

Steven J. Kuehl
Principal Mechanical Engineer
Intellectual Property Facilitation

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Engagement Objective

Professional satisfaction through facilitation of opportunity development, breakthrough problem solutions discovery and subsequent client patent portfolio value growth, for an organization committed to innovation and growth in its products and services demonstrated via new feature / new product / new market introductions.

Career Experience

Founder & Principal Technologist – SJ Kuehl, LLC, LeverageandGrow.com, April 2018 - Present

Helping Organizations: Apply breakthrough thinking in solving engineering problems and building patent portfolios.

Principal Technologist – Advanced Engineering - Global Product Organization, Whirlpool Corp. Benton Harbor, MI 08/16 - 01/2018

Responsibilities: Assist category product teams with concept solutions to establish patent position. Re-establishing competency for Intellectual Property (IP) coordinator role while supporting Independent Business units, and Advanced Engineering IP management.

Accomplishments: Scoped and negotiated tools for patent search and landscape support to Global Product organization. Set up tools for competitive Intelligence Group to track monthly patent and news wire activity. Mentor younger engineers / IP coordinators on tools and best practices. Lead multiple workshops for Water, AE and Dishwasher groups to focus, identify, enable and embellish, novel solutions for IP protection. Provided clearance analysis and marshalled timely review and filing of IP.

Principal Technologist – (Emerging Categories Air Treatment & Water Products) - Global Product Organization, Whirlpool Corp. Benton Harbor, MI 01/13-07/16.

Responsibilities: Establishing product leadership with product roadmaps, program development and IP portfolio for areas of new Growth in Water Products & Air Treatment Categories.

Accomplishments:

Water Products

- Aiding product engineering team with IP support

- leading ideation and coaching on submission writing on concepts for;
- Exterior Mounted retrofit water dispenser with filtration
- In filter flow counting with end of filter life indicator
- Drop pitcher utility and design patent filings
- coordinating clearance on new product launches
- providing business with high level competitive landscape searching and benefit evaluation and technical teams with technology scouting.
- Managing portfolio with budget planning & execution for US and foreign filing.
- Facilitated sessions on new product solution definition, highlighted major issues to solve & subsequent IP protection

Air Treatment Products

- Working as part of Global team to support regional teams, developed 3 year technology roadmap and development plan for Air Treatment new feature introductions on Mini Split AC. Drove technical direction for my Chinese direct reports to launch 2016 and 2017 lines comfort control and Sleep features.
- Developed Floor Standing Split System Air Conditioner platform, with furniture look
 - working concept product for Chinese market built and demonstrated
 - Currently being scoped by Hisense for premium floor standing line with improved comfort and IAQ capability..
- Provided proof of concept Sequential Operation Split System AC to provide entry level product multi Indoor unit as alternative to compete against more costly inverter drive compressor for multi Indoor split systems.
 - Testing and characterization of split system switching dynamic
 - layout of control circuit and control options for good, better, best with costing and complexity and benefits articulated.
- Ideation and schematic layout of disruptive
 - Outdoor Unit with enhanced compressor cooling
 - Indoor Unit with enhanced air filtration
- All concepts have patent applications filed.

Special assignment - Natural Gas automotive Refueling Appliance

- Lead 3 man technical team during establishment of final business case development with outside business consultants.
 - Evaluated competitive product, generated concepts for disruptive low cost, high reliability, low maintenance, home based unit.
 - Provided summary of codes requirements and opportunities for Whirlpool to influence on CSA review committees.
 - Filed US patent application on concept for low cost hydraulic based multi stage compression system.

Misc IP Support

- Ongoing support of Refrigeration IP coordinator and counsel on office action follow-up and evaluation of legacy IP for refrigeration.
- Led 4 man team to define and assess options for in-house patent landscaping and engineering evaluation of patents.
 - Thus resulted in a negotiated 3 year deal with Questel for multiple seats of Orbit for use by patent coordinators globally.
 - Set-up & co-facilitated on-line & in-house training for coordinators using Orbit.

- Facilitation of ideation and submission drafting for;
 - electronics group related to UI architecture commonality
 - Cooking group related to optimal sensing and control for baking process
 - laundry products on consumable dosing cartridge
 - Brazilian Beverage system optimization
- Primary contact to competitive intelligence group director for competitor patent landscape assessments.

Principal Technologist - (Cross Product Global IP Coordinator) - Global Product Organization, Whirlpool, 07/07 - 12/12.

