



Natural Power is an international provider of practical consulting and risk management services. Together with LatWind, our local agent, we offer a portfolio of wind technical solutions relating to the entire renewable energy project development and operations for projects in Chile.

Our services include:

Feasibility

- Virtual wind resource assessment & site wind speed mapping
- High-level desktop assessments
 - Constraints review
 - Hub height wind speed and indicative energy yield estimate
 - Environmental advice
 - Front End Engineering Design studies to evaluate overall financial feasibility



800
MW+ feasibility
services

200
MW+ technical
due diligence

60+
projects

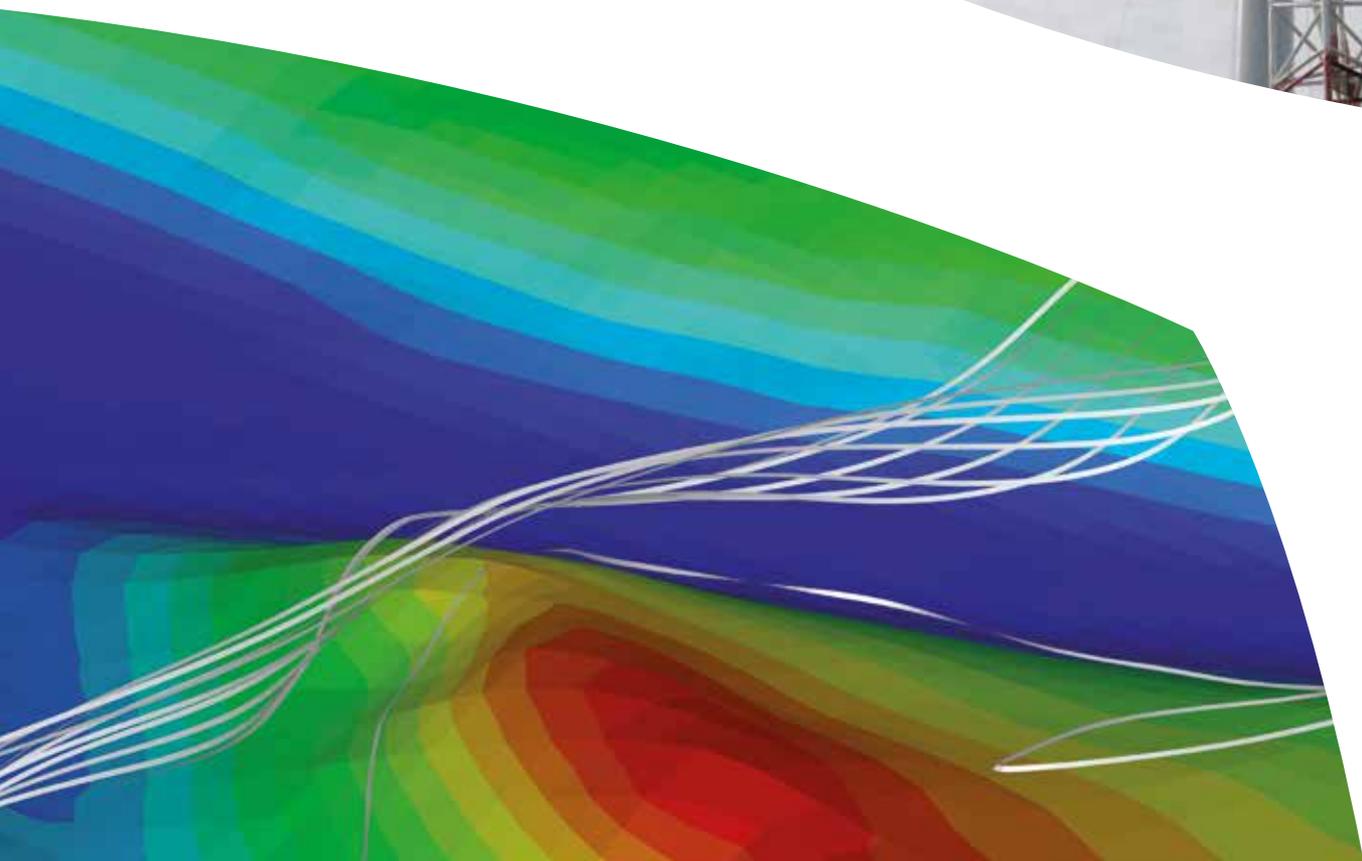
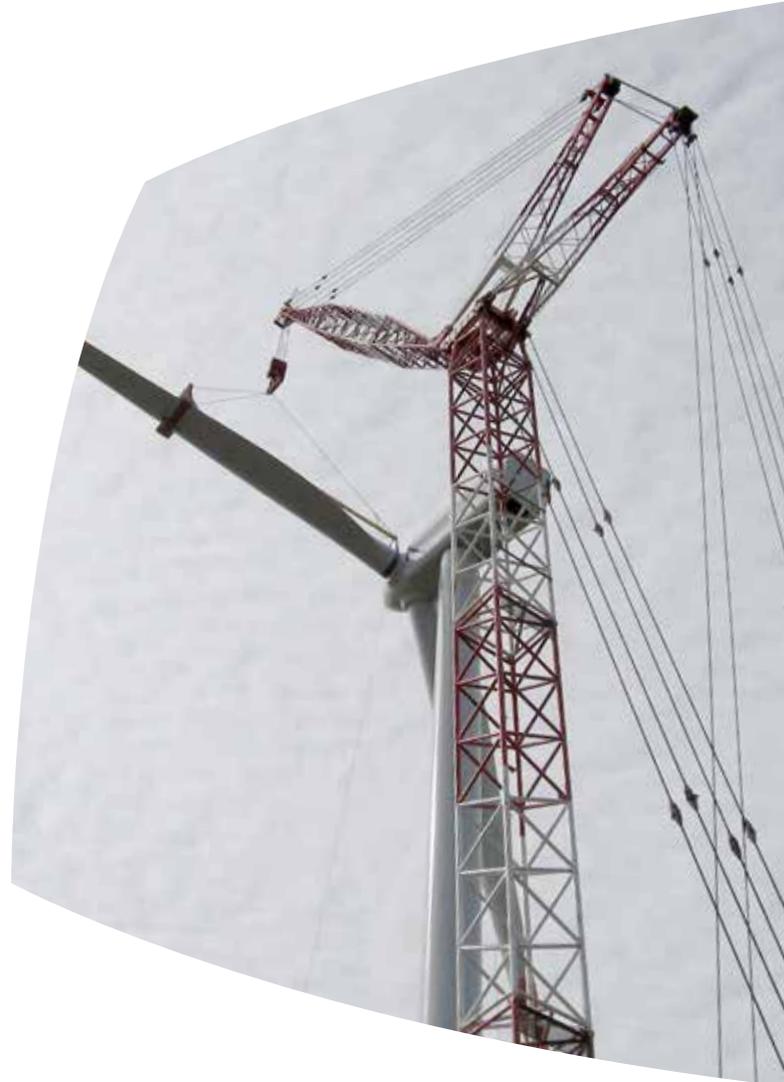
3GW
technical services
delivered

