

## MASTER INDEX OF FROM EXPERIENCE

Below is a complete listing of all the topics we have written about in From Experience during the past decade. To request a back copy, or to get an update about any of these stories, please contact us at 513-214-1230 or send an email to Warren Green at wgreen@hixson-inc.com.

1997		2002 Continued	
July	The Straight Dope On Drain Slope	September	HVAC Unit And Duct Layout
August/Sept.	Milk Your Savings Potential	October	How Dense Is It?
October	Go With The Flow October 1997	November	The Forgotten Asset
November	New Regs, Old Regs, Mega-Reg	December	Dry Material Storage...And Fire Protection
December	How Much Will It Cost?		
1998		2003	
January	Key Engineering Properties	January	Galvanized Pipe Corrosion
February	More Filling - Works Great	February	Seeing The Light
March	Measure For Measure	March	Nitrogen: To Generate Or Not To Generate?
April	Ice Builders - A Cool Way To Save	April	Don't Chill Out
May	If You Can't Stand The Heat - Transfer It	May	Emergency Ammonia Venting
June	"Rules of Thumb" For Instrumentation & Control	June	Boiler Efficiency: And Hidden Costs
July	USDA Says Meat Must Not Meet	July	Empty Pallets: Storage and Minimizing Fire Risk
August/Sept.	Estimating Fluid Flow	August	Motor Voltage: More Can Cost Less
October	Draw Me A Picture	September	Ultra Pasteurization
November	Steam Cooling Water Velocities	October	What's Relative About Humidity?
		November	Plant-Floor Communication
1999		2004	
January	Will Somebody Please Close The Door?	January	Prevent Leaky Caustic Lines
February	Leakage And Vacuum Equipment Size	February	Estimating CIP Burst Rinses
March	How Much Is That In Torrs?	March	Rising To The Occasion Part 1: Case-Lifting Systems
April	It Depends On What Your Definition of "PSI" Is	April	Rising To The Occasion Part 2: Pallet-Lifting Systems
May	Omega Fire Sprinklers Recalled	May	Boiler Efficiencies for Different Fuels
June	Which Warehouse Is Best?	June	Pipe Supports...Spanning The Distance
July	Temperature & Pressure Variations	July	Electrical Reliability Calculations
August	For Peace Of Mind, Pump Your Own	August	Keeping It Cool...Guidelines For Unit Cooler Coils
September	Historic Inventory Database	September	Safety-Related Ventilation for Battery Charging Areas
October	Inclined To Do It Better	October	24-Volt Vs. 120-Volt Controls
November	Fighting Listeria	November	Palletizing: End-Of Line Automation
December	Are You A Potential WMS User?	December	Minimizing Utility Costs
2000		2005	
January/Feb.	Chute Design: Size And Shape Matter	February	Wasted Opportunities
March	A Truck Is A Truck Is A Truck	March	Ice-Builder Maintenance...Beware Thin or Thick Ice
April	Commissioning Helps Ensure New System Success	April	Insulation...How Thick is Thick Enough?
May	A Fine Kettle Of...	May	Conduit Material...Stainless is Not Always Best
June/July	Rack' Em Up	June	Wrapped Up Right - Packaging Machinery Selection
August	Rack' Em Up Part 2	July	Sweeping Dust Under The Hood...Exhaust Ventilation
September	Something In The Air	August	Airing It Out: Right Ventilation for Forklift Exhausts
October	Chutes And...More Chutes	September	Propylene Glycol: Too much of a good thing
Nov./Dec.	Estimating Conveyor Horsepower	November	Condensation: A Condensed Primer
		December	Sanitary Weld Quality
2001		2006	
January:	Natural Gas/No.2 Fuel Oil Equivalency	January	Process Control Points: Key to Automation Startup
February	Variable Frequency Drives	February	Now You're Cooking: Efficient Gas Distribution
March	Flash Calculations In A Flash	March	All Fired Up: Justifying Burner Management
April/May	Effective Process-Area HVAC	April	Surface Cleanability: When "32 Ra" is not "32 Ra"
June	Humidity And Temperature Control	May	Boiler Operations: Optimizing Feed Water Conditions
July	Hissing Away Your Money?	June	Commissioning: Not Just Start-Up Anymore
August	Premium-Efficiency Motors	July	Air Knives: Better Use of Compressed Air
September	No Surprises: Equipment Installation Specification	August	Removeable Blanket Insulation: Energy Losses
October	Hissing Away Part 2	September	Proper Air Distribution: Thinking Outside the Duct
November	Before It's Set In Concrete	October	Order Picking: Choosing the Best Approach
December	Drip\$, Drip\$, Drip\$	November	Maintaining Balance: Pressurization and Air Flow
		December	Safety Showers & Eyewash Stations: Good Design
2002		2007	
January	When Motors Fail	January	Beyond the Codes: Flammable/Combustible Storage
February	Burned-Out Motors: Replace or Repair?	February	Safe By Design: Operating Equipment
March	Air Change Rates	March	Will It Float? Calculating Gas/Vapor Densities
April	Earth-Shaking Changes	April	Counting Calories: Put Your Facility On A Diet
May	More On Heat Capacities	May	Chill Out: Balancing Valves in Chilled Water Systems
June	Reduce Compressed Air Pressure and Save!	June	Sustainable Design: Already In Progress?
July	Buffers Can Increase Throughput...And Revenue		
August	A Quick - And Effective - Lift		

