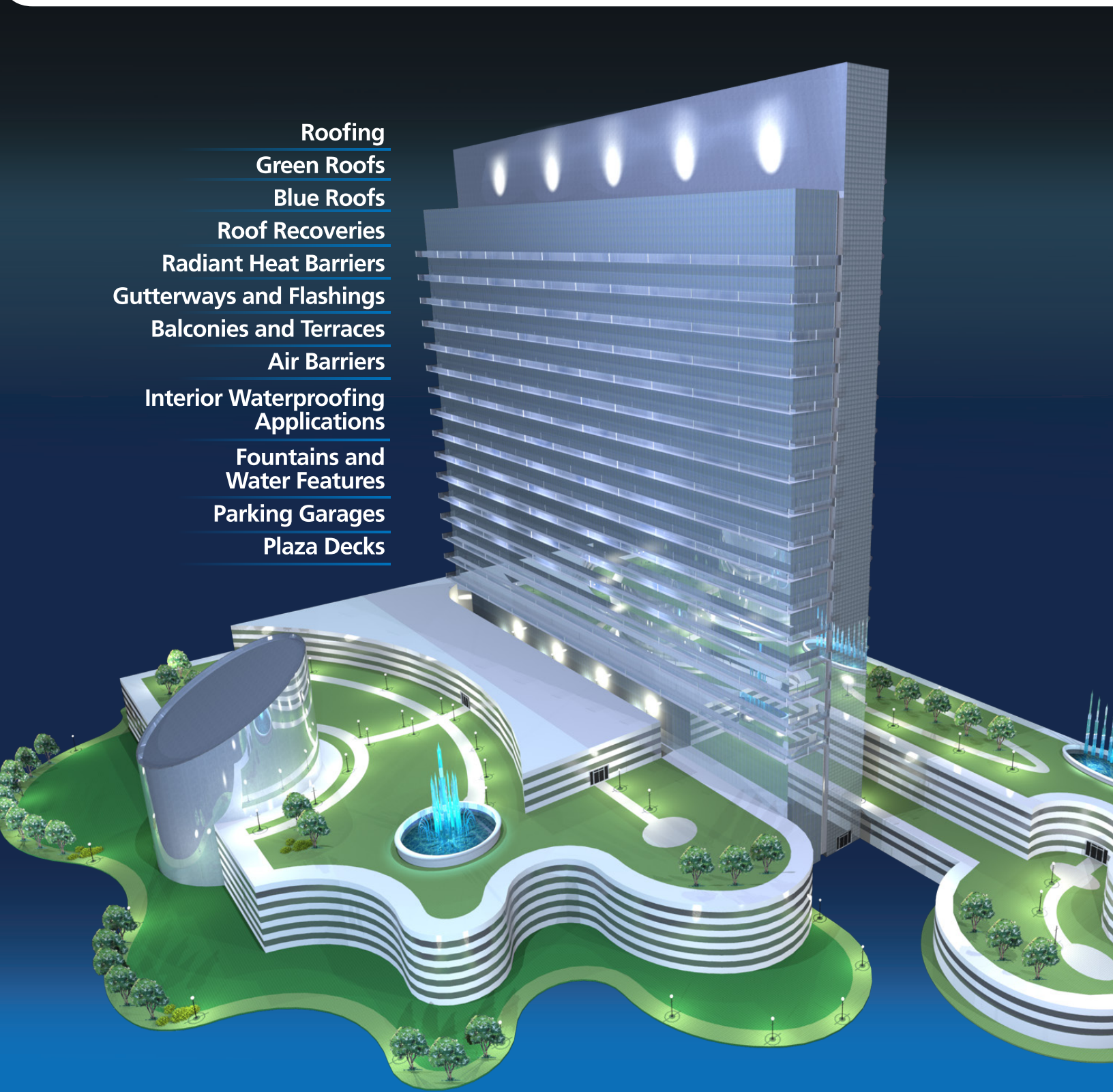
KEMPER SYSTEM | BUILDING ENVELOPE Solutions

Accredited Continuing Education Program Guide



Top to Bottom, Inside and Out, Full Building Envelope Solutions

With more than 60 years of proven experience, Kemper System is the global leader and innovator of the highest quality, cold liquid-applied, fully reinforced waterproofing and roofing membrane systems. We have expanded from our German roots to offer a full range of Building Envelope solutions that protect against weather, preserve the integrity of surfaces, and enhance the energy savings, comfort, and value of buildings. From the scorching heat of Puerto Rico to the ice and freezing temperatures of Alaska, our products stand the test of time, even under the most adverse conditions.

