

LISTING OF CORROSION SERVICES

KACE (Kadlec Associates Corrosion Engineers) provides Corrosion Engineering & Cathodic Protection services worldwide. A partial listing of services provided is listed below.

CERTIFICATION

KACE project managers are NACE (National Association of Corrosion Engineers) certified at various levels up to and including corrosion specialist. A registered professional engineer and corrosion specialist reviews all complex designs. Operator Qualification is certified by NCCER and ISNET World maintains records. Operator Qualification is also maintained by MEA.

TURNKEY CATHODIC PROTECTION SERVICES

KACE turnkey cathodic protection services for pipelines, aboveground and underground storage tanks, on ground and elevated water tanks, piers/wharfs, and other structures include the following: Field survey, design (specification/drawing/cost estimate preparation), materials, installation, energize/adjustment, stray current evaluation, ECDA (External Corrosion Direct Assessment), troubleshooting, upgrade/repair, maintenance and bid evaluations as necessary. Drawings are prepared in AutoCAD and submitted electronically in AutoCAD and/or PDF format.

MILITARY/DEPARTMENT OF DEFENSE

KACE has extensive experience providing corrosion and cathodic protection engineering services for Military and other Government Facilities. Our projects include designs of cathodic protection systems, upgrade/repair cathodic protection systems, corrosion surveys, close interval surveys, cathodic protection evaluations, API 651 inspections, coating inspections/surveys, failure investigations and cathodic protection maintenance for pipelines, underground and aboveground storage tanks, sewage facilities, power generating facilities, elevated and on ground water storage tanks, steam and high temperature hot water lines, chilled water lines, sewage lift stations, hydraulic elevator and hoist cylinders, dock and pier structures, electric and communication cables, steel and reinforced concrete piles, floating structures, dry dock gates and other facilities.

CLOSE INTERVAL SURVEY/COATING SURVEY/PCM

CIS (Close Interval Surveys) are a specialty of KACE. We are a leader in this highly specialized discipline and have designed and built our own portable cathodic protection field computers. They are designed specifically for close interval cathodic protection surveys and allow us to perform these surveys to virtually any specification. Rectifier interrupted surveys are conducted using GPS controlled interrupters. Stationing, GPS coordinates, depth of cover, and potentials are recorded and submitted in Excel format. We have conducted close interval surveys for over 15,000 miles of pipelines. KACE coating survey services include ACVG (Alternating Current Voltage Gradient) and DCVG (Direct Current Voltage Gradient) surveys. KACE offers PCM (Pipeline Current Mapper) surveys to locate buried electrical shorts, buried bonds, coating defects.

RECTIFIER INTERRUPTED SURVEY

KACE has over 25 interrupters, all synchronized to GPS, for use during interrupted surveys. Additional interrupters are obtained on an as needed basis.

DEEP-WELL ANODE BED DESIGN AND INSTALLATION SERVICES

Kadlec Associates has designed and installed several hundred deep-well anode beds ranging from 50' to 400' deep. Deep-well drilling is subcontracted.

TEST WIRE, REFERENCE ELECTRODE, COUPON AND TEST STATION INSTALLATION

Test wires, reference electrodes, and coupons are installed using a standard backhoe or vacuum excavation. An ultrasonic thickness tester is used on all pipes before cad-welding.

INDUCED AC SERVICES

KACE offers AC mitigation services for pipelines in parallel right-of-ways with high voltage power lines. AC potential surveys are conducted and AC modeling is simulated as required. Surge arrestors, decouplers, capacitors, zinc ribbon and zinc mats are installed to mitigate excessive steady state AC voltage levels.

MARKER REPLACEMENT AND RIGHT-OF-WAY SURVEY

KACE offers right-of-way evaluations including GPS coordinates and digital pictures of all necessary corrections. The pipeline is located and markers are installed where needed.

ABOVE GROUND STORAGE TANKS

KACE has designed and installed several hundred under tank cathodic protection systems for existing above ground storage tank bottoms. These systems include reference cell and horizontal anode installation. Our largest project to date consisted of installing horizontal systems under 63 tanks ranging in size from 50' to 280' diameter. Directional drilling is subcontracted. Kadlec has also designed and installed cathodic protection systems in conjunction with tank bottom replacement and during new tank construction.

