



Taraz Saba

BE (MECH), ME (WIND)

Senior Technical Director (Renewables Lead)



Location

Brisbane, QLD, Australia

Experience

22 years

Qualifications/Accreditations

- Bachelor of Engineering (Mech), Master of Engineering (Wind)
- Certificate in Project Management.

Memberships

- Member of Clean Energy Council and former Board Member of Renewable Energy World (Asia).

Relevant experience summary

Taraz is Principal Renewable Engineer with over 22 years' experience in study, design, planning, technical advisory, and delivery of renewable power projects; and 6 years of experience in detailed design and manufacturing. He has project managed numerous renewable power projects in a variety of roles and lead several due diligence projects for vendors, financiers/lenders, developers and investors in the Asia Pacific region. His expertise covers full spectrum of renewable projects development, construction, and operation life cycle – including feasibility studies and resource assessment, solar and wind power plant layout design, technical specifications, tendering & tender negotiations, contracts review (EPC, S&I, O&M, PPA, etc.), operation and technical advisory. Taraz has held senior and executive roles in engineering consultancy and worked on over 30,000MW of renewable power projects.

Project experience - Owner's Engineer & Feasibility Studies

Completed above studies on a range of projects, including:

- Coopers Gap Wind Farm (Qld, 423MW)
- Bulgana Wind Farm (Vic, 200MW)
- Warradarge Wind Farm (WA, 180MW)
- Badgingarra Wind Farm (WA, 130MW)
- Hornsdale Wind Farm (SA, 309MW)
- Rabbit Ridge Wind Farm (Qld, ~25MW)
- Bais Wind Farm (Philippines, 10MW)
- Burgos Wind Farm (Philippines, 86MW)
- Collgar Wind Farm (WA, 200MW)
- Oakland Hill Wind Farm (SA, 63MW)
- Mt Emerald Wind Farm (QLD, ~150MW)
- India (several Wind Farms, over 1,000 MW)
- Butoni Wind Farm (Fiji, 10MW)
- Emu Downs Wind Farm (WA, 80MW)
- San Carlos Wind Farm (Philippines, 25MW)
- Tararua Wind Farm – stage 1&2 (NZ, 105MW)
- Windy Hill Wind Farm (QLD, 12MW)
- Multiple Renewable Projects (Pakistan, 150+MW)
- Crescent Ridge Wind Farm (USA, 55MW).

Additional renewable projects were also completed in Asia and Africa.

Held responsibilities include:

- Site visit, wind monitoring, independent wind resource assessment and complex terrain wind flow analysis, micro-siting, layout design and turbine selection;
- Statistical risk analysis, stakeholder presentations, layout optimisation, noise prediction modelling, EMI study, shadow flicker modelling, liaison with geotec, electrical, civil, EIS, and planning specialists;
- Financial feasibility analysis, layout optimisation, technical inputs into development application;
- Functional specifications, EPC and O&M contracts development, evaluation and shortlisting, responding to EPC contractor queries, liaison with lender's engineer and turbine suppliers, coordination of technical inputs into the development application, and compilation of detailed feasibility study (and EIS) reports; and
- Full range of OE services during wind farm construction including turbine inspections, walkdowns, commissioning tests, punch list, and Practical Completion certification.

Project experience – Independent Engineer & Due Diligence Services

Completed above services on a range of projects, including:

- Stockyard Wind Farm (VIC, 528MW)
- Timboon & Yawong Wind Farms (VIC, 14.4MW)
- Snowtown Wind Farm (SA, 270MW)
- Ararat Wind Farm (VIC, 240MW)
- Wonthaggi Wind Farm (VIC, 12MW)
- Canunda Wind Farm (VIC, 46MW)
- Infigen Energy Wind Farm portfolio (Aust, 557MW)
- White Rock Wind Farm (NSW, 175MW)
- Boco Rocks Wind Farm (NSW, 113MW)
- Bamyan solar farm (Afghanistan, 1MW)
- India (several Wind Farms, over 1,000MW)
- Taralga Wind Farm (NSW, 107MW)
- Mumbida Wind Farm (WA, 55MW)
- Waterloo Wind Farm (SA, 111MW)
- Hybrid system, wind & solar (Pakistan, 2 projects)
- Woodlawn Wind Farm (NSW, 48MW)
- Bluff Point and Studland Bay Wind Farms (TAS – 140MW)
- Emu Downs Wind Farm (WA, 80MW)
- Cathedral Rocks Wind Farm (SA, 66MW)
- Lake Bonney Wind Farm (SA, 46MW)
- Walkaway Wind Farm (WA, 89MW)
- Wonthaggi Wind Farm (VIC, 12MW)
- Wilgoloeche Wind Farm (SA, 150MW+)
- Queensland Government Wind Farm Asset Sale (Australia, 5 Wind Farms)
- Gangwon Wind Farm (Sth Korea, 98MW)
- Yeongduk Wind Farm (Sth Korea, 39MW)

Held responsibilities include:

- Technical due diligence services on wind resource assessment, EPC and O&M contracts, wind turbine technology selection, civil and electrical works including connection, power purchase agreement, development approval, feasibility studies, grid connection, Capex and Opex;
- Independent Engineer for construction monitoring, commissioning testing, technical advice on EPC issues and review of performance testing, bank drawdowns, EPC Milestone Certificates, O&M reviews, and project monitoring during the defects liability period;
- EPC Superintendent and independent Engineer after construction during the operational phase of the projects;
- Wind farm inspections (including end of warranty), covering turbines, civil and electrical works; and
- Wind Turbine Inspections.

