**KAROLY MAGDA**

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**SUMMARY**

Spallation Neutron Source (SNS) Cooling Systems group senior engineer. Experienced with beam accelerator cooling systems (ACS) and neutron research facility equipment cooling design, operation, maintenance, upgrade, and construction. Acted as ACS team leader. Skilled in particle accelerator cooling deionized water chemistry, structure, radio frequency (RF) components, magnet and magnet power supply cooling, SCR, high-voltage converter modulator, process control, and Central Utilities. Participated in Proton Power Upgrade (PPU) Klystron Gallery cooling systems equipment and piping preliminary and final design, installation, test, and start-up verification phases and commissioning. Collaborates on integration of equipment with multi-teams such as architect/engineer (AE) construction companies and the Electrical, Process Controls, RF, and Conventional Facilities groups. Works on preliminary and final design of ring power supplies and magnet cooling systems and acted as cost account manager.

Collaborates with other DOE national laboratories regarding cooling systems. Acted as a reviewer for the Fermilab Proton Improvement Plan II (PIP-II) project preliminary review and co-wrote the final design report.

Worked on Second Target Station (STS) and space programing study for the magnet and magnet power supply cooling systems pump room with AE Cannon Design. Created magnet and power supplies cooling system distribution piping options. Collaborates and shares lessons learned with STS Conventional Facilities and STS Accelerator Systems groups.

Acts as SNS tour guide.

Acted a facilities engineering manager in automotive industries and lead numerous energy-saving and environmental projects.

Led start-up and power ramp-up in a cogeneration power plant for mechanical systems and ran the mechanical engineering department.

**TECHNICAL EXPERTISE AND WORK AREAS OF INTEREST**

* Particle accelerator cooling systems upgrade, design, construction, operation, maintenance, test, start-up verification, commissioning, and multidisciplinary project integration.
* Accelerator components cooling system operation and maintenance data collection, analysis, and optimization.
* DIW chemistry characteristics.
* Rotary equipment vibration profile.
* Accelerator structure and RF components cooling passages copper corrosion protection and preservation.
* Collaboration and experience exchange with other US national laboratories and other global accelerator communities, such as the European Spallation Source.
* Energy-saving and environmental preservation projects.
* Facilities management.
* Community work such as Engineers Week—presenting engineering work to students.

**EDUCATION**

Master’s degree in industrial engineering, University of Tennessee, Knoxville

Bachelor’s degree in mechanical engineering, University of Tennessee, Knoxville

Associate degree in mechanical engineering, Technical College Zrenjanin, University of Novi Sad, Yugoslavia

Other Credentials:

Certification of Energy Management, Atlanta, Georgia

OSHA 30 Certification, Nashville, Tennessee

**PROFESSIONAL EXPERIENCE**

**Cooling Systems Group Senior Engineer, ORNL/SNS Research Accelerator Division (RAD), Oak Ridge, Tennessee April 2016–present**

* Collaborate with other DOE national laboratories. Act as a reviewer for the Fermilab PIP-II project preliminary review.
* Oversee PPU construction of the Klystron Gallery piping and KL-06 pump room construction, test, startup, and collaborating with Cooling Systems group team members, subcontractors, and project management during equipment installation, tests, start-ups, and verification. Propose correction when needed.
* Review AE PPU cooling system construction design models by using Navisworks Manage software. Review pump room and cooling distribution piping plan and section drawings. Make engineering design review record notes to AE and propose resolutions.
* Review PPU AE construction submittals; requests for information; approve, propose to reject, and redo submittals for the cooling system.
* Collect data and analyze SNS accelerator current cooling systems and size new cooling systems.
* Optimize cooling systems and eliminate two planned cooling systems building, thereby saving $3M.
* Develop the preliminary design of SNS PPU ACS, select all components for the pump room KL-06 cooling and polishing loop, and all DIW chemistry instruments.
* Collaborate with Electrical, RF, Site Services, Project Management, and Process Controls groups throughout the PPU project, such as building a new klystron cooling system KL-06 and upgrading the ring magnet and magnet power supply cooling systems.
* Develop preliminary and final designs of ring magnets and power supplies RN-03, project cost estimate, and act as cost account manager. Provide basis of design, P&ID, scope, and deliverables to AE for design of ring power supplies cooling systems RN-03. Prepare and give several review presentations for the PPU, such as the Critical Decision 3B DOE Review.
* Integrate PPU and other ACS projects with multi-teams such as Electrical, Process Controls, RF, and Conventional Facilities groups.
* Co-wrote the technical construction specification for RN-01 magnet cooling system and RN-03 magnet power supply cooling system capacity upgrade for PPU—Scope of Work.
* Wrote the technical specification for cooling system components, such as temperature control and resistivity control valves.
* Procure cooling system components.
* Participate in Space Programming Study for the STS magnet and magnet power supply cooling systems pump room, Conceptual Design of the STS accelerator cooling systems distribution piping RT-01, RT-02 options, bases of design for the STS magnet power supplies.
* Act as Pressure System Custodian for Accelerator Cooling Systems—Hazard Analysis of KL-06 and RN-03 cooling systems.
* Gather data for all ACS pressure relief valves in a single database and propose a calibration and/or replacement program.
* Define DIW purification for ACS and write water chemistry protocols and guidance.
* Simulate ACS hydraulic and thermal modeling and analyze different scenarios using AFT Fathom software.
* Manage annual contracts.
* Write and publish technical reports via the ORNL RESolution system.

