

ULTRAPURE WATER®

Technology and Business of Water Treatment

Journal



Ion Exchange

JULY/AUGUST 2014 Volume 31 Number 4

ULTRAPURE WATER®

Technology and Business of Water Treatment

Volume 31, Number 4

July/August 2014

ULTRAPURE WATER® Journal

General Offices:
Media Analytics Ltd.
Suite C, Kingsmead House
Oxpens Road
Oxford OX1 1XX
T: +44 (0)1865 204 208
F: +44 (0)1865 204 209

www.ultrapurewater.com

Christopher Gasson, Publisher
cg@globalwaterintel.com

Mike Henley, Editor
Phone/Fax: 303-745-3890
mike@ultrapurewater.com

Mark Richards, Advertising and Promotions
Phone: 512-716-8532; Fax: 512-716-8521
mark.richards@globalwaterintel.com

Bonnie Eastland, Customer Service
bonnie.eastland@globalwaterintel.com
Phone: 303-731-5618

Layout and Design:
Paul Hasler and Charlotte Massey

For other inquiries:
Jessica Underwood, Executive Director
junderwood@globalwaterintel.com

Ultrapure Water (ISSN:0747-8291), is published bi-monthly exclusively in a digital format, by Media Analytics Ltd. Paid subscriptions to the digital edition permit reading and printing of issues since 2008. The publisher assumes no responsibility for unsolicited material and reserves right to publish, in whole or in part, all letters and news releases received. All material, including technical articles, sent to Ultrapure Water will be considered the property of the publisher and may be subject to editing.

Media Analytics Ltd. accepts no liability or responsibility whatsoever for any loss or damage suffered by the subscriber or any other user of the information contained in this publication. Unauthorised distribution or reproduction of the contents of Ultrapure Water is strictly prohibited without prior consent of the publisher. © 2014 by Media Analytics Ltd. All rights reserved. No part of this publication may be photocopied, reproduced, retransmitted, put into a computer system or otherwise redistributed without prior authorisation from Media Analytics.

ULTRAPURE WATER® is a registered trademark. **A Buyer's Guide to recent and current advertisers is available at:**

www.ultrapurewater.com

Past Articles: A complete database of references to more than 1,800 past articles can be found on our web site. Photocopies of specific articles are available at a nominal cost.

FEATURES

On the Waterfront – Our Vision: Developing Journals and Web Sites to Serve the Needs of the Water Business

Mike Henley 4

Pharmaceuticals – Part 1: Technical and Regulatory Perspective on Establishing and Maintaining Microbial Purity in Pharmaceutical Water Systems.

Edward G. Helmig 11

Microelectronics – Dynamic Distribution Modeling to Optimize Point-of-Use Supply Pressure

John Morgan and Matthew Weglewski 13

Ion Exchange – Troubleshooting an Ion Exchange Mixed-Bed Unit

Donald Downey 17

Instruments – Tech Brief: Know Whether to Calibrate, Clean, or Perform a pH Calibration Check

Fred Kohlmann 22

Legal Review – Dollars and Sense: A Water Technology Owner's Guide to Transferring Intellectual Property

Clifton E. McCann and Gregory D. Chafee 24

UPW Pharma – ISPE and PDA Highlighted at June Conference

Mike Henley 27

Business News 6

Ultra Stock Quotes 8

ADVERTISERS

Follow-up with advertisers present in this issue by visiting their web sites. For a complete listing of web addresses, and direct links please link to our Buyer's Guide from our home page at: www.ultrapurewater.com

Consolidated Water Solutions 9

Heateflex 16

Mettler Toledo Thornton 21

Pure Aqua, Inc. 5

Swan Analytical USA, Inc. 2

COVER

Ion-exchange resins, like the ones shown, help meet a wide range of separation requirements, from softening to high-purity water generation to trace contaminant removal.

Photo courtesy of Dow Water & Process Solutions.