DOT/EPA/STATE COMPLIANCE

For compliance with DOT, EPA, and State regulations, KACE provides corrosion and cathodic protection engineering, design, survey, operation/maintenance, repair and installation services for **Aboveground Storage Tanks (AST's)** and associated piping, **Underground Storage Tanks (UST's)** and associated piping, and **Underground Pipelines** and associated storage. We have extensive experience with both existing and new facilities including:

-over 800 AST's

-over 600 UST's

-over 50,000 miles of Pipelines

PARTIAL LISTING OF KADLEC ASSOCIATES CLIENTS

PIPELINE SYSTEMS, ABOVE GROUND and BELOW GROUND STORAGE TANKS	ARCHITECTS/ENGINEERS/CONTRACTORS	
<p><u>United States</u></p> <p>AMCLO Pipeline System Anchorage-Whittier, Alaska Pipeline ARCO Pipeline Company Atlas Oil Company, Taylor, Michigan Aztec Oil and Gas Basin Pipeline Company Bio-Tech, Grawn, Michigan Bluewater Gas Storage, LLC Board of Water & Light, Lansing, Michigan BP Amoco Buckeye Partners, LP Buckeye Pipe Line Company Champlin Petroleum Company Chaparral Pipeline Company Chelsea Gas Authority Chelsea Gas System, Oklahoma Cochin Pipeline System Conoco, Inc. Consumers Energy Consumers Power Company Contintntal Pipeline Company Copper Range Company Cow Creek Pipeline Dakota Ethanol Deer Creek Rural Water Corporation Diamond Shamrock Corporation Dome Pipeline Corporation Duluth Water & Gas, Minnesota Dynegey Eastern Delivery Pipeline System (EDS) Explorer Pipeline Company Exxon Mobile Federal Express Flint Hills Resources Flint Hills Resources Asphalt Plants Gaylord Country Club, Gaylord, Michigan General Electric Corporation Grand Haven Sewage Gulf Central Pipeline Company Harbor Springs Sewer Authority, Michigan Huntsman Chemical International Minerals and Chemicals Corporation Koch Industries Koch Minnesota Pipeline Company Koch Pipeline Company. LP Koch Refining Koch Wisconsin Pipeline Company Koch Woodriver Pipeline Company Llano, Incorporated Gas Pipiline system Magellan Magnum Solvents Mannford, Oklahoma Gas System Marathon Ashland Markwest Martin Marietta Marysville Hydrocarbons Matrex Pipeline MCN Energy, Michigan Merck Michigan Consolidated Gas Company</p>	<p><u>United States</u></p> <p>Midstates Pipeline Company Minnesota Pipeline Company Mobil Chemical Company Montana Refining company Natural Gas Pipeline Company of America North Baja Pipeline, Arizona & California Norther Border Pipeline Company Northern Natural Gas Company Omimex Ozark Gas Pipeline Corporation Peoples Gas, Light & Coke Company Phillips Petroleum Company Phillips Pipeline Company Saginaw Bay Pipeline Santa Fe Pipeline Company SEMCO energy Simmons Refining Corporation Smith Enron Stagecoach Pipeline State Police Post, various locations in Michigan Swissport Fueling, Inc. Tampa Bay Pipeline Company Texaco-Cities Service Pipeline Company Transunion Pipeline, Louisiana & Arkansas Union Pacific Resources, Inc. US Bioenergy Verasun Wellhead Enterprises, Inc. Wesco Pipeline Company West Bay Exploration, Michigan West Shore Avaition Williams Pipe Line Company Wisconsin Pipeline System Woodriver Pipeline System WPS - ESI Gas Storage</p> <hr style="border-top: 1px dashed black;"/> <p><u>Foreign</u></p> <p>Badak-Bontang 42" Pipeline, Bontang, Indonesia BP Amoco Canada Caspian Pipeline System, Khazakistan & Russia CEPP - Compinia de Electricidad, Dominican Republic Kertapati-Jambi Multi-Product Pipeline, Sumatra, Indonesia NOVA Chemicals, Canada Oman LNG, LLC, Oman Saccpian Pipeline Consortium, Russia & Kazakhastan Trans lthsmian Pipeline, Panama</p>	<p><u>ARCHITECTS/ENGINEERS/CONTRACTORS</u></p> <p>Advantage Engineering Allen & Hoshall Alt Witzig Argus Consulting Austin Brockenbrough & Associates Bamforth, C. Allan - Engineers Barr Engineering Birchwood Construction Company BLDI Blount Engineers BMJ Engineers Bowman Foster & Associates BRPH Burns & McDonnell Burns & Roe Butler Associates, Inc. Centennial Contractors, Inc. Clark, Nexsen, Owen, Barbieri & Gibson Clark-Smith Associates Clemco Industries Corporation Elitech Consultants Enerfab Enterprise Engineering Fagen Engineering Filtrasystems Frankfort Short & Bruza GBA, Incorporated H L Brown HTNB, Incorporated ITSI (Innovative Technical Solutions Inc.) Kear Corp (SDB) Maddux Engineering Marsh Engineering Matrix Service Natkin & Company Old Dominion Engineering Pace Collaborative PACE collaborative Perini Pond & Co. Pond Constructors Prime Engineering The Benham Group Underground Construction Co. URS Greiner, Inc. Utter and Associates Wellhead Enterprises, Inc. Weston Solutions Willbros Engineers</p> <hr style="border-top: 1px solid black;"/> <p style="text-align: center;"><u>REFINERIES</u></p> <p><u>United States</u></p> <p>Champlin Enid Refinery, Oklahoma Marathon Ashland St. Paul Park Refinery, Minnesota Marysville Hydrocarbons Facility, Michigan Pine Bend Refinery, Minnesota</p> <hr style="border-top: 1px dashed black;"/> <p><u>Foreign</u></p> <p>Pak-Arab Refinery Ltd (PARKO), Pakistan Sonangal Refinery, Luanda, Angola</p>
<p style="text-align: center;"><u>AIRPORTS</u></p> <p><u>United States</u></p> <p>Albuquerque Intl Airport, New Mexico Harbor Springs Regional Airport, Michigan McCarran Intl Airport, Las Vegas, Nevada Memphis Intl Airport, Tennessee Miami Intl Airport, Florida Oakland Intl Airport, California Palm Beach Intl Airport, Florida Reno/Tahoe Intl Airport, Nevada Sacramento Intl Airport, California San Jose Intl Airport, California Sea-Tac Intl Airport, Washington Sky Harbor Intl Airport, Phoenix, Arizona Southwest Florida Intl Airport, Fort Myers, Florida</p>		

