

KACE

KADLEC ASSOCIATES CORROSION ENGINEERS

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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 other 3rd party administrators.

TURNKEY CATHODIC PROTECTION SERVICES

KACE turnkey cathodic protection services for hydrant fueling systems, 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 hydrant fueling systems, 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-ft to 400-ft 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 (ASTs)** and associated piping, **Underground Storage Tanks (USTs)** and associated piping, and **Underground Pipelines** and associated storage. We have extensive experience with both existing and new facilities including:

-over 1000 ASTs

-over 800 USTs

-over 60,000 miles of Pipelines

PARTIAL LISTING OF KADLEC ASSOCIATES CLIENTS

<u>PIPELINE SYSTEMS, ABOVE GROUND and BELOW GROUND STORAGE TANKS</u>	<u>AIRPORTS</u>
<p>United States</p> <p>AMCLO Pipeline System</p> <p>Anchorage-Whittier, Alaska Pipeline</p> <p>ARCO Pipeline Company</p> <p>ASIG (Aircraft Service International Group)</p> <p>Atlas Oil Company, Taylor, Michigan</p> <p>Aztec Oil and Gas</p> <p>Basin Pipeline Company</p> <p>Bio-Tech, Grawn, Michigan</p> <p>Bluewater Gas Storage, LLC</p> <p>Board of Water & Light, Lansing, Michigan</p> <p>BP Amoco</p> <p>BP Canada</p> <p>Buckeye Partners, LP</p> <p>Buckeye Pipe Line Company</p> <p>Carbon Green Energy, Michigan</p> <p>Champlin Petroleum Company</p> <p>Chaparral Pipeline Company</p> <p>Chelsea Gas Authority</p> <p>Chelsea Gas System, Oklahoma</p> <p>Cochin Pipeline System</p> <p>Conoco, Inc.</p> <p>Consumers Energy</p> <p>Consumers Power Company</p> <p>Contintntal Pipeline Company</p> <p>Copper Range Company</p> <p>Cow Creek Pipeline</p> <p>Dakota Ethanol</p> <p>DCP Midstream</p> <p>Deer Creek Rural Water Corporation</p> <p>Diamond Shamrock Corporation</p> <p>Dome Pipeline Corporation</p> <p>Duluth Water & Gas, Minnesota</p> <p>Dynegy</p> <p>Eastern Delivery Pipeline System (EDS)</p> <p>Explorer Pipeline Company</p> <p>Exxon Mobile</p> <p>Federal Express</p> <p>Flint Hills Resources</p> <p>Flint Hills Resources Asphalt Plants</p> <p>Gaylord Country Club, Gaylord, Michigan</p> <p>General Electric Corporation</p> <p>Grand Haven Sewage</p> <p>Gulf Central Pipeline Company</p> <p>Harbor Springs Sewer Authority, Michigan</p> <p>Huntsman Chemical</p> <p>International Minerals and Chemicals Corporation</p> <p>Koch Minnesota Pipeline Company</p> <p>Koch Pipeline Company, LP</p> <p>Koch Refining</p> <p>Koch Wisconsin Pipeline Company</p> <p>Koch Woodriver Pipeline Company</p> <p>LGSTX</p> <p>Llano, Incorporated Gas Pipiline system</p> <p>Magellan</p> <p>Magnum Solvents</p> <p>Mannford, Oklahoma Gas System</p> <p>Marathon Ashland</p> <p>Markwest</p> <p>Martin