Development / Pre-construction

- Site visits
- Energy optimisation through detailed site and layout design
 - Desktop noise modelling
 - Zones of Theoretical Visibility (ZTVs) / production / photomontages
 - Environmental constraints
- Anemometry campaign services
 - Desktop review / location optimisation
 - On-going data management and reporting services using vuWind our in-house software tool
- Computational Fluid Dynamics (CFD) modelling
- Interim and finance grade energy yield analysis services
- Site classification studies
- Environmental advice and impact assessment
- Ground modelling and earthworks quantification
- Outline structural design of foundations and substations
- Pre-construction technical due diligence for funding
- Detailed infrastructure design

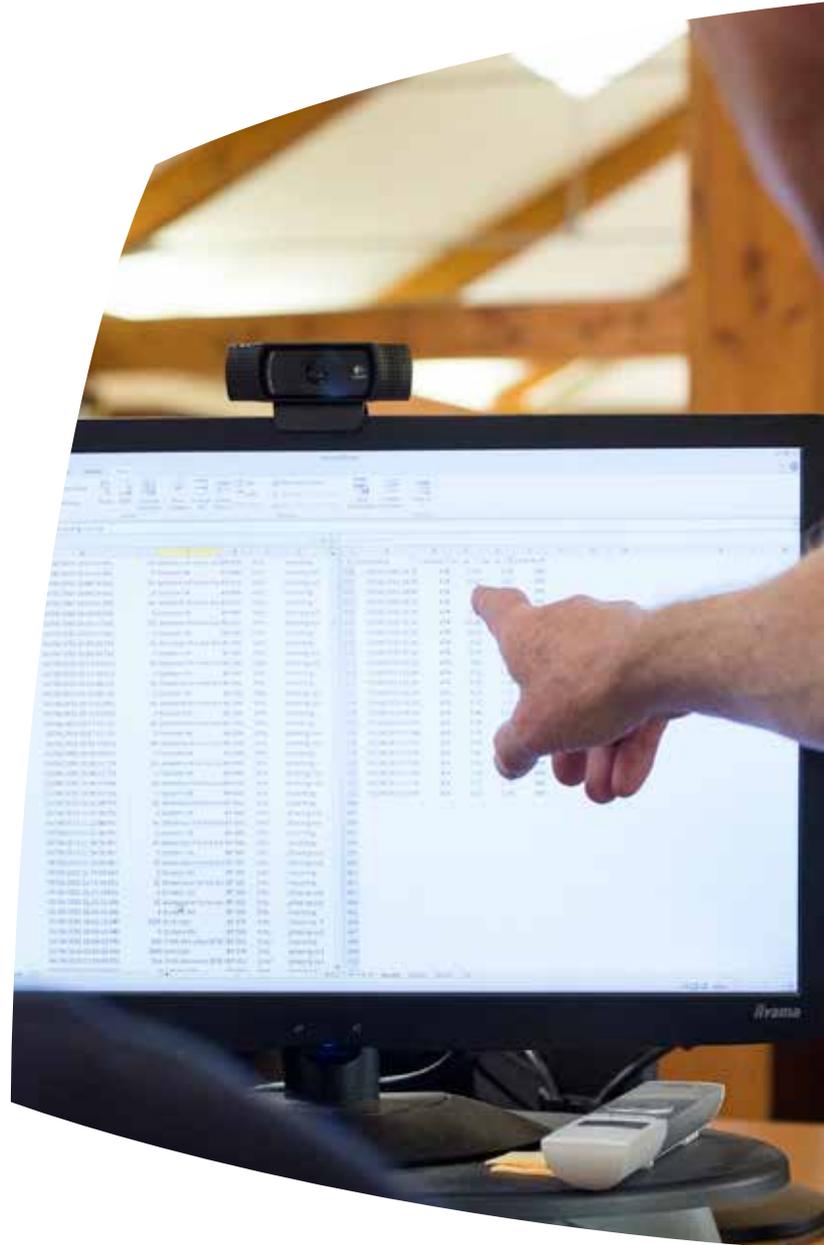
Construction

- Design review
- Lender's Technical Advisor / Owner's Engineer
- Safety consultancy



Operations

- Monthly and ad hoc operational reporting
- Performance assessments
 - Power curve performance investigation
 - Operational energy yield analysis, independent SCADA analysis and high level assessments
 - Reconciliation and budget reforecasting
 - Operational optimisation
 - Refinancing and repowering analysis
 - Energy prediction for site expansion
 - Real time monitoring
- Turbine technology review
- Environmental review and advice
- Turbine Inspections - End of Warranty and periodic health assessments



// through careful analysis of our clients' data we can advise on the best opportunities for optimising performance and reducing downtime, helping to achieve maximum revenue from their assets //

Lauren Wheatley, Director of Technical



Case Studies - Chile

Project:	Raqui Wind Farm 100MW
Client:	Arauco Bioenergia S.A.
Project Description:	Natural Power delivered a finance grade energy yield analysis at the proposed Raqui Wind Farm
Services Provided:	<p>Feasibility Phase</p> <p>The terrain on the site provided some complex challenges for this project and therefore, the team utilised its CFD model to determine wind characteristics when considering a total of 18 turbine configurations. Data from two masts and a single lidar were quality checked and correlated with a number of reference points to inform long-term wind characteristics. Natural Power optimised a layout on-site after consideration of all site constraints and local wind characteristics. Based on the layout associated losses due to project specific curtailments were applied to the calculations and, 50%, 75% and 90% exceedance figures were derived to estimate the site's total production. Natural Power presented a full report to the client summarising the findings of the assessment.</p>

Project:	Portfolio
Client:	Pacific Energy
Project Description:	Natural Power was engaged to delivered a variety of development services across a portfolio of four sites in Chile.
Services Provided:	<p>Feasibility Phase</p> <p>A wind resource assessment was undertaken utilising a VORTEX mesoscale dataset at both Carelmapu and Santa Isabel Wind Farms. Based on the findings of the indicative assessment, a maximum layout was optimised after consideration of the wind climate on each site. Natural Power then conducted a turbine selection process to inform the client of the most suitable turbine configurations, and an indicative energy yield assessment was delivered to derive production figures.</p> <p>An interim energy yield assessment was undertaken at the proposed Puelche Extension Wind Farm, utilising mast data collected at the existing Puelche site. The results were then extrapolated to confirm local wind characteristics in order to optimise a layout, inform the turbine selection process and calculate yield figures. Natural Power delivered a similar assessment to the one undertaken at Puelche Extension for local LatWind staff. The work was supported by site visits undertaken by the local representative, Latwind. Natural Power also undertook a desktop review of each site in the Portfolio to identify the optimum locations for mast installations, taking into consideration, all of the constraints and the wind climate at each proposed development.</p> <p>Met masts and a ZephIR Z300 Lidar have been installed at three of the four analysed sites, after a positive outcome of the portfolio appraisal. On-going data management services are currently being delivered.</p>



For more information contact:

David Walker

Business Development Manager, Stirling

davidw@naturalpower.com

