



# Innovation of an *Invention*

By Jeff Roseman

*Trial and error methods are often used when developing products. Thomas Edison, with 1,093 patents, more than any other inventor, took many products and ideas and made them better. He would merely take a very good product, such as the light bulb, and make it commercially available. The light bulb had already been invented and used in labs, but Edison took the idea and developed it into a cost-effective product that could be sold commercially.*

*A few savvy tweaks  
greatly impact  
product development*

Many water treatment products are simply copies of other systems, but changes have been made to make the system more effective or user friendly. Some products turn out to be very good while others are marketed well but perform only marginally more effectively than their predecessors. The following is an example of plastic tubing that has proven to perform very well in new water treatment designs.

#### **UV Light Development**

Quartz sleeves have been used in water treatment as a method of

protection of the ultraviolet (UV) bulb for decades, but someone had an idea of using plastic tubing to protect the bulb from the water flow. The problem that arose was the fact that plastic tubing lowered the transfer rate of the UV light because the tubing was not as translucent as the quartz sleeve and rendered the first attempts futile. The unit had to be made bigger; the tubing needed to be changed to get better translucency; or changes in design needed to be made to increase contact time.

Different polymers were used to

make the tubing clearer and increase the UV light penetration, and a coiled design emerged to increase the contact time by allowing longer travel times of the water near the UV light. This also created a phenomenon that caused the water to become more turbulent, reducing the chance of shadowing in the UV chamber.

The whole idea of using the plastic was to create a water treatment device that was more economical to produce and would also lower the cost for the end-user when replacing the UV bulb and quartz sleeve. Developers also considered the safety factor by eliminating the potential of the quartz breaking. These low-cost coils could be discarded and recycled. Several companies have developed some viable designs and are using the coil effectively.

#### **Ozone Transfer**

Other ideas for use of the coil and the plastic tubing have come into play in ozone system development. A few industrious individuals have used this highly ozone-compatible material

in delivering ozone into water. The tubing is a welcome change because there are a number of materials used that can keep costs down but increase the look of the final design. The introduction of a bright white jacket keeps the units looking nice over the years, as the tubing does not show discoloration from the ozone.

The coil has been used to help create turbulence or rolling of the water for ozone to water transfer. The idea behind this concept was to decrease the footprint for developing systems that are mobile and where space was a concern. The coil also could be used in developing point-of-use systems for vegetable, fruit and other disinfection processes in kitchens, ice machines, water coolers, etc. Other uses include swimming pools, hot tubs, pond aeration, decorative water fountains, public shower disinfection and food processing equipment.

There are many products on the market that work well, but there are also many areas that need to be addressed. Proper testing is crucial, not only of the source water but also of the final product water used for each process or application. Once the theory, math, chemistry, physics and marketing ideas all fall into place, a prototype can be built and tested. If the disinfection reduction is achieved, the product has a promising market. So, like many of Edison's inventions, slight changes made better products that could be sold and distributed.

### Simple Components Can Change a Product

Making products user friendly and reducing costs is what keeps industrious individuals thinking and tweaking. The problem some encounter is the fact that getting their idea to market, where parts can be purchased in bulk and built on assembly lines, reduces the price of these products drastically. Patents are cumbersome, expensive and hard to enforce. Take a look at other industries and then consider the water industry: similar products, but, just like the old mousetrap theory, which one delivers better water with less cost? Large corporations and big businesses can help develop a product and absorb these legal costs, so do not be intimidated by these roadblocks.

Many times a simple change in product design by using an innovative component can help make a system more effective. This change can be simple and yet instill vast improvements into a product that has been used for decades. Technological

advancements turn product development into such an entrepreneurial experience. By making these components available to others, designers, engineers and marketing professionals can turn the gears and dream up innovative methods that could land them the next idea that is better than sliced bread. *wqp*

**Jeff Roseman, CWS-VI, is a consultant and freelance writer in the water industry, and a member of the WQP Editorial Advisory Board. Roseman can be reached via e-mail at [jeffrey@aquaioplus.com](mailto:jeffrey@aquaioplus.com).**

For more information on this subject write in 1003 on the reader service card.

### WEBresources >>>

Related search terms from [www.waterinfoink.com](http://www.waterinfoink.com): disinfection, entrepreneur, product development

For more information related to this article, visit [www.wqpmag.com/lm.cfm/wq071003](http://www.wqpmag.com/lm.cfm/wq071003)



## Innovative Chemistry

HEADWORKS  
BIOLOGY  
SEPARATION  
MEMBRANE  
DISINFECTION  
BIOSOLIDS  
SYSTEMS

**Degremont Technologies masters the science of water and wastewater chemistry to yield environmental excellence.**

Degremont Technologies provides industrial system solutions that minimize cost, reduce space and insure life-cycle reliability, while meeting even the most stringent regulatory criteria for such contaminants as TSS, heavy metals and nutrients. With over 100 years of customer-focused service, we provide trusted, proven experience and world-class results.



### Our Building Blocks of Water and Wastewater Solutions:

- Solids & physical-chemical separation
- Demineralization and reverse osmosis
- Ion Exchange and advanced resins
- Multi-stage biological processes
- Oxidation, ozonation and UV disinfection
- Reduced effluent to zero-liquid discharge

Infilco Degremont, Inc. 8007 Discovery Drive, Richmond, Virginia 23229 (800) 446-1150

[www.degremont-technologies.com](http://www.degremont-technologies.com)

write in 754

## Built to take it.



There's a reason we call it TOUGH STUFF®.

Our exclusive high-impact Type II PVC Pipe is more flexible and more durable than the competition. No breaking. No shattering. No cracking. No bowing. It doesn't get brittle in chlorinated water like ABS—and it's part of every precision product we make that calls for SDR pipe: slotted risers, basket risers, brine valves and more.

**TOUGH STUFF PVC Pipe from Mattson/Witt.**  
For whatever you build, it's built to last.

[www.mattsonwitt.com](http://www.mattsonwitt.com) | 1.800.663.4371



write in 753