**Accelerator Cooling Systems Team Leader,** **ORNL/SNS RAD, Oak Ridge, Tennessee October 2012–April 2016**

* Led and managed the Accelerator Cooling and Mechanical Systems design work, manage $3.5M budget, equipment procurement and installation, operation, maintenance, upgrade, improvements, and R&D projects.
* Oversaw and approved design change notes and work control processes and acts as design authority.
* Planned and scheduled outages and long runs; created annual work packages.
* Prepared full-time equivalent annual and 5-year budgets.
* Conducted employee performance assessments and suggested employee compensation.
* Supported management with establishing future paths and company culture.
* Collaborated across multiple teams and groups, including electrical, control, HP radio frequency, high-voltage converter modulator, Central Utilities Building, magnets, cryogenics, ion source, and vacuum.
* Promoted and implemented principles of Lean Systems, Six Sigma, Inventory Management, and Workplace Organization. Proposed savings by using these principles.

**CUB Utilities Engineer, ORNL/SNS RAD October 2010–October 2012**

* Acted as design authority for design change notes packages for improvement projects to industrial pumped water systems, chilled water plants, cooling towers, air compressors, air handlers, and confinement fans.
* Provided technical direction and oversight for the operation, maintenance, energy management, system upgrades, and improvements to Central Utilities systems.
* Developed and maintained standard procedures for the operation and maintenance of the Central Utilities systems, budgeting, and preventive maintenance contracts.
* Resolved rotary equipment excessive vibration problems.

**Facilities Engineering Manager, BOSCH Group AF/****PBR Knoxville, LLC, Knoxville, Tennessee 2006–2010**

* Planed, budgeted, and managed a $1.5M building expansion project that included access control, security, and fire protection projects.
* Recognized by DOE for demonstrating leadership in energy savings; received a Pacifica Award for the Corporation Best Environmental Project for a wastewater ultrafiltration system.
* Champion Energy Savers team and electrical safety projects such as arc flash protection.
* Supported lean manufacturing, just-in-time, and workplace organization (Six Sigma). Designed layouts for equipment installation and relocation to improve lean manufacturing and material flow.
* Led critical reorganization projects during transition at company buy out.
* Assumed numerous responsibilities of SH&E Manager during plant closure.

**Senior Facilities Engineer, PBR Knoxville, LLC, Knoxville, Tennessee 1999–2006**

* Supervised energy saving programs such as heat recovery utilization. Design a heat recovery system for a 240,000 ft2 plant. Reduced compressed air usage by 34% and saved $270,000/year.
* Managed operational and capital budgets ranging from $3.5M to $5M.
* Re-designed machining chip reclamation and captured $90,000/year savings in machine coolant recycling.
* Negotiated utilities, equipment, and building maintenance contracts and saved more than $200,000/year.
* Directed and oversaw maintenance work on mechanical and electrical equipment, including switchgears.
* Managed operation and maintenance for compressed air system, boilers, natural and back-up gas system, HVAC, electrical distribution, wastewater equipment, and metal machining chips reclamation.
* Directed and managed plant activities to obtain and maintain ISO 14001 certification.

**Maintenance Technician, Breed Technologies Inc./Allied Signal Safety Restraints, Knoxville, Tennessee 1993–1999**

* Maintained welding robots, hydraulics and pneumatics, heat treat furnaces, steam boilers, boiler water chemical treatment, cooling systems, compressed air systems, nitrogen-generating equipment, and propane vaporizer mixer.
* Designed new compressed air systems for the textile plant, including equipment layout and piping flow diagrams.
* Established preventive maintenance program, vibration trending on rotary equipment, equipment maintenance history, and daily checklists.

**Manager of Mechanical Maintenance, Cogeneration Steam Power and Heating Plant, Zrenjanin, Yugoslavia 1981–1992**

**Manager of Mechanical Maintenance**

* Directed the activities of 10 engineers and more than 30 maintenance technicians and mechanics.
* Oversaw commissioning, startup, and power ramp-up of a new cogeneration steam plant mechanical system.
* Budgeted for capital modifications and retrofits, major repair outages, and maintenance on 120 MW turbine-generator startup, natural gas fired boilers, and auxiliary equipment.

**System Engineer of Powerhouse and Auxiliary Objects**

* Performed as technical adviser on maintenance of steam turbine generators equipped with several extractions, boilers, high-pressure heat exchangers, feed-water pumps with Voith fluid variable-speed couplings, centrifugal and screw pumps, cooling towers and fans, and water softening and purification.

**Powerhouse Section Head**

* Led a vast analysis and energy-saving program determined on thermal equipment innovations, such as steam turbine condenser reject energy usage for the city heating system.
* Supervised a project that provided enough energy each year from heat recovery to heat 20,000 apartments for more than a month.

**PUBLICATIONS—ORNL RESolution**

1. Ring Service Building Magnet Power Supplies Data Collection and Findings on Power and Rejected Heat to Water, 2021, ID 150684.
2. Final Design Report Proton Power Upgrade Project, 2020, ID 141585
3. ORNL Spallation Neutron Source, Introduction to members of Association of Energy Engineers East Tennessee Chapter, 2019, ID 124768.
4. SNS Resonance Control Cooling Systems and Quadrupole Magnet Cooling Systems DIW Chemistry, 2018, ID 107100
5. SNS RFQ Cooling Channels Average Surface Area Loss Estimate, 2017, ID 100967
6. SNS RFQ Cooling Water Chemical Treatment, 2017, ID 72417

**MEMBERSHIPS/AFFILIATIONS**

* Association of Energy Engineers
* DOE/NNSA US Maintenance Managers Working Group

**LANGUAGES**

Fluent in English, Hungarian (native language), and Serbo-Croatian. Used German and Spanish.