


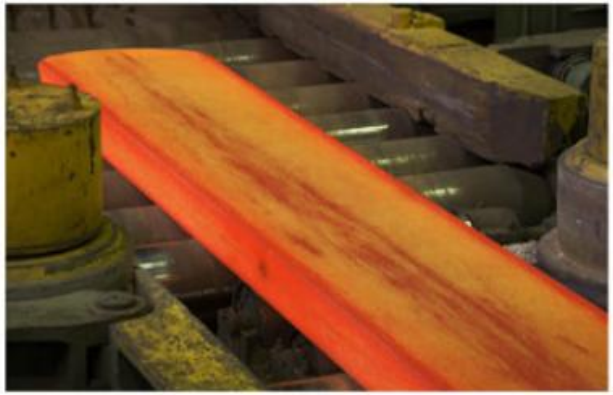


PB's Geothermal Activities and Direction

Chris Taylor, 23 November 2011

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Overview

- Current/Recent
  - New Zealand
  - Philippines
  - Indonesia
  - Australia
  - U.S.A.
  - Europe
- Future Direction

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New Zealand

- Contact Energy
  - Te Mihi 2 x 83 MW EPC implementation
    - Providing full detail engineering and commissioning support as part of the MacDow/SNC Lavalin /PB Joint Venture (MSPJV)
    - JV Project office in Newmarket in old PB offices
    - Currently approximately 80% complete on the detail engineering
- Mighty River Power
  - Nga Awa Purua (NAP) Separator vibration investigation
  - Ngatamariki steamfield
    - Preparation of EPC specification for the steamfield construction
  - Ngatamariki steamfield bid phase engineering
    - Preliminary design for pricing by EPC contractor

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Philippines

- First Gen / EDC
  - BacMan (2 x 55 MW, 1 x 20 MW power plant)
    - Multi-contract major refurbishment including relocation of one unit within the field
    - Up to approximately 20 PB staff on site, significant support on civil and logistical front from PB Philippines, with specialist staff from NZ, Australia, Hong Kong, India, US. Australian staff have been a key resource for us with the Te Mihi project peaking at similar time.
    - Unit 1 synchronised last week, remaining 2 units to follow over next few weeks
  - Northern Negros (50MW power plant)
    - Relocation to Nasulo site (Palinpinon field)
      - feasibility study
      - preparation of tender documentation for relocation

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Indonesia

- PT Adaro
  - Baturaden geothermal project
    - Adaro, a very large mining company, were interested in buying a major shareholding in the planned Baturaden geothermal project, Central Java.
    - PB provided due diligence on the resource, planned development, concept designs, costings etc.
- Sarulla (330MW)
  - Medco
    - PB has been acting a technical advisor now for 5 years
    - critical reviews of the Ormat proposals, concept engineering, resource, and drilling plans, including development of a resource simulation model using TOUGH2
    - concept engineering for a dual flash alternative to the Binary plant

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Indonesia cont…

- Patuha I (1 x 55MW “dry” field)
  - Geo Dipa Energi (PLN/Pertamina)
    - PB previously conducted FEED and EPC spec preparation
    - PB has bid for OE role with local partner
  - Muara Laboh, Rajabasa and Rantan Dedap
  - Supreme Energy
    - PB has undertaken a feasibility study for Supreme Energy on Raja Basa, which subsequently Supreme successfully bid for.
    - OE and EPC roles still under discussion.

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U.S.A.

- Black Rock (~195MW)
  - CalEnergy (CE) - Salton Sea area of Southern California.
    - Three identical power plants using single flash steam technology with a nominal output of 65MW each
    - PB's US power group in lead role with to US contractor bidding for the EPC contract. PB NZ providing geothermal engineering and design support
    - Contract deferred to second quarter of 2012, with CE deciding to complete PPA and grid expansion agreements prior to contracting

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Europe

- PB UK
  - Statoil Petroleum AS –
    - Cornwall – medium temperature field Engineered Geothermal System (EGS)
    - PB bidding the detailed modelling for feasibility and performance of the above ground binary plant

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Opportunities

- Changes in PB
  - Revival of global Power cooperation
    - Asia Pacific region now headquartered in Singapore
    - Indonesian regional office soon to be established
    - PB US connection for geothermal in US/South America
  - Change in ownership – part of Balfour Beatty group
    - Changing from employee owned to publicly owned opens up new opportunities, specifically for taking risk positions, and bringing funding into projects where there is a strategic benefit to PB
    - Balfour Beatty has a strong contracting capability but it is not intended to associate with BB on projects specifically
    - BB's finance arm will invest strategically in projects where this will benefit PB's position in projects

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Opportunities

- PB expanding our service offering
  - risk positions driving growth and leverage our core capability
  - Maximise the value of services to clients with a reduced focus on direct labour input – that is not just selling labour.
    - Focus especially on increasing our PB Power scope of work in project delivery of projects through EPC/M by including procurement, project management and construction management services.
    - Take full "at risk" EPC roles, either in JV or by ourselves, where PB has a competitive advantage.
    - This is not new to PB. PB has used all of these models, including full "at risk" EPC delivery, in Power and other parts of the company

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Opportunities

- Regional
  - Asia.
  - Strong growth in geothermal in the region, combined with PB NZ's strong presence in geothermal creates opportunities to amplify our skill base, providing seed capabilities into geothermal projects supported by general power engineers from Asia, Australia and NZ
  - Focus will be LTE, OE roles and selective participation in EPCM.
  - Australia/New Zealand
  - OE roles, front end engineering with increased focus on detailed design and, where risk is understood and manageable, potential EPC participation
  - Americas
  - Build on PB US strong background in EPC delivery of power projects by combined PB NZ geothermal expertise to participate in Design and EPC geothermal projects in both North America and South America.

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