# 10 YEARS OF from Experience

## THE SOURCE OF OUR EXPERIENCE

From tips for improving plant performance and operational effectiveness to handy engineering rules-of-thumb to money-saving suggestions, each issue of *From Experience* focuses on topics that will be relevant to food and beverage plants. While sometimes you will find us quoting sources; often, the information we present is grounded in our own experience.

What exactly is the source of that experience? Obviously, our own associates and the knowledge they bring to our firm are a big part of it. Hixson was founded in 1948 by Lewis Hixson. While none of our associates from that era are still on staff today, the average age of Hixson associates is 42, with 10 years at Hixson. This means that our associates have an extensive amount of experience working with food and beverage processors; in fact, many have worked in food and beverage industries prior to coming to Hixson, helping to increase their understanding of our clients' challenges and needs. Hixson Associates also benefit from our Continuing Education policy, which enables all associates to spend at least 40 hours per year learning and growing in their respective fields. (See page 2 for a sampling of some of these activities).

Secondly, through the years, Hixson has worked on a large number of projects in hundreds of plants. During the course of these projects, which have helped our associates grow and expand their knowledge base, we have forged strong relationships with our clients, garnering repeat business year after year. If you have worked with us, you know that we are not just interested in getting as much business as we can from as many clients as possible. Rather, we prefer to work with clients with whom we can build truly successful relationships. We believe that this strategy, in the long run, will benefit everyone involved.

## WELCOME! TO THE 10TH ANNIVERSARY OF FROM EXPERIENCE!

In 2007, Hixson marks the 10th anniversary of producing our *From Experience* newsletter.

When we first created the newsletter, it was our vision to provide a forum where we could share the knowledge and insight we have accumulated with our clients.

While many things in the world have changed in the last 10 years, much of what you see in *From Experience* remains the same. Because we know your time is valuable, our newsletter has been kept to a single page, front-side only format. The focus of the piece is the main article, which is intended to provide information that will help you operate and maintain your facility more effectively. In the right-hand column, we provide additional information – sometimes calculations, sometimes simply additional data – known as “Experience in Brief.” Finally, in 1999, we began offering a look at the continuing education, seminars and events our associates have attended. Each of these elements still exist today.

From the seeds of *From Experience*, other Hixson newsletters have quickly followed. The first offshoot happened in 1998, with the first issue of the *From Experience – Environmental Health & Safety Edition*. As its name implies, this quarterly newsletter exclusively focuses on environmental, industrial hygiene and safety topics. A third publication, *Building Experience*, examines architectural, civil and structural engineering issues. In addition, we are constantly producing white papers, articles and more. If you or a colleague are not receiving these other pieces and would like to be included on our mailing list, please let us know!

In closing, a client recently remembered we had written about a certain topic in a past issue of *From Experience*. We quickly located the issue – from 2003! – and re-sent it to him. It is our hope that in every monthly issue of *From Experience*, you are finding at least one nugget of information that you or one of your co-workers can use in your job – if not today, then sometime in the future. As always, we are more than happy to send you past issues. (See the back page of this special edition for a complete list of the topics on which we've written.) In addition, let us know if there is a topic you want us to cover in the future. We like to spend our time on issues and ideas most important to you!