Our full Building Envelope solutions address all types of challenges across the the building structure, top to bottom, inside and out. Our versatile solutions provide edge-to-edge protection for long-term performance within various applications. This includes green, blue and white roofs, plazas, existing roof recoveries, balconies, terraces, historic restoration, gutterways, interior, industrial applications, below-grade waterproofing and negative-side waterproofing.

For more information about *'top to bottom, inside and out'* Full Building Envelope Solutions, visit www.kempersystem.net.

KSA – 1
Cold Liquid Applied Roofing & Waterproofing Systems
Credit Designations: AIA/CES 1.5 LU|HSW & 1.5 RCI CEH

History of fully reinforced, cold-fluid applied, liquid resin waterproofing membranes. Technology - composite of resin and reinforcement. Understanding system components. Application process, performance benefits, range of applications. Project examples including detailing and various assemblies.

- **Learning Objective 1:** Introduction and brief History of the fully reinforced cold-fluid applied liquid resin waterproofing membranes and the technology that created them.
- **Learning Objective 2:** Understanding System Components and Assemblies. Application Process including Technology Resin and Reinforcement. Review the Performance Benefits and Characteristics of Liquid-applied Systems
- **Learning Objective 3:** Review the Range of Applications including roofs, plaza decks, balconies, terraces, fountains, gutters and interior applications. Includes a special brief introduction to sustainable roof designs including green roofing, blue roofing and white roofing. Process -Substrate evaluation -Preparation -Priming -Waterproofing -Surfacing Options
- **Learning Objective 4:** Understanding System Components Primers -Patching Mortars -Reinforcements -Resins / Additives -Sealants and Surfacing Reviewing details, assemblies and case studies of projects.

KSA – 2
Green, Blue and White and Its Applicability to Sustainable Design
Credit Designations: AIA/CES 1.5 LU|HSW & USGBC GBCI: 910000002 1.5 CE & 1.5 RCI CEH

There are now three (3) distinct types of sustainable roof solutions: green, blue and white. Designers need to understand the relative benefits of each approach to effectively select the appropriate system for the project. Understand the standards that are used as the basis for green roofs and their myriad benefits that can be reaped. Numerous case studied will be presented.

- **Learning Objective 1:** Identify examples of green, blue and white roofing systems - explaining the environmental performance issues of each and discussing the criteria used when selecting each as an approach to sustainable roofing practices from a storm water management, cool roofing and urban heat island point of view.
- **Learning Objective 2:** Compare vegetated roofs, landscaped garden roofs and green roofs - in the context of the FLL definitions comparing extensive, semi-intensive and intensive green roofs. Further discussing storm water capacity, system weight, maintenance requirements and general recommendations.
- **Learning Objective 3:** Describe the benefits to building owners and the public including economic benefits related to heating and cooling, amenity space and aesthetics, sound insulation, air quality benefits, moderating Heat Island Effect and Storm Water Management in terms of minimizing Combined Sewer Overflow.
- **Learning Objective 4:** A review of Design Guidelines and Updated Standards for Green Roof Design including roof slope, design loads, wind design and fire resistance. How to evaluate the growing media and to specify appropriate flora and fauna for a green roof.

KSA – 3
Technical Inspections for Liquid Resin Roofing & Waterproofing Membranes
Credit Designations: AIA/CES 1.5 LU|HSW & 1.5 RCI CEH

With the mainstream usage of the Cold Fluid Applied, Liquid Resin Roofing & Waterproofing Membranes; it is necessary to obtain the technical knowledge used to provide QC inspections. Course will provide attendees of basic "what to look for" information, some science related to the information and corrective course of actions that may be possible.

- **Learning Objective 1:** Understand the recommended application procedures for these types of liquid resin systems. Including several different resin and reinforcement types typically seen in the U.S. market.
- **Learning Objective 2:** Identify typical application deficiencies including substrate preparation, primer application, membrane application and surfacing.
- **Learning Objective 3:** Develop solutions for typical problems encountered in the field and provide recommendations on how to address these problems promptly before they become large scale issues.
- **Learning Objective 4:** Show project specific case studies to support the common sense solutions for application deficiencies.

KSA – 4
Blue Roofs and Storm Water Management
Credit Designations: AIA/CES 1.5 LU|HSW & USGBC GBCI: 920000037 1.5 CE & 1.5 RCI CEH

The effects of Storm Water during Peak Flow periods in areas serviced by Combined Sewer Systems is a hot button issue all over the United States. Blue Roofs are a useful and cost effective tool for managing Storm Water during Peak Flow periods and can be used to contribute to minimizing Combined Sewer Over-flow.

- **Learning Objective 1:** Understand the causes, look at the process and identify some of the problems associated with the combined sewer over-flow phenomenon.