Responsibilities: Leading of senior level engineers in a Community of Practice for Global IP Coordination to establish tools and best practices for Global portfolio management and generation. Management of \$5M+ North American IP budget among 9 product and/or functional categories.

Accomplishments:

- Managed North American IP budget and leveraged to provide IP tools for global organization.
 - Drove implementation of CPA Memotech to update patent docketing system and provide global invention submission system.
- Led IPCOP (community of practice) in adoption of new policies regarding IP processes, and best practice sharing.
 - Engineering lead in 4 man team to provide IP basics training course. Outlined and established up graded IP coordinator role definition.
 - e.g. product delivery system IP guide, foreign filing guidelines, awards policy, IP reviews for senior leadership,
 - budget reviews and allocation and mid-year re-allocation to product/functional categories.
 - Filled in gaps for other categories (Cooking & Refrigeration) when coordinators in transition.
 - Administration of patent recognition program in US
 - drove establishment of similar programs for Mexico, India, China
- Provided IP coordination for Air Treatment, Water and Beyond the Core dockets
 - assisting inventors with patent review and embellishment to enable inventors to expand breadth of patent application.
 - Managed filing strategy to maximize efficiency in spend and strength of portfolio.
- Leadership of global team of invention workshop facilitators
 - introduced GB TRIZ to organization with training sessions led in US, China, Brazil.
 - Facilitated and co-facilitated over 100 invention workshops since 2005 resulting in over 200 filed patent applications.
- Personally, over 35 granted US patents with priority filings in US, EU and Brazil since start of career.

- Whirlpool Named as a top 10 Consumer Products IP portfolio for past 5 years by Ocean Tomo / Wall Street Journal.

Staff Engr. - (Suites Technical Lead & Refrigeration AD IP Coordinator) - Corporate Innovation Technology, Whirlpool Corp. Benton Harbor, MI 9/05-7/07.

Responsibilities: Suites Technical Lead - Cross product category coordination of introduction of appliance suites with common launch date or staged launch for brands.

Refrigeration Advanced Development IP Coordinator - working with category global IP coordinator to marshal concepts through patent process via work with inventors on disclosures and follow-up with lawyers to ensure application content matched inventive intent and provided market advantage to company.

Accomplishments:

Suites

- Managed technical reviews to keep product categories on schedule
- worked with cross product – cross category team from Industrial design, procurement, materials, test labs and marketing
- Introduced Kitchen Aid Architect series, Jenn Air Bronze, Whirlpool Gold and Inglis by Whirlpool Universal Silver lines.
- Troubleshoot issues with product category teams and vendors on design and manufacturing issues for common aesthetic features, such as handles and badges, paint matching

Advanced Development IP coordinator

- Commissioned by Technology VP in fall of 2005
 - led facilitation of group with refrigeration category lead to establish charter of roles and accountabilities
- Completed training on Invention Workshop facilitation with refrigeration category lead.
 - Began conducting invention workshops to drive inorganic invention disclosure and patent applications for all product categories globally.
 - Coordinated the training of 5 other invention workshop facilitators globally.

Staff Engr. - Corporate Innovation Technology, Whirlpool Corp. 09/03-09/05.

Responsibilities: Tracking & development of new technologies product design or process concepts involving feasibility studies and prototype fabrication with cost and performance evaluation for refrigeration appliances.

Accomplishments:

- Project lead for multi-temperature zone refrigerator
- Global technology lead on refrigerated drawers development program.

- set-up of prototype line in Poland for introduction of refrigerated drawers in Europe for field trial and sales trial.
- Technical led on refrigeration appliances for vehicles.
 - conducted ethnographic study with participants in vehicles & designed functional units with freezing capability and user portability

Lead Engr. - Corporate Technology Development, Whirlpool Corp. 07/97-09/03.

Responsibilities: Tracking & development of new technologies product design or process concepts involving feasibility studies and prototype fabrication with cost and performance evaluation for refrigeration appliances. Manage designer/drafter resources for Department and mentor interns and junior engineers.

Accomplishments:

- Led design team in development of new built-in refrigerator bottom freezer platform refrigerator configuration for Kitchen Aid.
 - developed and delivered phase 1 product approval units with passing results
- Led project teams for US & BR development of temperature controlled crisper bins
- Led project teams for development of optimal temperature storage ice cream bin and glycol based quick chill for beverage containers

Senior Engr. - Corporate Technology Development, Whirlpool Corp. 04/93-07/97

Project Engr. - Corporate Technology Development, Whirlpool Corp. 03/90- 04/93

Responsibilities: Tracking & development of new technologies product design or process concepts involving feasibility studies and prototype fabrication with cost and performance evaluation for refrigeration appliances. Mentor interns and junior engineers.

