



## ERS Team Experience – Example Risk Engineering and Loss Adjusting Projects – Power Generation

Region	Role	Insurance	Project/Technology	Features/Issues
Asia	Risk Engineering	Operational All Risks/ Business Interruption	Combined Cycle Gas Turbine Power Utility	Strategic Spares Contingency Planning Fire Equipment Availability/Security
Asia	Risk Engineering	Operational All Risks/ Business Interruption	Combined Cycle Gas Turbine Power Utility	Remote Location Redundancy of key BOP systems Storage Conditions for sensitive spares Contingency Planning for heavy lifts
N. America	Risk Engineering	Construction All Risks & Initial Operation	Combined Cycle Gas Turbine Power Utility	Phased Turnover Simultaneous construction & operation (SIMOPS) Fire protection of cooling towers & transformers
Europe	Loss Investigation/ Adjusting	Construction All Risks/ Delay in Start Up	Combined Cycle Gas Turbine Power Utility	Gas turbine compressor damage – loose blade lock



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Europe	Loss Investigation/ Adjusting	Construction All Risks/ Delay in Start Up	Combined Cycle Gas Turbine Power Utility	Gas turbine combustor lining damage – design issues.
Europe	Loss Investigation/ Adjusting	Construction All Risks/ Delay in Start Up	Combined Cycle Gas Turbine Power Utility	Internal thermal distortion to steam turbine – caused by water in turbine due to poor piping execution.
Europe	Loss Investigation/ Adjusting	Construction All Risks & Delay in Start Up	Combined Cycle Gas Turbine Power Utility	Damage to stage 2 turbine blades - cooling design issue.
Europe	Loss Investigation/ Adjusting	Construction/Erection All Risks & Delay in Start Up	Gas Turbine Combined Heat & Power Project	Serious damage to compressor & turbine following liberation of stage 1 compressor blade.
Europe	Loss Investigation/ Adjusting	Construction/Erection All Risks & Delay in Start Up	Gas Turbine Combined Heat & Power Project	Distortion of superheater following ingress of boiler feed water through defective drains.
Europe	Loss Investigation/ Adjusting	Contract Works	Gas Turbine Combined Heat & Power Project	Contamination of turbines through ingress of raw water into injection system through defective drains.



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N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Project suspended during construction. Long-term preservation of partially constructed plant, equipment & materials
N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Project suspended before construction. Long-term storage & preservation procured equipment & materials.
N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Construction at full rate resumed after slowdown. Condition of materials & equipment after extended preservation during slowdown period.
N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Project construction slowed down to minimal rate. Long-term preservation of partially constructed plant, equipment & materials.



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N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Project construction slowed down to minimal rate. Long-term preservation of partially constructed plant, equipment & materials
N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Project subject to construction slowdown to limit costs. Long-term preservation of partially constructed plant, equipment & materials
N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Construction at full rate resumed after slowdown. Condition of materials & equipment after extended preservation during slowdown period. Phased Turnover of power blocks.
N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Utility	Survey very late in construction period – during punch-list activities.



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N. America	Risk Engineering	Builders Risk, Delay in Start Up & Business Interruption	Combined Cycle Gas Turbine Power Cogeneration/ CHP Facility	Phased Turnover.Simultaneous construction & operation (SIMOPS). Merchant Basis sales model.
Caribbean	Risk Engineering	Construction/Erection All Risks	Combined Cycle Gas Turbine Re-Powering of Oil-Fired Thermal Power Utility	Construction resumed after 7-year delay. Inspection/refurbishment/replacement of equipment & materials after varying standards of preservation. SIMOPS management.
Europe	Risk Engineering	Construction All Risks/Delay in Start Up	Combined Cycle Gas Turbine Power Utility	Small plant footprint. Aggressive construction schedule.
N. America	Risk Engineering	All Risks of Physical loss or Damage & Construction/ Erection All Risks	Combined Cycle Gas Turbine Power Utility	Construction resumed after 3-year delay & change of ownership and change of design basis from base load to cycling/peaking operation. Inspection/refurbishment/replacement of equipment & materials subject to preservation.



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N. America	Risk Engineering	Construction All Risks/Delay in Start Up	Combined Cycle Gas Turbine Power Utility	Requirement for early simple cycle availability. Late delivery of LP Steam Turbine, prompting change in erection sequence.
N. America	Risk Engineering	Construction All Risks	Combined Cycle Gas Turbine Power Utility	Completion of Power Plant construction project after 4 years' preservation & ownership change. Inspection/refurbishment/replacement of equipment & materials subject to preservation. Turbine & boiler product modifications to bring to current standards.
Asia	Risk Engineering	Operational Property & Machinery Breakdown	Combined Cycle Gas Turbine Power Utility	Fire protection training & orientation. Manning Levels.
Asia	Risk Engineering	Operational Property & Machinery Breakdown	Combined Cycle Gas Turbine Power Utility	Condition Monitoring. Manning levels.