  Learning Objective 2: Look at some of the measures being taken to address this concern including vegetated roofs, vegetated swales, pervious paving, water retention tanks and blue roofing.
- **Learning Objective 3:** Define Blue Roofing and discuss the current design issues in terms of limitations, requirements, best practices and performance.
- **Learning Objective 4:** Review case studies of projects in place discussing how design issues were addressed and providing a frame of reference to how these projects are typically being handled.

KSA – 5
Dynamic Tour of Liquid Resin Roofing & Waterproofing Materials Manufacturing Facility
Credit Designations: AIA/CES 1.0 LU|HSW & 1.0 RCI CEH

Guided Manufacturing Plant Tour of Kemper System America's West Seneca, NY Facility. Tour includes a review of plant safety criteria (5 mins); QC & R&D labs (30 mins) introduction into various equipment used for ASTM and product testing; Warehouse tour (5 mins) including discussion of building design for containing potential spills to protect surrounding wildlife area; Distribution center (5 mins) discussions including QC process for incoming raw materials and outgoing products; Manufacturing overview (15 mins) showing machinery and processes for creating various liquid resins, primer, topcoats and coatings.

- **Learning Objective 1:** Attendees will be presented general safety information for touring an active chemical manufacturing plant. Including General Rules, Safety Information such as Prohibition & Warning Signs, Hazardous Information, What to do in case of Fire and Emergency, and Meeting Place Location.

- **Learning Objective 2:** Attendees will be introduced to the following Laboratory equipment used in various testing by KSA Scientists: Instron Tensile Tester (tensile strength, % elongation, peel testing); FTIR (comparative studies, determination of composition, QC of incoming samples); Brookfield Viscometer (dynamic viscosity, Rheocalc for determining pot life); Karl Fisher (water % determinations of liquid materials, volumetric KF); Elcometer (pull off adhesion testing); Density Ball (precision to 0.002 g/ml, calcs. Density); IR moisture analyzer (% of moisture powder materials); Oxygen Bomb (combustion of combustible products for halogen determinations); Freeze Point Tester (freeze point testing acc. to ASTM D1177); Flash point Tester (flash point testing); Ross Miles Foam Test (testing foam acc. to ASTM D1173); QUV Xenon Arc Accelerated Aging Chamber (ages materials acc. to ASTM G155); Questions?

- **Learning Objective 3:** Attendees will be introduced to plant design intended to protect the surrounding wildlife in the event of a chemical spill and will be provided an introduction into the QC program for incoming and outgoing products and raw materials.

- **Learning Objective 4:** Attendees will have a basic understanding of the manufacturing equipment and processes employed to create urethane and epoxy resins, coatings and primers for waterproofing and roofing applications.

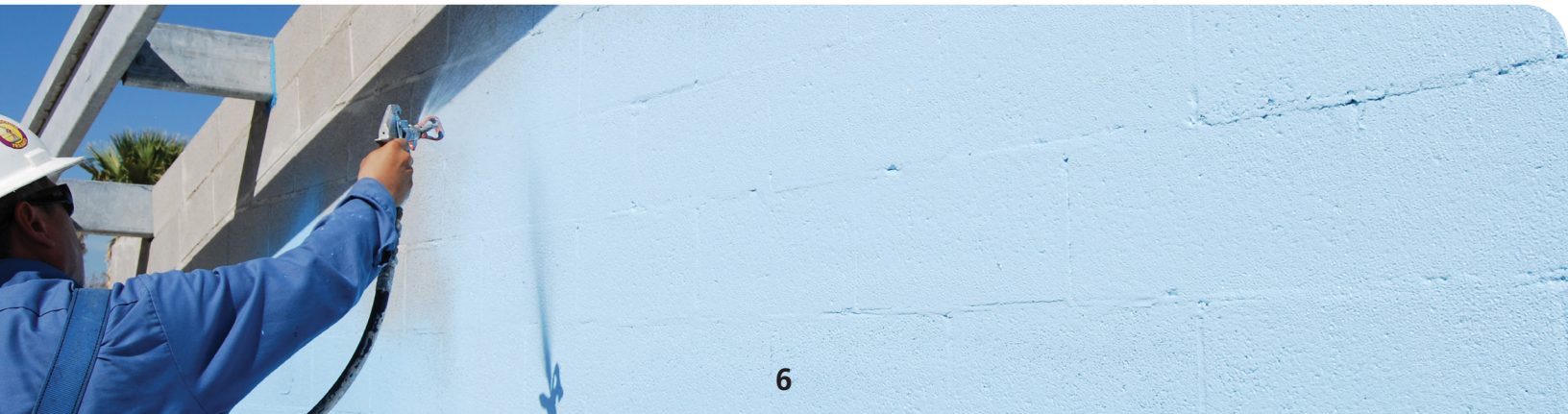
KSA – 6
Sustainable Roofing Strategies: Fighting the effects of Urban Heat Island
Credit Designations: AIA/CES 1.0 LU|HSW