Accomplishments:

- As lead of project team, developed unique dual evaporator sequential operation vapor compression refrigeration circuits achieving 20%+ energy improvement.
 - Co-author on eight (8) issued patents covering developed technology for system configuration and method of control.
 - Directed contract home economist for food preservation testing demonstrating benefits of system temperature recovery and control.
- Project lead on application and construction of PC-based programmable controllers for departmental use in development of electronic control based algorithms.
 - Systems built and deployed for US team
 - subsequent systems built for EU team
- Project lead for 60 unit field trial of the ultra efficient refrigerators using variable capacity compressor and dual evaporator sequential systems.
Coordinated;

- on assembly line build, site selection and installation, service training and unit recovery and tear down.
- remote diagnostics set-up and monitoring (units connected via modems)
- Developed practical prototype of accelerated flow evaporator with subsequent manufacture feasibility, cost and product application.
 - Concept provided potential of 40% reduction in evaporator materials and compacting of evaporator plenum volume.

Project Engr. - Dryer Engineering, Whirlpool Corp. St. Joseph, MI 06/89-03/90

Responsibilities: Dryer cost and quality improvements.

Accomplishments:

- Collaborated with Staff Engineer to redesign idler pulley assembly on dryer drum drive for a \$400k annual cost reduction and increased product reliability, patent awarded.
- Implemented blower shaft seal to reduce air/heat losses and reduce complaints on start-up hits to housing.

Engineer - Kitchen Aid Laundry Technology, Whirlpool Corp. St. Joseph, MI 08/88-05/89

Responsibilities: Kitchen Aid brand washer and dryer cost and quality improvements.

Accomplishments:

- Core member of project team to eliminate top load washing machine walk and vibration issues on wood floor installations.
- Improved sound pack materials quality and obtained cost reduction.

Engineer - Design Services, Whirlpool Corp. St. Joseph, MI 04/88-07/88

Responsibilities: Upgrading of Packaging test laboratory and design of dryer packaging.

Accomplishments:

- Performed packaging testing per internal specs and helped identify cause and then troubleshoot distribution system product shipping damage issues on gas dryers.
- Designed and built a test instrument for checking clamp truck force calibration.
- Learned CV CAD and supported group by converting mylar drawings to CAD files.

Engineer - Advanced Development, Whirlpool Corp. Benton Harbor, MI 08/86-03/88

Responsibilities: Development of new product design or process concepts, involving feasibility studies with prototype fabrication and evaluation for refrigeration and air control appliances.

Accomplishments:

- As part of four man project team, developed a twin sheet thermo-formed plastic panel construction chest freezer with modular refrigeration system, co-inventor, three patents

- Rebuilt hardware & software for a evaporator coil calorimeter.
 - Evaporator evaluation tests run to support product engineering and new concept development.

Education

MSME-8/87 Herrick Laboratories, Purdue University West Lafayette, IN
Graduate Course Emphasis: Thermo-Fluid Analysis & Numerical Computation (GPA 5.2/6.0)

Thesis Project: Theoretical Modeling and Experimental Study/Validation of the Two-Phase Refrigerant Flow Phenomenon in Heat Pump Expansion Devices. (Project Sponsor: Rheem Manufacturing).

BSME-5/84 Michigan Technological University Houghton, MI Passed E.I.T. Exam.
Design Option: Energetics & Thermo-Fluid Analysis (GPA 3.4/4.0)

Professional Short Courses/Seminars/Certifications & In-House Training

- Dale Carnegie *Strictly Business* Immersion Course, 2017
- Knowbrainer Creativity Training Workshop, 2013
- GBTRIZ Innovation facilitator certification, 2012
- Invention Workshop Facilitation – Vincent and Associates, 2005
- Group Facilitation – Whirlpool sponsored course, 2004
- I-Mentor – Whirlpool Innovation tools & processes (later developed & taught I-Lite)
- Pro/Engineer - Mechanics Structural/Thermal Analysis, 50+ hours, 1998
- Pro/Engineer - Part Design & Assembly, 200+ hours, 1996
- Project Management - Short Course & MS Project
- Objective Setting & Appraisal Writing for Supervisors
- 100+ US patents

Personal

Married, empty nest, member ASME & ASHRAE.

Interests include: Travel, skiing, boating, gardening, home improvement & church activities.