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EDUCATION

B.S., Materials Engineering Lehigh University, Bethlehem, PA

Mr. Wolf is a registered professional engineer (PE) with nearly 40 years of international project and construction experience as an owner, supplier and EPC contractor in the design, construction and operation of complex infrastructure and industrial facilities. He has negotiated and executed EPC projects internationally in both the municipal and private sectors and has hands on construction experience in many industries including Metals, Power Generation, Oil/Gas, Water and Wastewater industries. He is familiar with the processes, equipment, contract terms, cost systems and typical responsibilities employed on capital projects. At Veolia he was responsible for the development, design and construction of several Design/Build/Operate (DBO) and Public Private Partnership (PPP) Projects some of which included cogeneration. As an Expert Witness, he has written numerous expert reports that led to successful settlements as well as testified in front of juries, judges and international arbitration regarding Standard of Care, engineering issues, defective work, schedule analysis and damages. He has also taught seminars on effective project implementation (development, management and controls) both domestically and in India. He has twice served as General Chairman of an International Water Conference focused on Power Generation, on the CII Advisory Board, on multiple engineering society boards. He has authored several papers over his career.

REPRESENTATIVE OIL & GAS RELATED ENGAGEMENTS

- Testifying expert in London arbitration on reasonable Capital Cost (CAPEX) and Operating Cost (OPEX) for a Nigerian NGL storage, separation and processing facility.
- Schedule and Damage expert for international EPC contractors on multiple natural gas, fertilizer, petroleum & chemical process plant projects in the Mideast, South America and India.
- Claim & Defect analysis, design standard of care and damage development on multiple mid-stream cryogenic gas storage and processing plants that included deethanizing and fractionating natural gas. (WVA, PA & OH)
- Construction Standard of Care, Claim and Schedule analysis on multiple mid-stream pipelines and compressor stations for natural gas in PA and WVA.
- Quantum analysis on a South American refinery expansion project where final design significantly varied from FEED information resulting in large cost overruns.
- Quantum, technical and schedule analysis for a series of South American FPSO units where final design significantly varied from FEED.
- Quantum and schedule analysis to support equitable change order development on a Mideast refinery expansion project for final design and costs significantly varied from FEED information and estimates.

- Schedule analysis and support for an international EPC firm on a Nigerian Gas to Liquids facility to support subcontractor incentive awards.
- Testifying expert on Standard of care, regulations and reasonable expectations of contractors support in a US refinery turnaround project.
- Design Standard of Care for seller of mid-stream Marcellus Shale Gas storage & processing facility in WVA.
- Testifying expert in US Federal Court on the Design Standard of Care for a major internationally owned refinery in response to OSHA Citation allegations.
- Consulting Expert (Constructability and Design) on a Caribbean refinery project with seismic design issues.
- Testifying Expert on Standard of Care for contractors when installing Owner supplied equipment such as control valves with the incorrect materials of construction.

REPRESENTATIVE EPC ENGAGEMENTS

- Testifying Expert on a USA Grain Feed Mill project with technical, completion and Standard of Car issues.
- Testifying Expert on Project Management and Design Professional Standard of Care on a WVA Airport.
- Damages and Insurance Claim management for an earthquake stricken Power Plant projects in Chile
- Defect and PM Standard of Care analysis for Owner on multiple design issues on an EPC rendering facility.
- Testifying Expert (Damage, Delay and Technical) on a USA cement plant SCR modification project.
- Testifying expert in US Federal Court on quantum and delay concerning the construction of a federal facility to process and purify acids for munitions.
- Expert support and analysis for the Standard of Care of project and design management concerning failed retaining walls at a PA shopping center, a WV industrial facility and at a WV airport.
- Project organization, contracting strategies and negotiation support to a Canadian owner for new greenfield and expansions of Ammonia & Urea production facilities over 3 sites in North America.
- Engineering, Schedule and Damage expert for international EPC contractors on multiple industrial process plant projects in the Mideast, South America, Europe, Asia and India.
- Standard of Care & scope analysis for an EPC expansion of a federal munitions facility by contract operator.