LEGAL REVIEW

DOLLARS AND SENSE: A WATER TECHNOLOGY OWNER'S GUIDE TO TRANSFERRING INTELLECTUAL PROPERTY

Putting the right price on a sale or license of intellectual property (IP) is challenging, and misconceptions about IP law and valuation can make the transfer of water technology frustrating both for the party offering the technology and the party acquiring it. Many large companies are reluctant to consider ideas from third parties, largely because of the cost and difficulty of accurately assessing the nature and value of an outsider's IP, and also because an inventor or small company can have an incorrect understanding of IP and unrealistic expectations as to compensation and other contract terms. Large companies use technology developed in-house because reliable corporate knowledge often exists as to whether IP rights will be available and useful for protecting important water treatment products, services, or methodologies.

In the water business, entrepreneurs, start-ups, and others offering technology to large companies and investors need to know their technology and whether the technology will meet an important need or solve an important problem facing the acquirer. The technology owner should also have an understanding of several distinct IP issues and typical terms of transfer.

IP Questions to Consider

Before a proposed transfer of rights can be realistically assessed, both the

By **Clifton E. McCann** and
Gregory D. Chafee
(Thompson Hine LLP)

ISSN:0747-8291. COPYRIGHT (C) Media Analytics Ltd. Reproduction in whole, or in part, including by electronic means, without permission of publisher is prohibited. Those registered with the Copyright Clearance Center (www.copyright.com) may photocopy this article for a flat fee per copy.

technology owner and the acquirer need to consider these IP-related questions:

1. Is the water treatment technology capable of being protected by valid patent or trade secret rights?
2. Will the scope of protection cover products, services, and/or methods of interest to the acquirer?
3. Will the acquirer be able to practice the technology without infringing the rights of others?

1. Is the water treatment technology capable of protection by valid patent or trade secret rights? The existence of patent protection can markedly affect the value of a technology transaction, but patent quality varies widely. Sophisticated companies know that a U.S. Patent Examiner has on average about 20 hours to examine a patent application, and that leaves little time for the Examiner to understand the invention, conduct a search for relevant prior art, notify the inventor of deficiencies and rejections, deal with the inventor's responses, and handle all the related paper work that is required. In addition, an Examiner does not review prior art sources throughout the world, even though non-U.S. and non-English language patents and publications are equally as pertinent as U.S.-origin prior art literature.

A technology owner therefore needs to show up with more than simply a patent in hand. Technology owners should prepare to give the company comfort that their patents were appropriately issued and can be defended. A prior art search report by a professional search firm is helpful, especially where it shows that the search extended to countries and languages were relevant prior art might have been found. Because most patent searchers are not

attorneys and are therefore unaware of complexities and recent changes in the criteria for effective prior art under U.S. patent law, a supporting opinion on the likely validity of the patent rights, signed by an attorney knowledgeable in the relevant technology and industry, is also helpful. A resume showing the inventor's credentials and familiarity with the pertinent art can also help convince the acquiring company that the patent protection is strong and worth owning.

Technology transactions can be based solely on trade secret rights in the technology. Trade secrets are sometimes effective in protecting competitively valuable manufacturing and treatment processes, ingredients, and additives, and products that cannot be "reverse engineered." Trade secrets became more valuable in March 2013, when U.S. patent law changed to enable owners of trade secrets to patent their trade secret technology even after years of commercial use. Trade secrets become worthless, however, when others become aware of the secret technology through independent means. A technology owner who only owns trade secret protection must convince an investor or acquiring company that the technology is not presently known to third parties and that third parties are unlikely to independently learn of the technology in the future. A compelling fact-based analysis of a trade secret's strength can carry a deal through, but the risk of the loss of secrecy markedly depresses the value of a typical trade secret deal.

2. Will the scope of protection cover products, services, and/or methods of interest to the acquirer? The scope of a patent's protection is especially important to the acquirer. Patents are of little value when they don't cover the products, services, materials, equipment, or process of interest. A patent is

also of little value when a competitor can “design around” the patent and create an unpatented product or process that has essentially the same commercial value as the protected subject matter.