Warren Green  
Manager of Process Engineering/  
Managing Editor, From Experience

## ABOUT OUR AUTHORS

You may or may not see their names in print, but behind some of the stories you read in *From Experience* are the thoughts and ideas of a number of Hixson associates, including recent contributors such as David Klenk, P.E., (Mechanical Engineering), Mitch Vanover (Automation), Tatyana Slobodnik (Mechanical Engineering), and Greg Hammond (Architecture). In addition, some of our frequent contributors are:



**Warren Green:** Warren is the Manager of Process Engineering at Hixson and serves as the Managing Editor for, as well as frequent contributing author to, *From Experience*. In his primary role as Process Engineering Manager, Warren leads the team which provides core process engineering services, as well as process safety evaluations, waste and energy minimization studies, due diligence and master planning. The department also serves as a process liaison with outside consulting. Warren earned an MBA from the University of Cincinnati and a B.S. in Chemical Engineering from the University of Kentucky.



**Kurt F. Kaupisch, P.E.** If you have never heard the name Kurt Kaupisch, you must not have been reading *From Experience* for very long! Kurt is the founder and former Managing Editor of the newsletter. While he primarily devotes his time today to serving Hixson's clients needs as a Senior Project Engineer in the Process Engineering group, he is still a frequent contributing author. A 40+ year veteran of the industrial and food processing sectors, Kurt holds a B.S., M.S., and a Doctorate (without dissertation) in Chemical Engineering from the University of Cincinnati as well as several certifications.



**Jim Adler.** Jim Adler is the Manager of Refrigeration Engineering at Hixson. A refrigeration engineering professional with more than two decades of experience, Jim joined Hixson in 1998 and now leads the Hixson team that specializes in the design of new and modified complex refrigeration systems. During his tenure at Hixson, Jim has been a frequent contributor to the *From Experience* newsletter on topics related to refrigeration, moisture control, etc. Jim holds a B.S. in Chemical Engineering from Pennsylvania State University.



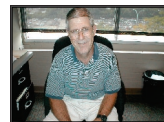
**Jerry Becher, P.E.** A Senior Project Mechanical Engineer with decades of experience, Jerry Becher is responsible for design, specifications, technical contact, systems start-up assistance and systems commissioning of boilers, air compressors, water and more, among other duties. Jerry, who is certified in energy cost reduction, holds both a Masters and a B.S. in Mechanical Engineering from the University of Cincinnati.



**Doug Ferguson.** A professional with more than 35 years of experience in operations and engineering for food and consumer products, Doug provides regular insight to Hixson's *From Experience* readers on topics related to manufacturing. In his "day" job, Doug serves as the manager of Hixson's Manufacturing Engineering group, leading the team responsible for designing, selecting and facilitating the installation of filling, material handling, packaging, storage and retrieval systems to meet clients' needs. He holds a B.S. in Mechanical Engineering from the University of Cincinnati.



**Mark S. Frey, P.E.** As Vice President and Manager of Electrical Engineering, Mark Frey leads the team responsible for designing, implementing and overseeing the installation of electrical and electrical-related components. A veteran engineer with nearly 30 years of experience consulting in the food and beverage industry, Mark holds a B.S. and an A.S. in Architectural Engineering from the University of Cincinnati, as well as an A.S. in Building Construction Technology from that institution.



**Rick Knuff, P.E.** As manager of Hixson's Mechanical Engineering department, Rick Knuff leads a team which is responsible for the mechanical equipment design, selection and installation needs of our clients. As a regular contributor to the *From Experience* newsletter, Rick brings to bear more than 25 years of industry experience working with mechanical, utility and HVAC systems in industrial and high technology projects. Rick is a LEED® Accredited Professional and holds both a B.S. and an M.S. in Mechanical Engineering from The Ohio State University.

## CONTINUING EDUCATION

In 1999, a feature known as "Copy Our Notes" began to randomly appear in the issues of *From Experience* to alert readers to the seminars, tradeshows and conferences attended by Hixson associates. In late 2000, the feature became a regular fixture under the title of Continuing Education, a natural given that Hixson provides full-time associates with 40 hours of personal development time each year to improve or enhance their work-related knowledge and capabilities. Look for the feature each month in the right-hand column!

To the right is a representative sampling of some of the continuing education featured in the pages of *From Experience* during the past decade.