REPRESENTATIVE WATER RELATED ENGAGEMENTS

- Project Neutral retained to analyze assets at a municipal WWT facility and develop options to improve overall plant operations and the financial performance of a Cogeneration / Biosolids Drying Facility.
- Testifying Expert on multiple Drinking Water Plant disputes in CA & WVA, in a PA municipal Waste Water jury trial and in an industrial Waste Water arbitrations in NE & PA.
- Technical Expert, schedule analysis and damages on several Water & Waste Water Treatment equipment disputes in a variety of locals (including MI, NY, CT, TX, WVA and PA) and industries.
- Consulting Expert on performance, operations and design on numerous water treatment plant projects including large municipal sanitary wastewater facilities in Canada and USA producing Biosolids product.
- Design evaluation and Engineer Standard of Care analysis on an equipment failure at a municipal waste water treatment plant.

- Arbitrator mutually selected by the Parties for a dispute between the general contractor and the engineer on a PA coal fired power plant groundwater collection and treatment WWT project.
- Design Engineering Standard of Care analysis for a dispute on corroded hydraulic piping on dam lock gates.
- Technical/Business Consultant on various issues concerning Water & Wastewater for Korean, Japanese, Finnish, German, French & British firms

REPRESENTATIVE POWER ENGAGEMENTS

- Schedule, Damage and Standard of Care Expert on a dispute at a USA coal fired power plant.
- Independent third party technical/financial analysis on a power plant project, board level presentation.
- Arbitrator mutually selected by the Parties for a dispute between the general contractor and the engineer on a PA coal fired power plant groundwater collection and treatment WWT project.
- Project Neutral employed to explore technical options for a gas fired cogeneration plant mediation
- Damage calculations, Force Majeure Insurance Claim development and management for an earthquake stricken coal fired Power Plant under construction in Chile.
- Schedule Analysis, Damage Evaluation and Claim Management for a major EPC supplier for turnkey power plant support system projects in Michigan, Indiana and British Columbia.
- Project Advisory Services for two new USA Combined Cycle Gas Cogeneration Power Plants.
- Schedule, Damage and Standard of Care for a power plant's zero liquid discharge (ZLD) facility.
- Consulting Expert on multiple engagements concerning treatment equipment on coal fired plants.

REPRESENTATIVE EQUIPMENT & DESIGN ENGAGEMENTS

- Testifying Standard of Care and Quantum Expert on major equipment package for a large natural gas fired processing plant in international arbitration.
- Standard of Care analysis on a Procurement Contract concerning the Manufacture and supply of a Vertical Carousel System for the Umbilicals serving a subsea oil exploration production unit.
- Damages, Process and Design Engineering Standard of Care analysis for a dispute on a corrosion failed Marcellus Shale Gas centralized Frac Water Treatment complex.
- Various design & engineering Standard of Care analyses relative to plaintiffs injuries in several cases including filters, hydraulic recycling balers, rotating equipment, construction winches and furnaces.
- Investigation and failure analysis of a molten glass furnace breakout for a commercial bottler.
- Expert supporting acquiring company over indemnities and warranties stemming from a design dispute relative to industrial motors used in commercially sized HVAC units.
- Expert analysis of HVAC system design enhancements claims at a federal armaments plant.

REPRESENTATIVE METALS ENGAGEMENTS

- Testifying expert in a commercial dispute between a Chinese steel purchaser and the Turkish manufacturer.

- Project Risk Management and oversight for a new 5 MTPY USA Strip Rolling Mill and Multiple Process Lines. Developed internal contracts to share services. Oversaw Performance tests.
- Technical and Project management Standard of Care analysis on new Seamless Pipe Mill Project in USA
- Testifying expert in a new USA electric furnace steel mill melt shop construction dispute
- Project Advisory Services and Claim Preparation for the owner of a new polysilicon plant in USA.
- Standard of Care and Quantum Testifying Expert on the failure of major equipment package for a large natural gas fired iron processing plant in international arbitration.
- Developed capital spending procedures and internal processes for a Stainless Steel Manufacturer
- Oversaw on site services for Arbitration Support, Claim Management and Risk Management for a new 5 MTPY green field integrated steel plant in Brazil. Testified in Rio arbitration.
- Damages, Design, and Engineer Standard of Care testifying expert on failed equipment at a solvent extraction/electrowinning treatment plant producing zinc.
- Business interruption claim analysis for an integrated steel mill in Michigan
- Quantum analysis on completion of a USA Carbide facility following termination of EPC contractor
- Multiple accident engagements in electric arc furnace melt shops and rolling mills.