PARTIAL LISTING OF KADLEC ASSOCIATES CLIENTS

<u>POWERPLANTS</u>	<u>MILITARY/DEPARTMENT OF DEFENSE</u>	
<p><u>United States</u> Associated Electric, Unionville, Missouri Deseret Generation and Transmission Cooperative, Utah Dynegey Dynegey Power Plant Carson City, Michigan Erickson Power Station, Lansing, Michigan Escalante Generating Station, New Mexico Globeleq Kansas Power and Light Company Lansing Board of Water and Light Mirant Sugar Creek Power Plant, Indiana Moon Lake Power Station, Utah Palisades Nuclear Plant, Michigan Plains Electric Cooperative Presque Isle Electric and Gas Renaissance Power LLC Schullykill Energy Resources Schuykill Power Station, Yatesville, Pennsylvania Smith Enron St. Nicholas Co-Generation Plant Sugar Creek Power Company, LLC Thomas Hill Power Plant, Missouri Tri-state Electric, New Mexico Wolverine Power Supply Cooperative</p>	<p><u>United States</u> Air Force Academy, Colorado Altus Air Force Base, Oklahoma Anchorage Defense Fuel Supply Point, Alaska Anniston Army Depot, Alabama Atlantic Division, NAVFACENGCOM Barksdale Air Force Base, Louisiana Battle Creek Air National Guard, Michigan Beale Air Force Base, California Breezy Point Naval Air Station, Norfolk, Virginia Camp LeJeune Marine Corps Base, North Carolina Camp Ripley Air National Guard, Minnesota Charleston Air Force Base, South Carolina Charleston Naval Base, South Carolina Cheatham Annex Naval Supply Center, Virginia Cherry Point Marine Corps Air Station, North Carolina Chesapeake Naval Security Group Activity, Virginia Craney Island Defense Fuel Supply Point, Virginia Dam Neck Fleet Combat Training Center, Virginia Department of the Air Force Department of the Navy - Atlantic Division Department of the Navy - Great Lakes Division Department of the Navy - Northern Division Department of the Navy - Pacific Division Department of the Navy - Southern Division Fairbanks Defense Fuel Supply Point, Alaska Fentress Naval Auxiliary Landing Field, Virginia Fort Eustus, Virginia Fort Lewis, Washington Fort Riley, Kansas Fort Story, Virginia Great Lakes Naval Training Center, Illinois Hickam AFB to Waikakalaua Tank Farm Pipeline, Hawaii Hickam Air Force Base, Hawaii Hunter Army Airfield, Georgia Jacksonville Defense Fuel & Supply Points, Florida Jacksonville Naval Air Station, Florida Jacksonville Naval Fuel Depot, Florida Joint Reserve Base Naval Air Station, Louisiana Key West Naval Air Station, Florida Kingsville Naval Air Station, Texas Kipapa Defense Fuel Supply Point, Hawaii Laughlin Air Force Base, Texas Little Creek Naval Amphibious Base, Virginia Loring Air Force Base, Maine Louisville Naval Ordnance Station, Kentucky MacDill Air Force Base, Florida Malmstrom Air Force Base, Montana Melville Defense Fuel Supply Point, Rhode Island Minneapolis - St. Paul Joint Air Reserve, Minnesota New Orleans Naval Air Station, Louisiana New River Marine Corps Air Station, North Carolina Norfolk Naval Air Station, Virginia Norfolk Naval Base, Virginia Norfolk Naval