Marietta</p> <p>Marysville Hydrocarbons</p> <p>Matrex Pipeline</p> <p>MCN Energy, Michigan</p> <p>Merck</p> <p>Menzies</p> <p>Michigan Consolidated Gas Company</p> <p>Midstates Pipeline Company</p> <p>Minnesota Pipeline Company</p> <p>Mobil Chemical Company</p> <p>Montana Refining company</p> <p>Natural Gas Pipeline Company of America</p> <p>North Baja Pipeline, Arizona & California</p> <p>Norther Border Pipeline Company</p> <p>Northern Natural Gas Company</p> <p>Omimex</p> <p>Ozark Gas Pipeline Corporation</p> <p>Peoples Gas, Light & Coke Company</p> <p>Phillips Petroleum Company</p>	<p>United States</p> <p>Phillips Pipeline Company</p> <p>Saginaw Bay Pipeline</p> <p>Samson Resources</p> <p>Sands Aviation</p> <p>Santa Fe Pipeline Company</p> <p>SEMCO energy</p> <p>Servisair</p> <p>Simmons Refining Corporation</p> <p>Skytanking</p> <p>Smith Enron</p> <p>Stagecoach Pipeline</p> <p>State Police Post, various locations in Michigan</p> <p>Swissport Fueling, Inc.</p> <p>Tampa Bay Pipeline Company</p> <p>Texaco-Cities Service Pipeline Company</p> <p>Transunion Pipeline, Louisiana & Arkansas</p> <p>Union Pacific Resources, Inc.</p> <p>US Bioenergy</p> <p>Valero</p> <p>Verasun</p> <p>Wellhead Enterprises, Inc.</p> <p>Wesco Pipeline Company</p> <p>West Bay Exploration, Michigan</p> <p>West Shore Aviation</p> <p>Williams Pipe Line Company</p> <p>Wisconsin Pipeline System</p> <p>Woodriver Pipeline System</p> <p>WPS - ESI Gas Storage</p> <p>Foreign</p> <p>Badak-Bontang 42" Pipeline, Bontang, Indonesia</p> <p>BP Amoco Canada</p> <p>Caspian Pipeline System, Khazakstan & Russia</p> <p>CEPP - Compinia de Electricidad, Dominican Republic</p> <p>Kertapati-Jambi Multi-Product Pipeline, Sumatra, Indonesia</p> <p>NOVA Chemicals, Canada</p> <p>Oman LNG, LLC, Oman</p> <p>Plains Midstream Canada</p> <p>Sacpian Pipeline Consortium, Russia & Kazakhstan</p> <p>Trans Ithsmian Pipeline, Panama</p> <p style="text-align: center;"><u>AIRPORTS</u></p> <p>United States</p> <p>Albuquerque Intl Airport, New Mexico</p> <p>Baltimore Washington Intl Airport, Maryland</p> <p>Boston Logan Intl Airport, Massachusetts</p> <p>Chicago O'Hare Intl Airport, Illinois</p> <p>Dallas Love Field, Texas</p> <p>Detroit Metro Intl Airport, Michigan</p> <p>Dulles Intl Airport, Virginia</p> <p>Fort Lauderdale Intl Airport, Florida</p> <p>Greenville - Spartanburg Intl Airport, South Carolina</p> <p>Harbor Springs Regional Airport, Michigan</p> <p>Houston Bush Intercontinental, Texas</p> <p>Houston Hobby Intl Airport, Texas</p> <p>Indianapolis Intl Airport, IN</p> <p>Kansas City Intl Airport, MO</p> <p>McCarran Intl Airport, Las Vegas, Nevada</p> <p>Memphis Intl Airport, Tennessee</p> <p>Miami Intl Airport, Florida</p> <p>Milwaukee Intl Airport, Wisconsin</p> <p>Minneapolis - St