Project experience – Other Renewable Projects

Completed above services on a range of renewable projects, including:

- Hornsdale Tesla Battery (SA, 100MM)
- Several large-scale Solar Farm (Australia, 500MW+)
- Bamyan Solar Farm with storage (1MW, Afghanistan);
- Hybrid - wind, solar, diesel, storage (Pakistan, 100kW)
- Wind & Solar Hybrid community project (Pakistan, 10kW)

Held responsibilities include:

- Resource assessment, site visits, wind/solar/diesel/storage system design;
- Plant yield calculations and layout optimisation;
- Equipment selection, community training, stakeholder consultation, on-site system installation and commissioning; and
- Operation & Maintenance strategy and plans.

Project experience – Turbine Inspections

Completed above inspections on:

- Badgingarra Wind Farm (WA, 130MW)
- Hornsdale Wind Farm, (SA, 309MW)
- Yeong Yang Wind Farm (Sth Korea, 61.5MW)
- Canunda Wind Farm (SA, 46MW)
- Emu Downs Wind Farm (WA, 79MW)
- Windy Hill Wind Farm (QLD, 12MW)
- Butoni Wind Farm (Fiji, 10MW)

Held responsibilities include:

- EPC turbine handover inspections
- End of Warranty wind turbine inspections
- Review of O&M manuals and wind farm defects
- O&M contract renewal and negotiations
- Condition monitoring
- Root Cause Analysis reviews
- Wind farm condition reporting
- Analysing wind farm production against expected predictions
- Wind farm life extension studies.

Project experience – Wind Atlas Mapping

Developed Wind Atlas Map of Kazakhstan.

Responsible for:

- Wind mapping services to UNDP to install 13 wind monitoring masts across Kazakhstan;
- Wind monitoring program for two years;
- Detailed wind resource assessment and wind farm output calculations for 13 sites;

- Wind farm layouts design, developing a meso-scale wind map of Kazakhstan;
- Technical reporting; and
- Conference presentation to UNDP in Astana.

Project experience – Wind & Solar Resource Assessment

Completed Energy Yield Prediction (16,000MW+ worldwide).

Held responsibilities include:

- Site visit;
- Resource monitoring installation and measurement campaigns (Sodar, Lidar, lattice, and tubular towers);
- Resource assessment and complex terrain wind flow analysis, micro-siting;
- Bankable Energy Yield Prediction reports for lenders and financiers;
- Statistical risk analysis;
- Noise prediction modelling

Project experience – Publications

Authored or Co-authored on multiple publications including:

- "Wind Power Atlas Creation for Kazakhstan", a presentation to UNDP International Wind Power Seminar in Almaty Kazakhstan – Central Asia, Kazakhstan 2011;
- "Ensuring viable wind farms projects are bankable in the current financial environment and the role of Independent Engineer", A paper presented in Renewable Energy Power World Conference - Asia, Thailand 2009 and NZWEA Conference in Hamilton 2010;
- "Wind Power Opportunities in Australia", a paper presented at Environment Institute of Australia and New Zealand seminar on 26 October, Brisbane 2006;
- "Uncertainty Analysis in Energy Yield Assessment – Investigating Monte Carlo Method", Co-authored with Andrew Kerley. This Paper was presented at the World Wind Energy Conference, Melbourne, 2005;
- "Sources and Magnitudes of Common Errors in Energy Yield Assessment", Co-authored with Justin Harding and presented at the PowerGen Asia 2005 and AUSWEA 2005 Conferences in Singapore and Sydney, respectively, 2005;
- "Wind farm energy predictions, Are you doing it right?", a paper presented at the World Wind Energy Conference, Beijing, 2004;
- Effects of Tower Shading on Anemometers - Field Data and Wind Tunnel Investigations", a paper presented at the New Zealand Wind Energy Conference, New Zealand, 2002;
- "Dealing with Risk in Wind Power developments", a paper Co-authored with S Faulkner, P van Lieshout; presented at the New Zealand

Renewable Energy Research Seminar, New Zealand, 1999;

- "Calculation of errors in Wind Turbine Siting in Complex Terrain", Co-authored with A J Bowen, a paper presented at NZWEA Conference, New Zealand, 1999;
- "Evaluation of software in Wind turbine siting in simple and complex terrain", M.E. Masters thesis, 1999;
- "Evaluation of software in wind flow analysis over complex terrain", a paper Co-authored with A J Bowen and presented at the International Wind energy Conference, India, 1994; and
- "Prospecting for wind energy", Co-authored with A J Bowen and presented at the IPENZ Conference in Nelson, New Zealand 1994.