Shipyard, Virginia Norfolk Navy Public Works Center, Virginia Oceana Naval Air Station, Virginia Patrick Air Force Base, Florida Patuxent River Naval Air Station, Maryland</p>	<p><u>United States</u> Pearl City Fuel Annex, Hawaii Pearl City to Barbers Point NAS Pipeline, Hawaii Pearl Harbor Naval Supply Center, Hawaii Pensacola Naval Air Station, Florida Point Loma Defense Fuel Supply Point, California Pope Air Force Base, North Carolina Portsmouth Naval Shipyard, Virginia Red Hill Complex, HI Red Hill to Pearl City Pipeline, Hawaii Richmond Air National Guard, Virginia Robbins Air Force Base, Georgia Searsport Defense Fuel Supply Point, Maine Searsport Terminal, Maine Searsport to Loring Air Force Base Pipeline, Maine Sewells Point Naval Complex, Virginia Seymour Johnson Air Force Base, North Carolina Sugar Grove Naval Support Group Activity, West Virginia Tinker Air Force Base, Oklahoma Tonopah Test Range, Nevada United States Air Force Academy, Colorado Virginia Air National Guard, Virginia Waikakalaua Defense Fuel Supply Point, Hawaii Whittier Defense Fuel Supply Point, Alaska Yorktown Naval Weapons Station, Virginia Yorktown Navy Fuel Depot, Virginia</p>
<p><u>Foreign</u> El Paso Energy, Dominican Republic Ashmore Energy, Puerto Plata, Dominican Republic Termoelectrica De Mexicali, Mexico</p>	<p><u>Foreign</u> Antigua Naval Support Facility, West Indies Bermuda Naval Air Station, Bermuda Camp Anaconda, Iraq Canal Zone Naval Fuel Farms, Panama Cartagena Naval Fuel Annex, Spain Guam Naval Supply Depot, Marianas Islands Guantanamo Bay, Naval Air Station, Cuba Guantanamo Bay, Naval Base, Cuba Hakozaki Defense Fuel Supply Point, Japan Helguvik Fuel Facilities, Iceland Howard Air Force Base, Canal Zone, Panama Hvalfjordur Navy Depot, Iceland Keflavik Naval Air Station, Iceland La Maddalena Naval Support Activity, Italy Lajes Field Air Base Field, Azores, Portugal MCAF Classified POL Facilities, North Africa MCAF POL Facilities, North Africa Naval Fuel Annex, Cartagena, Spain Naval Fuel Farms, Canal Zone, Panama North Africa MCAF POL Facilities, Classified Locations Rodman Naval Station, Canal Zone, Panama Roosevelt Roads Naval Station, Puerto Rico Rota Naval Air Station, Spain Rota Naval Station, Spain Sebana Seca Navel Security Group Activity, Puerto Rico Sidi Slimane Air Base, Morocco Sigonella Naval Air Station, Sicily, Italy Soto Cano Air Base, Honduras Souda Bay Naval Air Station, Crete, Greece</p>	
<p><u>COMMERCIAL</u> Cemex City of Bay City, Michigan Copper Range Company, Michigan Dynaelectric Company Federal Express Federated Insurance Company General Electric Corporation General Motors Herman Miller International Minerals and Chemicals Corporation Kansas Power and Light Kansas Univ Med Center, Kansas City, Kansas Kansas University, Lawrence, Kansas Lake States Insurance Lansing Board of Water and Light Packaging Corporation of America Tenneco Packaging Town of Manford, Oklahoma University of Iowa University of Michigan Wichita State University</p>		