Paul Intl Airport, Minnesota</p> <p>Nashville Intl Airport, Tennessee</p> <p>New Orleans Intl Airport, Louisiana</p> <p>Oakland Intl Airport, California</p> <p>Palm Beach Intl Airport, Florida</p> <p>Reno/Tahoe Intl Airport, Nevada</p> <p>Sacramento Intl Airport, California</p> <p>Saint Louis Intl Airport, Missouri</p> <p>San Francisco Intl Airport, California</p> <p>San Jose Intl Airport, California</p> <p>Sands Aviation, McCarran Intl Airport, Nevada</p> <p>Sea-Tac Intl Airport, Washington</p> <p>Sky Harbor Intl Airport, Phoenix, Arizona</p> <p>Southwest Florida Intl Airport, Fort Myers, Florida</p> <p>Tulsa Intl Airport, Oklahoma</p> <p>Tuscon Intl Airport, Nevada</p>
	<p>Foreign</p> <p>Bogota El Dorado Intl Airport, Bogota, Columbia</p> <p>Lima Jorge Chavez Intl Airport, Lima, Peru</p> <p style="text-align: center;"><u>ARCHITECTS/ENGINEERS/CONTRACTORS</u></p> <p>Advantage Engineering</p> <p>Allen & Hoshall</p> <p>Alt Witzig</p> <p>Argus Consulting</p> <p>Austin Brockenbrough & Associates</p> <p>Bamforth, C. Allan - Engineers</p> <p>Barr Engineering</p> <p>Birchwood Construction Company</p> <p>BLDI</p> <p>Blount Engineers</p> <p>BMJ Engineers</p> <p>Bowman Foster & Associates</p> <p>BRPH</p> <p>Burns & McDonnell</p> <p>Burns & Roe</p> <p>Butler Associates, Inc.</p> <p>Centennial Contractors, Inc.</p> <p>Centerra Group LLC</p> <p>CHA Consulting</p> <p>Clark, Nexsen, Owen, Barbieri & Gibson</p> <p>Clark-Smith Associates</p> <p>Clemco Industries Corporation</p> <p>Corpro</p> <p>Dawson</p> <p>E-MC Electrical, Inc.</p> <p>EFS West</p> <p>Eltech Consultants</p> <p>Enerfab</p> <p>Enterprise Engineering</p> <p>ERM Environmental Resources Management</p> <p>Fagen Engineering</p> <p>Fagen, Inc.</p> <p>Filtrastystems</p> <p>Frankfort Short & Bruza</p> <p>G4S Government Solutions</p> <p>GBA, Incorporated</p> <p>Gilbane</p> <p>GTP Engineers</p> <p>H L Brown</p> <p>Hatch Mott MacDonald</p> <p>HTNB, Incorporated</p> <p>Intercontinental Corrosion Engineers</p> <p>ITSI (Innovative Technical Solutions Inc.)</p> <p>Jacobs</p> <p>JLL</p> <p>Kear Corp (SDB)</p> <p>Kirila Fire</p> <p>Maddux Engineering</p> <p>Marsh Engineering</p> <p>Matrix Service</p> <p>McGough Industrial Contractors</p> <p>Mecon Industries</p> <p>Mott MacDonald</p> <p>Natkin & Company</p> <p>Nelson Baker Biotech, Inc.</p> <p>NRG Natural Resource Group</p> <p>Old Dominion Engineering</p> <p>Pace Collaborative</p> <p>PACE collaborative</p> <p>Performance Mechanical, Inc.</p> <p>Perini</p> <p>Pond & Co.</p> <p>Pond Constructors</p> <p>Prime Engineering</p> <p>RW Armstrong</p> <p>The Benham Group</p> <p>Underground Construction Co.</p> <p>URS Greiner, Inc.</p> <p>Utter and Associates</p> <p>Vectrus</p> <p>Wellhead Enterprises, Inc.</p> <p>Weston Solutions</p> <p>Willbros Engineers</p>