Sample Seminars/Conferences/Tradeshows Attended	
FPSA Total Cost of Ownership	PMMI Product Tracking
Baking Advances	World of Concrete
Steam Condensate Deaerators	Special Fire Suppression Systems
Advanced Energy Auditing	ASHRAE Water Quality & Treatment
Applied Baking Technology	NFPA/FDA Thermal Processing
AIChE Conference	Energy Annual Seminar
Stainless Steel Passivation	3A Committee Meeting
Poultry Processing	Food Industry Packaging
IDFA Plant Operations	IIAR Annual Meeting
Fiber Network Cabling	Large Chilled Water Systems

## INDUSTRY INSIGHTS AND PREDICTIONS

Just as the world is a different place than it was in 1997, so too is the food industry.

Clearly, food and personnel safety, productivity improvements and the need to reduce costs are key drivers for a vast majority of the changes we have seen in the past decade:

- Sanitary design has risen in prominence as plants look for new, better ways to maintain food safety.
- Stainless steel prices are extraordinarily high, climbing much faster than inflation. This trend may continue, causing payback for stainless steel equipment installations to become longer. Food manufacturers and suppliers may be tempted to substitute lower grades of stainless steel, but these substitutions must be carefully considered as some may be inappropriate for the application.
- The mandates of The Food Allergen Labeling and Consumer Protection Act of 2004 went into effect on January 1, 2006, resulting in an increased focus on allergen control within the food industry. It is expected that this emphasis will continue in the coming years as manufacturers search for cost-efficient methods to separate allergens while ensuring consumer safety.
- According to the Bureau of Labor Statistics, approximately 300 workers die each year from electrocutions at work, accounting for 5% of all on-the-job fatalities. Most of these can be avoided. To prevent these catastrophes, the National Fire Protection Agency (NFPA), at the request of OSHA, developed an electrical safety standard for the workplace. First published in 1979 and revised seven times since, NFPA 70E provides the conditions under which work on electrical equipment is to be performed. While this standard has been around for a while, like any rule, it has taken time to actually be implemented within companies. Within the past few years, OSHA has also begun to step up enforcement of the standard, making it more important for companies to ensure it is being followed.

Sustainability, another up-and-coming driver affecting the food plant within the past few years, will certainly have an even larger impact going forward. Some of the changes we have seen and/or will see:

- The rise of renewable bio-fuels such as ethanol is driving up costs for raw ingredients such as corn, and also extending the lead time for boiler equipment orders as manufacturers of this equipment turn their attention to bio-fuel providers.
- Lean manufacturing is becoming a growing factor for food manufacturers looking for sustainable and technologically advanced ways to create and operate facilities, impacting how products are created, packaged and shipped to the store.
- As landfill space continues to decline and disposal and treatment costs increase, producers will look for new ways to use or dispose of manufacturing byproducts. One

example is whey. This material, traditionally considered to be a low-value waste product of the cheese production process, is quickly being turned into a variety of value-added products:

- China is buying whey to feed the high protein to livestock such as piglets.
- Whey has potential to be a bio-fuel source.
- Whey is being used to increase protein content in a variety of foods.
- Whey Protein Isolate (WPI) is being molded into a pliable, bio-degradable ingredient for plastic packaging.
- Waste water treatment, energy consumption and air and water discharge are continuing issues. Sustainability is also a factor as plants search for ways to lower operating costs.
- While Hydrochlorofluorocarbons (HCFCs) were implemented as a temporary solution to replace ozone-depleting Chlorofluorocarbons (CFCs), these too must be phased out by 2030. Therefore, during the coming years, we expect more and more plants will take a hard look at their refrigerant to determine the appropriate solution.

Also driving change in the plant is the workforce itself. Immigration, language barrier issues, worker comfort and the growing use of automation with its inherent complexity are all factors affecting both how operations are conducted within the plant and also the ability of plants to attract and retain the right workforce.

Finally, consumer choice is driving change as well. The drive for a healthier diet has radically altered food menus and store shelves. Also, as a result of the rise of consumer preference for specialty items such as organics, pre-/pro-biotics and foods that adhere to religious dietary law restrictions (e.g., Kosher and Halal), consumers now have more choices than ever before when making food purchases.

In the end, all of these changes are certain to have an impact not only on how plants operate, but also in how they are designed as companies look to improve ingredient purity and segregation, equipment sanitation and changeover flexibility, and more. Considering these and other factors during plant design and construction will be crucial for success in the years to come.

*From Experience* has covered all aspects of plant operations from production to utilities and more. The following chart shows topics covered by discipline:

