Specification sheet

GEMS Bidcast

Wärtsilä Energy Storage's **GEMS** Bidcast is a cloud-hosted product that allows asset owners and operators to implement different trading strategies that maximise expected revenues.

GEMS Bidcast uses machine learning and optimisation algorithms based on automated and forecasted data to generate and supply optimised bid decks for the Australian Energy Market Operator (AEMO). Bidcast supports automatic and manual bid generation, API integration for bid submission, and performance monitoring to evaluate bid strategy. Our automated bidding technology takes real-time market information and combines it with a smart control platform that provides value-based asset management and portfolio optimisation.

This user-friendly tool maximises the economic benefits of real-time market operations by optimising for the user's key objectives, portfolio constraints, risk appetite, and market trends/uncertainties.

Key advantages

Automated bidding: Avoid human error and ensure high availability and participation of assets in available markets via the automatic generation of bids according to the active bidding strategy.

Smart bidding: Machine learning methods as well as linear and quadratic optimisation are applied in the right contexts to enable intelligent dispatch, forecasting, and improved performance.

Integrated with GEMS Power Plant Controller: Avoid expensive integration costs with third party bidding systems.

Hardware neutral: Integrate a wide range of devices from major manufactures of renewable, energy storage, and thermal generation equipment.

Controllable and transparent: Customised to fit your specific portfolio needs when creating new bid strategies and configurations. The use of userconfigured bid strategies means the generated bids are able to be both controlled and understood by those responsible for trading the asset. Back-test different bid strategies, enable or disable automated bidding, monitor and report bid strategy performance.

Co-optimise across portfolios: Scalable optimisation allows for the user to optimise across a portfolio of assets or to co-optimise across assets such as hybrid solar+storage or wind+storage systems.

Future-proof: Address new business challenges that arise after commissioning through the seamless extension of Bidcast with new applications, communication channels and more.

Reliability

- Cloud-based architecture ensures high availability with regional redundancy
- Remote software update capability
- Cloud-based, long-term data storage
- Algorithm performance monitoring

Accessibilities

- Web-based UI for remote access
- RESTful Web API for external system integration and programmatic data access
- Seamless integration with GEMS products (see "Related GEMS Products" below)

Cybersecurity

- SSL and IPSec VPN remote access support
- Alarms raised in the case of error in bid generation or invalid bid submission

Historical Data Retention

- Backend and infrastructure to store application data and handle bid strategy back-tests
- Data resolution matches market timings (e.g. five-minutes for real-time market)

Configurable Strategies

Use our Bid Lab tool to test different bidding strategies in the market by running simulations on historic data and observing the outcomes of your different strategies.

PPA and Market Support

GEMS software has been developed over the past 16 years and deployed in over 100 projects, which have included intelligent controls for assets in the NEM. GEMS Bidcast software allows users to optimise across multiple revenue streams, not just wholesale prices. This approach supports bespoke contractual arrangements that can include dayahead commitments, tooling arrangements, and other offmarket revenue sources.

Customisation and Context

- Bid placement, automatic generation of bid decks for asset trading team
- Manual bid modification/adjustment
- PPA Compliance
- Optimisation of a portfolio of assets or financial contracts

Intelligent Controls

Machine learning predicts future load and renewable generation based on historical data, satellite-based weather forecast data, and real-time sensing.

Optimisation algorithms plan the best bid stack or dispatch schedule based on performance goals and system constraints.

Intelligent dispatch determines optimal intra-interval dispatch of stand-alone storage or hybrid assets to minimise penalties and maximise revenue.
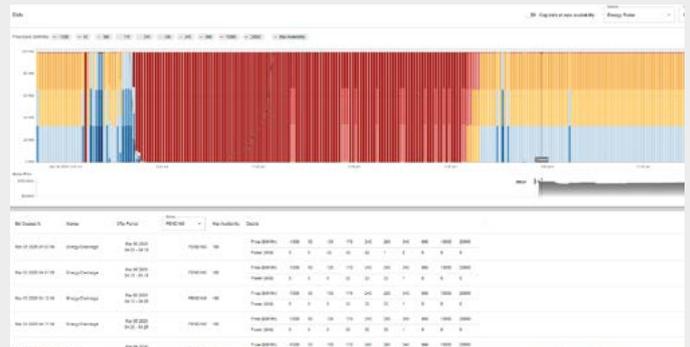

Figure 1: Probabilistic price model and site power

Figure 2: Bids dashboard

Related GEMS Products

GEMS PPC enables generation asset control, local operation, monitoring, protection and data collection onsite through the GEMS Rack. GEMS PPC and GEMS Grid Command can be co-installed in the same GEMS Rack to work in unison.

GEMS Cloud Connect supports central fleet management from the cloud.

GEMS Grid Command conducts intelligent grid control and optimises power management of islanded grids of all sizes.

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