PARTIAL LISTING OF KADLEC ASSOCIATES CLIENTS

<u>REFINERIES</u>	<u>MILITARY/DEPARTMENT OF DEFENSE</u>	
<p>United States Champlin Enid Refinery, Oklahoma Marathon Ashland St. Paul Park Refinery, Minnesota Marysville Hydrocarbons Facility, Michigan Pine Bend Refinery, Minnesota</p> <hr/> <p>Foreign Pak-Arab Refinery Ltd (PARKO), Pakistan Sonangal Refinery, Luanda, Angola</p>	<p>United States Beale Air Force Base, California Breezy Point Naval Air Station, Norfolk, Virginia Camp Atterbury, Indiana Camp Grayling, Michigan Camp LeJeune Marine Corps Base, North Carolina Camp Pendleton, California Camp Ripley Air National Guard, Minnesota Camp Shelby, Mississippi Charleston Air Force Base, South Carolina Charleston DFSP (Defense Fuel Supply Point), 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 Dallas VA, Texas Dam Neck Fleet Combat Training Center, Virginia Davis Monthan Air Force Base, AZ 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 DLA-E (Defense Logistics Agency - Energy) Dover Air Force Base, Delaware Eglin AFB, Florida Fairbanks Defense Fuel Supply Point, Alaska Fallon NAS, Nevada Fentress Naval Auxiliary Landing Field, Virginia Forbes Field ANG, Kansas Fort Belvoir, Virginia Fort Drum, New York Fort Eustus, Virginia Fort Leonard Wood, Missouri Fort Lewis, Washington Fort Riley, Kansas Fort Rucker, Alabama Fort Story, Virginia Fort Wayne ANG, Indiana Fort Worth NAS, Texas Fresno ANG, California General Mitchell Field, Wisconsin Great Lakes Naval Training Center, Illinois Grisson Air Force Base, Indiana Gulfport CBC, Mississippi Hickam AFB to Waikakalaua Tank Farm Pipeline, Hawaii Hickam Air Force Base, Hawaii Homestead AFB, Florida Hulman Field, Indiana 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 Kaneohe Bay MCB, Hawaii 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 Little Rock AFB, Arkansas Loring Air Force Base, Maine Louisville Naval Ordnance Station, Kentucky MacDill Air Force Base, Florida Malmstrom Air Force Base, Montana Manchester Fuel Depot, Washington Mayport NS, Florida McConnell AFB, Kansas McGhee Tyson ANG, Tennessee McGuire AFB, New Jersey McGuire ANG, New Jersey Melville Defense Fuel Supply Point, Rhode Island Memphis ANG, Tennessee Minneapolis - St. Paul Joint Air Reserve, Minnesota Minot AFB, North Dakota Mountain Home Air Force Base, Idaho</p>	<p>United States 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 North Island NAS, California Oceana Naval Air Station, Virginia Patrick Air Force Base, Florida Patuxent River Naval Air Station, Maryland 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 Salt Lake City ANG, Utah Searsport Defense Fuel Supply Point, Maine Searsport Terminal, Maine Searsport to Loring Air Force Base Pipeline, Maine Selfridge Air National Guard, Michigan Sewells Point Naval Complex, Virginia Seymour Johnson Air Force Base, North Carolina Sugar Grove Naval Support Group Activity, West Virginia Tampa Defense Fuel Supply Point, Florida Tinker Air Force Base, Oklahoma Tonopah Test Range, Nevada Travis AFB, California Tyndall Air Force Base, Florida United States Air Force Academy, Colorado Vandenberg AFB, California 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> <hr/> <p>Foreign Al Udeid AB, Qatar Andersen Air Force Base, Guam Antigua Naval Support Facility, West Indies Bermuda Naval Air Station, Bermuda Cairo West AFB, Egypt 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 Hakozaiki Defense Fuel Supply Point, Japan Helgukvik Fuel Facilities, Iceland Howard Air Force Base, Canal Zone, Panama Hvalfjorur Navy Depot, Iceland Keflavik Naval Air Station, Iceland Kunsan AB, South Korea La Maddalena Naval Support Activity, Italy Lajes Field Air Base, 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 Soto Cano Air Base, Honduras Souda Bay Naval Air Station, Crete, Greece</p>
<p style="text-align: center;"><u>POWERPLANTS</u></p> <p>United States Associated Electric, Unionville, Missouri Deseret Generation and Transmission Cooperative, Utah Dynegy Dynegy Power Plant Carson City, Michigan Entergy 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 New Covert Generating Company, Michigan New Madrid Power Plant, Missouri Palisades Nuclear Plant, Michigan Plains Electric Cooperative Presque Isle Electric and Gas Renaissance Power LLC Schullykill Energy Resources Schuylkill 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> <hr/> <p>Foreign Ashmore Energy, Puerto Plata, Dominican Republic CESP, Mexico El Paso Energy, Dominican Republic Termoelectrica De Mexicali, Mexico</p>		
<p style="text-align: center;"><u>COMMERCIAL</u></p> <p>Cemex City of Bay City, Michigan Copper Range Company, Michigan Dynaelectric Company Federal Express Federated Insurance Company General Electric Corporation General Motors Georgia Pacific 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 Mackinac Bridge Authority Packaging Corporation of America Tenneco Packaging Town of Manford, Oklahoma Traverse City Light & Power University of Iowa University of Michigan Wichita State University</p>		
<u>MILITARY/DEPARTMENT OF DEFENSE</u>		
<p>United States Air Force Academy, Colorado Alpena Air National Guard, MI Altus Air Force Base, Oklahoma Anchorage Defense Fuel Supply Point, Alaska Andrews Air Force Base, Maryland Anniston Army Depot, Alabama Atlantic Division, NAVFACENGCOM Arnold AFB, Tennessee Barksdale Air Force Base, Louisiana Battle Creek Air National Guard, Michigan</p>		