If a competitor is able to eliminate any commercially insignificant feature recited in a narrow patent claim, the competitor can make profits on the valuable ideas found in the patent without paying any royalties to the patent owner. A technology owner can help conclude a deal by presenting a chart to the potential

Claim scope is important in other contexts as well. Large companies may have technology with commercial value worldwide, or different companies in different countries may have an interest in the technology. Thus, it can be important for the technology owner to file for patent protection of the technology abroad. It is also important that the patent claims are not written in a way that limits them to a particular industry (e.g., the high-purity versus drinking water industries). Many water

justifiable patent infringement suit by the owner of the prior patent.

New opportunities have become available for challenging the validity of earlier third-party patents that conflict with the use of new technology. Since September 2012, the newly created Patent Trial and Appeal Board (PTAB) of the USPTO has had the authority to reconsider the validity of issued patents in what are known as Inter Partes Review or Covered Business Method proceedings. For patents based on applications filed on or after March 16, 2013, the PTAB has also been given the authority to broadly reconsider patent validity in a new proceeding known as Post-Grant Review. These three proceedings can provide legal, procedural, and cost-savings benefits to patent challengers, and the proceedings can be completed much more quickly than patent challenges in court. In some instances, owners of important new technology can enhance its value by using the new proceedings to eliminate conflicting third-party patents.

“Patents are of little value when they don't cover the products, services, materials, equipment, or process of interest.”

purchaser that shows the scope of the patent protection, matches the scope to the purchaser's need or problem to be solved, and shows that each of the claimed features are essential and that a competitor cannot effectively compete by designing around.

When patent claims are originally drafted, it is sometimes difficult to anticipate how a future competitor can design around them. Anticipating design-around options can be especially difficult in unpredictable areas of water treatment, for example where an inventor predicts that an invention will only be effective when particular starting materials, composition ratios, or processing conditions are employed, and then finds out later that features thought to be important were in fact nonessential. The technology owner can guard against such unpredictable outcomes and provide greater value for the acquiring company by filing what is known as a “continuing” patent application in the USPTO before the inventor's first patent issues. The owner can broaden the claims of the continuing application to remove a claim limitation that has allowed a competitor to design around. Alternatively, a patent owner can stop a competitor's design-around activity by broadening the claims of an issued patent, but a request for broadened claims must be filed within two years of the patent's issuance, and other disadvantages make this option less attractive.

technologies, such as reverse osmosis, ultrafiltration, UV disinfection, and the like have value across different sectors of the water industry. Licensing into different sectors can generate additional revenue at little or no cost.

3. Will the acquirer be able to practice the technology without infringing the rights of others? A patent gives its owner the right to exclude others from practicing the claimed invention. A patent does not, however, necessarily give the owner the right to practice the claimed invention. In particular, an earlier patent of a third party might claim exclusive rights to the use of one of several features of the newly claimed invention. In that case, the owner of the new patent may need to obtain permission from the owner of the earlier patent before going into commercial production. Before meeting with a potential acquirer about technology rights, it can be helpful for a technology owner to provide the results of a search for possibly conflicting, pending patents in the U.S. and/or another country in which the newly claimed invention is to be practiced. The search can be conducted by a professional searcher or by an attorney. If prior pending patents are found that raise questions, the owner of the new technology should consider engaging an attorney to provide an opinion as to whether the new technology can be freely practiced without fear of a

Familiarity with Contract Terms Is Important

Non-disclosure agreements, assignments, and licenses are among the types of contracts that are commonplace when transferring technology, and technology owners should be familiar with these contracts and the terms a large company or investor is likely to insist upon.

Non-disclosure agreement. Large companies that are invited to review new technology are usually unwilling to accept strict limitations on the use or disclosure of the technology. Therefore, the non-disclosure agreement between the parties should reasonably protect the disclosing party but not place unreasonable limitations on the ability of the receiving party to circulate the new technology internally and perform testing and evaluation that is necessary and appropriate for validating the technology and its usefulness for intended commercial applications.

Patent and/or trade secret assignment. When it comes to transferring rights in new technology to a large company,

technology owners have two basic transfer options to consider. One is assigning the rights in their entirety. The other is licensing the rights on exclusive or non-exclusive terms. An assignment of rights is simpler than a license, since the relationship between the seller and buyer essentially ends when the assignment agreement is signed. The acquiring company agrees to pay an amount to the technology owner for complete ownership of the rights. The acquiring company then takes all the profits if the technology is successful but also accepts all the risks of failure. Assignments can make sense for both parties, but where the likelihood of profits and risks has not been fully evaluated, the technology owner can expect more often than not to receive an offer that falls short of expectations.