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Central America	Risk Engineering	Machinery Breakdown & Business Interruption	Diesel Power Utility	Improvements to engine management, engine securities & condition monitoring. Improved fire protection measures.
Far East	Loss Investigation/ Adjusting	Material Damage, Machinery Breakdown & Business Interruption	Diesel Power Barges	Engine Fire – Oil leak from poorly tightened coupling.
Far East	Loss Investigation/ Adjusting	Material Damage, Machinery Breakdown & Business Interruption	Diesel Power Barges	Engine Fire – oil leak from failed turbocharger.
Europe	Risk Engineering	Construction All Risks, Advanced Loss of Profit and Increased Cost of Working	Energy-from-Waste Project	Boiler fired by municipal solid waste (MSW). Small site footprint. Issues involving liaison between contractors.
Europe	Loss Investigation/ Adjusting	Construction All Risks, Advanced Loss of Profit and Increased Cost of Working	Energy-from-Waste Project	Damage to steam turbine resulting in bent rotor.



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Europe	Loss Investigation/ Adjusting	Construction All Risks, Advanced Loss of Profit and Increased Cost of Working	Energy-from-Waste Project	Serious damage to gearing of steam turbine generator – caused by misalignment of turbine/gearbox and misalignment of steam pipes.
Europe	Loss Investigation/ Adjusting	Construction All Risks, Advanced Loss of Profit and Increased Cost of Working	Energy-from-Waste Project	Damage to heat exchanger caused by improper welding practices.
Europe	Loss Investigation/ Adjusting	Construction/Erection All Risks and Third Party Liability	Energy-from-Waste Project	Serious damage to retrofitted SCR DeNox unit - caused by exothermic catalysis of gases from incomplete combustion in boiler.





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N. America	Risk Engineering	Operational All Risks	Power Utility – Gas-fired Thermal & Peak Shaving simple Cycle GTs	Several units of different design/size. Some equipment >35 years old with design & construction standards superseded. Distortion of outdoor Turbine enclosures & loss of integrity owing to seasonal temperature fluctuations. Routing of control cables.
N. America	Risk Engineering	Operational All Risks	Power Utility – Gas-fired Thermal & Peak Shaving simple Cycle GTs	Several units of different design/size. Distortion of outdoor Turbine enclosures & loss of integrity owing to seasonal temperature fluctuations. Routing of control cables. Siting of Emergency Diesel Generator fuel tank.
N. America	Risk Engineering	Construction/Erection All Risk, Operational Material Damage, Delay In Start Up & Business Interruption Insurance	New coal-fired Power Plant & Coal Mine	New plant on green-field site. Phased turnover, with coverage for initial operation.



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Region	Role	Insurance	Project/Technology	Features/Issues
E. Europe	Risk Engineering/ Condition Assessment	Construction/Erection All Risks	Nuclear Power Utility	Pre-construction assessment after 15-year suspension of construction. Preservation management & standards applied. Inspection/refurbishment/replacement of equipment & materials.
Asia	Risk Engineering	Operational MD & Con Loss	Oil-fired Thermal Power Utility	2 Units – common operators and some shared BOP facilities, but separate operating companies. Subrogation waiver. Condition monitoring practices Positive Material Identification Contingency planning - road & bridge capacities.



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Region	Role	Insurance	Project/Technology	Features/Issues
N. America	Risk Engineering	Operational All Risks/ Business Interruption	Lignite/coal -fired Thermal Power Utility – 2 x once-through supercritical boilers & steam turbines – and associated strip mine. Major mining machinery - walking draglines, bucket wheel excavators & 650 ft cross-pit spreader.	Efficiency/Output upgrades to steam turbine generators & transformers. Transformer fire walls. Protection & routing of emergency power cables. Spurious alarm readings. Pressure vessel thickness monitoring. Comprehensive condition monitoring.
N. America	Risk Engineering	Operational All Risks/ Business Interruption	Lignite/coal-fired Thermal Power Utility – 3 x once-through supercritical boilers & upgraded steam turbines – and associated strip mine with major machinery - walking draglines & mobile machinery.	Efficiency/Output upgrades to steam turbine generators & transformers. Routing of cables. Fretting of modified pulverised fuel pipes. Comprehensive condition monitoring.



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N. America	Risk Engineering	Operational All Risks/ Business Interruption	Lignite/coal-fired Thermal Power Utility – 3 x once-through supercritical boilers & upgraded steam turbines – and associated strip mine with major machinery - walking draglines, 1400 ft cross-pit spreader & mobile machinery.	Efficiency/Output upgrades to steam turbine generators & transformers. Storage of spare boiler materials. Comprehensive condition monitoring.
N. America	Risk Engineering	Operational All Risks/ Business Interruption	Lignite-fired Thermal Cogeneration	Cogeneration for adjacent aluminium plant. Subrogation waiver. Storage conditions of spare boiler materials.
Caribbean	Loss Investigation/ Adjusting	Property & Business Interruption	Water & Power Utility	Serious damage to infrastructure from Category 3 hurricane. Complex BI calculation with policy exclusions for damage to specified parts of system.



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Region	Role	Insurance	Project/Technology	Features/Issues
Europe	Risk Engineering/ Project Monitoring	Construction/Erection All Risks, Third Party Liability & Delay in Start Up	Energy from Waste Facility	Small footprint. Fast track schedule with limited float.
Caribbean	Risk Engineering	Erection All Risks	Simple Cycle to Combined Cycle GT Power Plant Upgrade	Continued operation in simple cycle through most of construction period.
Europe	Risk Engineering	Operational All Risks	Energy from Waste Facility	Early operation & procedures in development