REPRESENTATIVE MINING ENGAGEMENTS

- Expert Analysis and testimony (Process, Design & Capabilities) for an international arbitration concerning a new iron ore mine, railroad and port complex in Australia.
- Testifying expert in an international arbitration dispute over the completion a new USA iron ore processing facility for an international iron mining and steel company.
- Expert Analysis of equipment design defects for a chromium ore mine and smelting complex in Kazakhstan.
- Testifying Expert (Engineering & Construction) for a water treatment facility for a molybdenum mine
- Testifying expert for an international contractor in a USA arbitration concerning performance testing on a coal mining water runoff treatment facility in a North American location.
- Consulting Expert on a Uranium mine expansion project in Canada and a Tungsten mine in the UK
- Project controls and governance assistance for the recovery efforts and re-base line of a multibillion troubled mine expansion project in Canada.
- Advisory assistance, schedule and cost analysis for an EPC contractor to develop opinions on validity of performance incentives for an iron ore mining expansion project in Canada
- Technical analysis and damage quantification for arbitration concerning a major material handling equipment failure in a USA coal mining project.
- Advisory assistance and final cost determination for an EPC contractor who was terminated for convenience by the owner on a USA coal mine project.

REPRESENTATIVE MANAGEMENT CONSULTING ENGAGEMENTS

- **Manufacturer (Harrisburg, Pennsylvania):** Project post mortem and procedural recommendations for Owner financed capital projects and service contract renewals.

- **Mining Company (Cleveland, Ohio):** Management consulting services for the development, definition and risk management for an iron nugget business/project utilizing new technology.
- **Manufacturer (Mobile, Alabama):** Consulting services for the development of an internal contract to segregate comingled utility services between operating entities to allow divestiture.
- **Manufacturer (Calgary Alberta):** Management consulting services for procedures, strategies and plans to increase the capital spending program related to new ammonia and urea expansions.
- **Financial Client (Wilmington, Delaware):** Process technology and equipment due diligence to support acquisition of a closed biodiesel production facility by a financial investor.
- **Manufacturer (Reading, Pennsylvania):** Management consulting services in relation to the development of standard equipment procurement procedures for new facilities.
- **Construction Company (Indianapolis, Indiana):** Advisory Services on establishing a new business venture to supply and install equipment in the ethanol market.
- **Unsecured Creditors (NY):** Capital project and completion due diligence to support selling a partially completed plastics facility to maximize return for unsecured creditors.
- **Gas Processor (WVA):** Capital plant and equipment due diligence to support selling assets to another natural gas pipeline and processing firm.

RECENT TESTIMONY

<u>Parties</u>	<u>Case Number</u>	<u>Venue</u>
Town of Plymouth vs. Stantec	1683-CV-00113	Massachusetts Court
Samsung C&T vs. Duro Felguera	ARB 065/16/JJ	Arbitration Singapore
Brahma vs. Tenaris	01-17-0003-8875	Arbitration USA
CB&I vs. Sinclair	15-cv-00091	US Federal Court
CWVRAA vs. Triad Engineering	15-C-1022	West Virginia Court
RG Engineers vs. Vitol	ICC Case#: 22095	Arbitration USA
Tetra Tech vs. Skanska	01-16-0004-7876	Arbitration USA
ArcelorMittal vs. Essar Steel	ICC Case #22187	Arbitration USA
HYL Tech vs. Kinetic Tech	ICC Case #21197	Arbitration Italy
Norwalk WPCA vs. Gilbane	3:14-cv-00549	US Federal Court
Federal Carbide vs. Exeter Const.	3:15-cv-248	US Federal Court
GEA Process vs. BLHI	01-17-0003-3394	Arbitration USA
Agra Industries vs. Hoover	02-17-0003-7433	Arbitration USA
Calgon Carbon vs. Atlas Const.	01-15-0003-0996	Arbitration USA
Fluor vs. TNT Crane & Rigging	2015-23268	Texas District Court
AZR vs. CSD Engineers	Ad Hoc	Arbitration USA
Process & Industrial Dev. vs. Nigeria	Claim No 28	Arbitration London
Sinopec USA vs. Habaş Sinai	19357/EMT	Arbitration Geneva
British Petroleum vs. OSHA	10-0637	US Federal Court
SNC Lavalin vs. ATK	7:10-CV-00540	US Federal Court
Kinder Morgan vs. ARGOS	2009-50242	Texas District Court
Multiplex vs. Boyle & Hildreth	11-C-53	West Virginia Court
Kranick Enviro vs. HRG Eng.	13015-2009	Pennsylvania Court
Tesar Const. vs Republic Steel	14CV182694	Ohio Court
Veolia Water vs. Consol	01-14-0000-3762	Arbitration USA

