LEED AP ND, NCARB
Associate, Project Architect, Urban Designer



Neptune-Benson filters more recreational water than any other company in the world.

Asia

Deoksan Spa Castle, South Korea
Equarius Waterpark, Singapore
Waterpia, South Korea
Wet World, Malaysia

Australia

Adventure Park, Victoria
Adventure World, Western Australia
State Aquatic Center, South Australia
Wet 'N' Wild Waterpark, Queensland
WhiteWater World, Queensland

Europe

Aabybro Swimhall, Denmark
Blue Lagoon Waterpark, Wales
Hjortespringbadet, Denmark
Kilkenny City Pool, Ireland
Lalandia AquaDome, Denmark
Tottenham Green, UK

Middle East

Wahooo Waterpark, Bahrain
Wild Wadi Waterpark, Dubai, UAE
Jebel Hafeet Whitewater Park, UAE

North America

Gibbons Park, Ontario, Canada
Grande Prairie Rec Ctr, Alberta, Canada
Great Wolf Lodge, Niagara Falls, Canada
MacDonald Island, Alberta, Canada
Oakridge Pool, Ontario, Canada
Splash Wave Pool, Ontario, Canada
Aquatica WaterPark, Orlando, FL, USA
Bluebird Park, Ellisville, MO, USA
Castaway Bay, Sandusky, OH, USA
Central York High School, York, PA, USA
East Portland Community Ctr, OR, USA
Give Kids the World Village, FL, USA
Great Wolf Lodge - 7 Locations, USA

North America continued...

JW Marriott Resort, San Antonio, TX, USA
Kenyon College, Gambier, OH, USA
Legoland California, Carlsbad, CA, USA
Mt. Olympus WaterPark, WI, USA
Nickelodean Holiday Inn Hotel, Orlando, FL, USA
NRH2O Family Waterpark, TX, USA
2012 Olympic Trials, Omaha, NE, USA
Perdue University Wellness Center, West Lafayette, IN, USA
Ray & Joan Kroc Center - 6 Locations, USA
Sesame Place, Langhorne, PA, USA
Smith Aquatic Center, Charlottesville, VA, USA
Splish Splash Waterpark, NY, USA
U.S. Air Force Academy, CO, USA
Washtenaw Community College, MI, USA
Waterworld California, Concord, CA, USA
Parque Plaza Sesamo, Monterrey, Mexico



Visit www.DefenderFilter.com
for additional information on hundreds
of other installations.

Follow the LEEDer

Neptune-Benson's commitment to LEED® principles pre-dates the creation of this formalized rating system. Improving the health and safety of aquatic environments has always been at the heart of what we do. Defender® has contributed to numerous projects to achieve LEED® certification by routinely providing the following category points:

Energy & Atmosphere

- Meets Prerequisite 2 – Minimum Energy Performance
- Earns Credit 1 – Optimize Energy Performance

Innovation & Design Process

- Earns Credit 1 – Reduction in Water usage



From our 70,000 sq. ft. manufacturing facility to our engineering and testing labs, no other company captures the spirit of innovation like we do.

It's no wonder that our materials, designs, and processes have written aquatic history worldwide. Our gifted staff of men and women are industry veterans who bring unparalleled knowledge supported by unsurpassed experience. We embrace your highest expectations and enjoy the rewards of exceeding them.



Defender® – For all the right reasons.

Superior Filter, Responsible Choice


An earth-friendly solution for pristine pool water.

In a socio-economic climate promoting “green” building products and “sustainability,” Defender® is the logical choice. Neptune-Benson’s half-century involvement in the pool industry has given us the experience to know what is best for today’s pool owner/operators. That’s why we designed the Defender® filter for maximum performance, longevity and user-friendliness. The result of these efficiencies is a total systems approach that is good for the planet and its resources - and constantly delivers the safest and cleanest water. The Defender® filter continues to have a marked impact on the global water footprint.

When it comes to water quality, the smaller the particle removal the better.

