



## About us:

AES Engineering is a firm in WA dedicated to Power Systems and Electrical Protection solutions. With more than a century of cumulative experience in Australia, Oceania and Asia, our subject matter experts can provide consultancy and detailed engineering services for various industries, from Power Plants to Transmission level substations and renewable energy to mining and oil and gas refineries. Our team's area of expertise covers a wide spectrum of industries and applications ranging from protection and fault investigations of coal and Gas power plants to small- and large-scale de-carbonisation projects, and from traditional AC networks to the edge cutting DC systems in renewables and special purpose systems.

With automation finally finding its way into the WA energy sector and network operators like WP, HP, BHP, Fortescue and Rio Tinto, expanding and upgrading their networks utilising IEC 61850 protocol, electrical protection has reached a level of complexity that requires dedicated SME services.

AES is currently amongst a handful of companies in WA with such capability and amongst even a fewer group covering all areas of protection from power generation plants to transmission level substations and industrial and O&G plants. AES does not require outsourcing such services to the East Coast or overseas.

With AES's unique capability, we can deliver maximum results with minimum risk for the client.

Utilizing our SMEs' accumulated expertise and state-of-the-art engineering tools, we provide a host of studies for our clients using the licensed software tools below:

- DIgSILENT PowerFactory
- PSCAD
- CYMCAP
- CDEX

Services within AES's scope of expertise include:

### Power Systems:

- 1- Steady state power system study, including load flow and short circuit.
- 2- Motor starting Dynamic and static.
- 3- Harmonic analysis and filter design
- 4- Grid connection study for all renewable sources, including solar, wind farm and battery.
- 5- Earthing design substation and distribution network
- 6- Arc Flash study and providing a solution to mitigate the arc flash level based on the IEEE and NFPA70-E
- 7- Insulation study for switching and lightning.
- 8- Model assessment, validation, and development.
- 9- Technical rules compliance assesment
- 10- DC system studies and asset modelling.



### **Protection Systems:**

- 11- Protection system studies and protection settings for various industries ranging from LV MCCs to Power plants and Power Transmission level substations' IEDs.
- 12- Fault and disturbance studies
- 13- IED configuration
- 14- Secondary protection system testing
- 19- IED upgrade with the best solutions available.

- 15- Generator Compliance test based on the AEMO requirement.
- 16- Test and commissioning of protection systems.
- 17- Project Management and EPCM
- 18- Special purpose networks and DC systems protection studies.

### **Substation automation Systems:**

- 20- Substation Automation System design and engineering (DNP3.0, MODBUS, IEC 61850, IEC 104, ...)
- 21- SCADA System FDS and basic design

- 22- RTU configuration
- 23- Signal lists.
- 24- SCADA system configuration
- 25- Bench testing iFAT and SAT support.

### **Test and Commissioning:**

- 26- Commissioning Management, from planning to execution
- 27- Plant Testing (FAT, SAT, SCADA, IED, Primary Plant, Secondary assets)

- 28- High Voltage testing and system verification
- 29- IEC 61850 compliance testing.

### **Power Generation:**

- 30- Compliance Tests
- 31- Fault investigations and analyse.
- 32- Protection Audit
- 33- Traditional and Renewable plants design and studies

- 34- Protection settings, configuration, and testing
- 35- Relay replacement services from design to execution.

### **Project Delivery:**

- 36- Project Development
- 37- Project support and management
- 38- Design management.

- 39- Procurement support and management



ALBORZ ESPEREZ ENGINEERS

40- Independent cost control and project governance

**Areas of expertise of our team includes the following industries:**

- Power Transmission Substations (up to 400kV voltage level)
- Power Plants (DG, GAS, Steam or combined cycles)
- Oil and Gas (onshore and offshore)
- Mining and process (Iron Ore, Copper, Gold, Lithium, ...)
- Water treatment plants
- Paper mills
- Steel plants
- Wind and Solar Farms
- Battery Energy Storage Systems
- Decarbonisation Projects
- Data Centre Substation

**AES is a direct consultant or trusted partner of the below companies:**

- Rio Tinto IO
- Fortescue
- PowerTech
- Mott McDonald
- Alinta Energy
- Bechtel
- Partum
- SAGE
- Proton Power
- Tasman Power

**AES is working as a subcontractor for below clients:**

- BHP WAIO
- BHP Nickle West
- Horizon Power
- Western Power
- Synergy
- Trans Alta
- Genus Group
- Siemens