RELEVANT PROFESSIONAL EXPERIENCE

Berkeley Research Group, Managing Director – Mega Project Experience

As a Consultant, Mr. Wolf has been engaged by both the Owners and Contractors for various roles on several mega EPC projects (over \$1B) including Oil Refinery projects in South America, Saudi Arabia, Kuwait and India; Methanol project in Egypt; Urea/Ammonia fertilizer projects in the USA and India; Steel plants in both North and South America; Iron Ore mine complexes in Australia, North and South America; a Metallurgical plant in the USA and FPSO vessels for South American offshore oil drilling.

Veolia Water (formally US Filter), Vice President – Capital Program Management

Mr. Wolf was responsible for all aspects of Design/Build/Operate (DBO) Projects from inception through to steady state operations. Projects ranged from \$5 to \$50 million in capital and typically had operation durations of 10 to 20 years. The projects included several in the Metals, Process and Power industries.

Wheelabrator APC, Executive Vice President

Responsibility for all design, engineering, project management, construction and purchasing activities of a business supplying equipment for air pollution control to Utilities, Metals and Process Industries.

Primary Energy, Director of Engineering and Construction

Mr. Wolf had the oversight responsibility supervising the owner's project management teams for construction and commissioning of cogeneration power plants using gas fired combined cycle technology located at industrial facilities in the Midwest. The plants were built under lump sum EPC agreements with a large US engineer constructor. Responsibilities included progress monitoring, change order negotiations, commissioning and performance guarantee evaluation.

LTV STEEL, General Manager of Engineering

Mr. Wolf led a 100+ person Engineering Division which managed 450 active projects ranging from green field plants, process refurbishment, infrastructure, mobile equipment, and IT upgrades for a \$5 billion steel and mining business with multiple facilities. He was responsible for the company's \$300 million in annual capital spending. He supervised project definition, environmental permitting, contracting strategies and construction.

KVAERNER (formally Davy/Dravo/John Brown), Various Positions

Mr. Wolf had increasing responsibility in projects, sales, purchasing, engineering, construction, training, startup and executive management in this international engineering & construction (EPC) firm. As Vice President Furnaces he was responsible for all aspects of the firm's furnace projects in the steel, aluminum and other non-ferrous industries. In an expanded Commercial Vice President role he was took on strategy, oversight, negotiations and all commercial activity for a billion dollars per year international engineering and construction business performing capital and maintenance work for the process, mining and metals industries. He led international contract negotiations and sales efforts for projects in Venezuela, Chile, Mexico, Saudi Arabia, Egypt, India, Indonesia and Australia.

Lukens Steel Company

As an entry level front line supervisor in the melting department, he gained manufacturing insight to union relations and steelmaking operations, including an EAF furnace startup and DRI steel making.

PROFESSIONAL CERTIFICATIONS / AFFILIATIONS / PUBLICATIONS

- Professional Engineer: Mechanical; Pennsylvania, Wyoming
- OSHA Construction Safety & Health
- International Water Conference; General Chairman 2004-2006; Exec Committee 2002-present
- American Society of Safety Engineers; Professional Member 2016 - present
- Engineer Society of Western PA; Board of Directors 2001-2010
- Cleveland Engineers Society; Board of Directors/President Elect 1997-2000
- Construction Industry Institute; Board of Advisors, Research Committee 1998-2001
- American Iron and Steel Institute; Board of Directors, Capital Effectiveness and Supplier Committees 1991- present
- Association of Iron and Steel Technology, Foundation Trustee, Life Member 1980-present
- Industrial Heating Equipment Association; Board of Directors 1993-1996
- US Coast Guard Advisory Panel on Hazardous Cargoes 1982-1987
- Published several papers on projects and technologies in various industries over the years
 - Most recent is: *Project Development and Strategies for Success*
Presented at 2013 AACE Annual Meeting in Washington DC, USA