- ✓ Removes over 99.9% of crypto in a single pass*
- ✓ Dramatically extends filter cycles
- ✓ Unsurpassed water quality that increases UV sanitation performance.
- ✓ Saves up to 25% of chemical consumption
- ✓ Controls turbidity to levels better than those required for drinking water.

*Test conducted by UNCC. Copyright 2008 EP Minerals; Used by permission



Defender®
can remove particles
down to 1 micron or less.



"WhiteWater World's RM system reduces waste by more than 90 percent and saves over 22 million litres of water per year. Our park has been given the highest efficiency rating possible for a waterpark by the Environmental Resources Management Australia."

Bob Tan
General Manager
Dreamworld/WhiteWater World



Along with the absolute finest in water quality, the Defender® allows our customers to enjoy a host of additional bottom-line benefits:

- ✓ **Water and Waste Savings** - The Defender® filter eliminates over 90% of the backwash water associated with sand filter operation.
- ✓ **Energy and Chemical Savings** - The dramatic reduction of backwash waste directly translates to savings in chemicals and fuels for reheating associated with make-up water.
- ✓ **Construction Savings** - The Defender® footprint is one quarter the space occupied by conventional sand filters. The design eliminates the need for a backwash holding tank and costly waste discharge plumbing.
- ✓ **Power Savings** - Defender® operates at a lower head (TDH) compared to conventional sand filters saving motor horsepower, capital equipment and operating costs. The dirt holding capacity extends filter cycles while maintaining designed recirculation rates. Perfectly partners with a VFD (Variable Frequency Drive) to cut electrical costs by over 30%.

SAMPLE DEFENDER® SAVINGS ANALYSIS

Potable Water & Discharge Impact	SAND	DEFENDER®
Backwash Volume (GAL, US)	1,483,560	163,116
Potable Water (Make-up) Fees (USD)	\$5,192.00	\$571.00
Discharge Fees (USD)	\$5,192.00	\$571.00
Energy & Fuel Impact		
Pump Power Consumption (KW)	216,569	170,170
Pump Power Cost (USD)	\$13,307.55	\$10,455.94
Heating Requirements (Therms)	4,449	489
Heating Costs (USD)	\$5,784.00	\$636.00
Water Treatment Chemical Impact		
Chemical Costs (USD)	\$4,451.00	\$489.00

An Equipment investment with an ROI

Let us show you just how quickly Defender® will pay for itself. You'll be amazed at the payback and ultimate affordability of this remarkable system. And with Neptune-Benson's 50+ year track record of delivering exceptional value, you'll enjoy the peace of mind that can only come from partnering with an industry leader. Some facilities have realized a return on investment in less than one year.



Designed with performance in mind.

Tank Construction – All vessels are conservatively engineered and manufactured with Flexsol 3000™ interior lining and include a 10 year fully rated warranty. The lining protects all wetted surfaces against corrosion to maximize the life expectancy of the vessel.

Automation – The Model RMF programmer manages automation for all filter cycles including regeneration (bump), maintenance mode, and media transfer. Easily interfaces with chemical controllers, heaters, and variable frequency drives. Saves labor and maximizes operational security.



Vacuum Transfer – At the push of a button, a self-contained, integrated pump quickly introduces dry media into the Defender® filter. This feature eliminates the mess and additional equipment required by wet, slurry designs.



Internal Hydraulics – Our underdrain manifold is engineered to achieve ideal distribution of influent flow. The generous open area serves to minimize turbulence and ensure superior "Flex Tube" coverage.

Lifting Davit – At some point it may be necessary to access the interior of the vessel. Our unique tank-mounted davit permits easy access without remote lifting devices. The davit reduces the overall height requirement and saves valuable floor space.



It's all about the "Bump!" – The Defender® filter is programmed to automatically "bump" on a daily basis to regenerate the media coating of the "Flex Tubes." This incredible benefit maximizes system performance while enhancing sustainability and conservation.