Patent and/or trade secret license.

License agreements provide increased flexibility and opportunities for sharing risks and rewards. A license typically entitles the water technology owner to receive a share of the licensee's sales or profits in return for the right to use the new technology for a limited term. The license can include royalty rates that vary in a way that incentivizes

“A patent gives its owner the right to exclude others from practicing the claimed invention.”

the licensee to make sales. The license can also include safeguards that allow the technology owner to cancel if the licensee fails to perform. Best efforts clauses can provide the technology owner with rights of cancellation, for example, if the licensee fails to meet due dates for completing feasibility studies, introducing the technology into the marketplace, and/or achieving a particular annual sales volume.

Licensing allows the technology owner to offer nonexclusive licenses to multiple companies. This is helpful when licensees exist in different market segments or in different geographical regions and do not compete with each

other. When the new technology is untested or requires considerable development prior to commercialization, however, an acquiring company will typically want exclusivity to protect its investment and to prevent competitors from receiving licenses on similar terms without investment expense. Periods of exclusivity in water technology can be lengthy, for example where pilot plants must be designed and constructed to prove feasibility. An exclusive license typically includes an upfront payment to compensate the technology owner for taking its technology off the offering block while the exclusive licensee attempts to develop the technology.

Royalty amounts are determined by taking into account the value of the technology and IP, the amount of investment needed to develop the technology, the market leverage a large company may bring to the table, and numerous other factors. Attorneys knowledgeable in the water industry are able to acquire royalty information from proprietary databases of licenses for comparable technology. This information can help a technology owner request royalty compensation at the high end of a reasonable range, and it can help serve as a framework for royalty negotiations.

Pursuing Infringement Claims and Settlements

One reason owners of water treatment technology should protect their intellectual property is to have recourse available in the event that a company practices a patented invention or trade secret without permission. Proving patent infringement can be expensive, and alleged infringers now have additional options for invalidating patents in the USPTO. But strong patents remain difficult to invalidate, and the U.S. Supreme Court issued a decision in April 2014 that makes it easier for a patent owner to receive an attorney-fee award from an infringer who raises unwarranted invalidity challenges in court. The recent decision provides the owner of a strong patent with increased leverage to make favorable deals with infringing companies, without the need for expensive litigation.



Author Clifton McCann co-chairs Thompson Hine LLP's Water Resources, Technology & Regulation Group and is a partner in Thompson Hine's Intellectual Property Practice and Washington, D.C. office. He is an experienced patent attorney with a technical background in chemistry, biology, and physics. Mr. McCann is knowledgeable in water treatment and concentrates his practice on the strategic development of patent rights, patent validity and infringement opinions, patent portfolio audits, and patent licensing and defense. He has obtained, exploited, and/or defended patent rights in numerous water technologies, including anti-corrosive coatings, desalination, filtration, fittings and valves, fluid dispensing and mechanics, ion exchange, organics removal, reverse osmosis, storm water treatment, water test equipment, and water treatment chemicals, equipment, and processes. He may be contacted at Clifton.McCann@ThompsonHine.com.



Co-author Gregory Chafee is a partner in the Corporate Transactions & Securities Practice and Energy Group and co-chair of the Water Resources, Technology & Regulation Group at Thompson Hine LLP. He has represented water industry companies in all aspects of their businesses, including purchase and sale transactions, regulatory compliance, operations, energy procurement and management, consumer and commercial products marketing and distribution, and financing and investment. Mr. Chafee provides strategic advice and counsel to water project developers, owners, operators, lenders, private equity and venture capital investors, suppliers and services providers on domestic and international matters. His practice involves a wide range of general corporate advice for clients ranging from global corporations to early stage entities and entrepreneurs. He may be reached at Gregory.Chafee@ThompsonHine.com.

Key words: INNOVATION, PATENTS, RESEARCH, TECHNOLOGY TRANSFER