- **Learning Objective 1:** Participants will be able to use the Cool Roof Ratings Council to locate product information mandated by new code amendments in many areas of the Country and LEED such as emissivity, reflectivity and solar reflective index necessary to fight the Urban Heat Island Effect.
- **Learning Objective 2:** Participant will understand several key roofing and waterproofing assemblies typically used.
- **Learning Objective 3:** Participants will have a general understanding of how traditional roofing systems contribute to the Urban Heat Island Effect in order to prompt them to more actively seek solutions to the problem both in roofing and other areas of their projects.
- **Learning Objective 4:** Participants will understand typical values or material performance requirements from minimum LEED and code requirements to maximum performance afforded by today's technology in order to assist them in determining what types of products and designs would best fit their project and location.

KSA – 7
Performance Standards and Code Requirements for Air Barrier
Credit Designations: AIA/CES 1.0 LU|HSW

This program provides an in depth look at the performance standards, testing and codes relating to Air Barrier Systems. This includes the 2015 IECC code requirements and NFPA 285 requirements. Participants will understand how to select the proper air barrier system for their project and the benefits a proper system provides.

- **Learning Objective 1:** Discuss the different systems to keep air and moisture out of the wall cavity.
- **Learning Objective 2:** Understand the impact on the environment, building owner, and occupants provided by an air barrier system.
- **Learning Objective 3:** Describe the performance test standards of an air barrier material, component, assembly and system.
- **Learning Objective 4:** Understand building, energy and fire code requirements relating to air barrier systems.



KSA – 8
Using Radiant Heat Barriers to Manage Heat Gain, Increase Building Occupant Comfort, and Reduce Energy Costs
Credit Designations: AIA/CES 1.0 LU|HSW

There are 3 modes of heat transfer: conductive, convective and radiant. Radiant Heat Gain (RHG) accounts for significant increases in energy use and impacts building occupant comfort. The use of Radiant Heat Barriers in specific project types can reduce RHG by up to 80% or more improving building performance in both categories. This presentation will provide insight into the science and the solutions.

- **Learning Objective 1:** Identify the three (3) modes of Heat Transfer.
- **Learning Objective 2:** Understand Radiant Heat Transfer and how it effects Building Occupant Comfort and Energy Costs.
- **Learning Objective 3:** Understand how Radiant Heat Barriers can be used to block a significant portion of Radiant Heat.
- **Learning Objective 4:** Compare various types of Radiant Heat Barriers identifying characteristics that make them suitable for specific projects.

KSWS
Technical Conference and Workshop on Liquid-Applied Waterproofing and Roofing Solutions
Credit Designations: AIA/CES 3.0 LU|HSW & 3.0 RCI CEH

Introduce the concept of cold-liquid reinforced systems. Describe their advantages and attributes, particularly with respect to sustainability and minimal environmental impact. Illustrate their wide range of roofing, waterproofing and surfacing applications. Step by Step application methods to increase efficiencies and productivity, where and when to use these products on your own, guidelines based upon 60 years of experience for various kinds of applications, do and don't tips, helpful hints to increase productivity, how to install from mobilization, site set-up, demo, preparation of all substrate types, primer guidelines, installation of various membranes and installation of various top coats. Overview of bidding procedures and guidelines to better help specifiers, contractors, owners, general construction managers estimate more accurately. Provide a hands-on demonstration using a 2 component urethane liquid resin with fabric reinforcement to show application of the membrane field, flashings, pipe penetrations and drains. Demonstrate surfacing application for use over membrane.

- **Learning Objective 1:** Practical - Learning about and understanding liquid resin waterproofing membranes in terms of history, project types, application process, assembly types, material components and performance attributes.
- **Learning Objective 2:** Practical - Study the Range of Applications - in depth review of applications including a study of assembly details and project case studies to assist in understanding how to perform complex projects and details. Questions and Answers.
- **Learning Objective 3:** Hands - On Step by Step demonstration of application methods to increase efficiencies and productivity. Demonstration uses a 2 component, solvent free, low VOC, odorless resin system applied to a mock-up of membrane flashing, field application, drain detail and pipe penetration.
- **Learning Objective 4:** Hands - On Demonstration of how to install from mobilization, site set-up, demo, preparation for all substrates types, primer guidelines, mixing and installation of various membranes and installation of various top coats.

We book lunch and learns all year round, to request an educational seminar at your firm visit: www.kempersystem.net

Free Online Course
Sustainability from the Top: Blue, White, & Green Roof Benefits

Assesses the urban environmental issues of storm-water runoff and heat islands and describes how their damaging impacts can be mitigated by blue, white and green roofs. The considerations and additional benefits of each roof type are also discussed.

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