As the bump tire deflates (A), the tube sheet lowers to loosen the media and trapped debris. The re-inflation of the bump tire (B) raises the tube sheet and forces water into the "Flex Tubes", gently expanding them to fully release all material. This bump cycle pulses ten times to ensure the entire cleansing process.



At the completion of the bump cycle, the Defender® will automatically pre-coat the "Flex Tubes" and re-commence the filter cycle. The "Bump" is a vital function in order to achieve superior filtration and to make the most out of every filter cycle.



Filter Elements – Our "Flex Tubes" are constructed of T304L stainless steel frames (optional T316L) with permanent polyester woven coverings. Not one has ever had to be replaced as a result of wear. Other systems designed with rigid plastic frames, o-rings and socks require costly replacement and frequent maintenance.

"Flex Tube" shown with filter media coating.



Large installation or small, there's a Defender® filter that's right for you.

Durability, economy, and simplicity make Defender® the system of choice by premier design professionals.

Model Number	Filter Area		Maximum NSF Flow Rate		Recommended Flow Rate Range		Tank Volume	
	ft ²	m ²	2.0 gpm / ft ²	4.89 m ³ /hr	.5 - 1.4 gpm / ft ²	1.22 - 3.42 m ³ /hr	gallons	m ³
SP-18-48-176	137	12.73	274	62.3	69-192	15.53-43.54	66	.25
SP-24-42-327	223	20.72	446	101.32	112-312	25.28-70.86	128	.484
SP-27-48-487	381	35.60	762	174.08	191-533	42.43-121.75	159	.602
SP-33-48-732	572	53.14	1144	259.85	286-801	64.83-181.73	250	.946
SP-41-48-1038	812	75.44	1624	368.90	406-1137	92.04-258.00	441	1.669
SP-49-48-1548	1211	112.50	2422	550.13	606-1695	137.25-384.75	615	2.328
SP-55-48-2076	1625	150.97	3250	737.48	813-2275	141.48-516.32	841	3.184

Seeing is believing.

Defender® - The Responsible Choice

"The Defender filters have proven to be a remarkable product. The ease of operating, the cost savings enjoyed, the "green" aspect of the design and the additional space in our plant rooms are more than what we expected. It's not often a product can live up to the hype presented in the company's sales and marketing literature. The Defender is that rare breed, however, and we are looking forward to the many years of cost savings in our operations in the magnitude of hundreds of thousands of dollars per year."

Chris Perry
Director of Operations
Wild Wadi Waterpark, Dubai, UAE



"The Neptune Benson Ultra Fine Filtration system has given us fantastic water quality which we constantly receive praise from our customers. The Filters are very easy to use and demand limited maintenance. One of the most exciting aspects of the system is the extremely low water use, our consumption is far lower than we ever expected. Overall the Neptune Benson system is providing us with phenomenal water quality and I would recommend installing them in all aquatic facilities."

Gordon Friend
Operations Manager
State Aquatic Centre, Australia



"We chose the Defender filters because of the water savings and water quality they'll provide for our park. Defender filters can filter particles down to 1 micron in diameter which decreases the risk of recreational waterborne illnesses such as crypto."

Peter Kowny
Maintenance Manager
Legoland California



"The Defender filters have been invaluable to our operation; the water quality is impeccable. When compared to our old system, we have much better water quality and are spending less time maintaining the system."

Everett Neal
Superintendent of Building & Grounds
Kenyon College, Gambier, OH



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Visit www.DefenderFilter.com to take Defender® for a test drive.

Savings Analysis

Typical savings analysis are available on our site. For a FREE customized detail of **your** Defender® savings call (800) 832-8002 to speak to a representative.

Test Drive a Defender®

Watch as a simulation demonstrates the actual steps for the complete operation of the Defender® Filter.

Review Technical Data

View Defender® Dimensions & Capacities, System Schematic and Product Specs all on screen or download as a .pdf.

