MINING INFRASTRUCTURE SOLUTIONS FOR INDONESIA

DELIVERING PROVEN INFRASTRUCTURE IN INDONESIA FOR MORE THAN 40 YEARS
WE’RE BUILDING A WORLD OF DIFFERENCE. TOGETHER.

Reliable power supply is critical for mining success in Indonesia. Our proven ability to consistently deploy energy projects with best-in-class availability rates throughout Indonesia is a core component of our mining infrastructure solutions.

In Indonesia since 1969, we have been delivering locally adapted, reliable and sustainable power generation and transmission, oil & gas, and water infrastructure solutions that improve and sustain the quality of life for Indonesians.

With over a 100 professionals at our mature and growing operations in Jakarta supported by regional and global offices, we bring together local appreciation of risk with regional supply chain knowledge and international expertise. Whether as a consultant or EPC (engineering, procurement and construction) provider, this combination results in better outcomes for our Indonesian clients: delivering projects safely, sustainably and on schedule.

COAL DOME AT THERMA SOUTH, PHILIPPINES: A 300-MEGAWATT CIRCULATING FLUIDIZED BED COAL-FIRED PLANT BUILT BY BLACK & VEATCH
MINING INFRASTRUCTURE SOLUTIONS

Black & Veatch has a team of mining industry veterans who fully understand the unique water, energy and environmental challenges that mining companies face today. These experts deliver integrated solutions that promote efficiency, resilience and sustainability.

Our mature and localized teams are able to tap into a worldwide and regional network of expertise in:

**Power Generation and Delivery.** Energy usage can account for up to 50 percent of a mine’s operating costs. In developing countries like Indonesia, the problem of load shedding by electrical utilities has a direct impact on production. Mining companies can escape this threat by generating their own power, including a variety of conventional and renewable resources often together as ‘hybrid’ deployments. Transmission lines and substations are also vital links that allows for high productivity at mines. We have built transmission lines across some of the world’s toughest terrains alongside our contribution to more than 15,000 MW of installed capacity throughout Indonesia.

**Water and Environmental Solutions.** Companies can reduce water scarcity, excess and interruption risks, whether using traditional water supply or alternative methods, such as recycling, reuse and desalination. Our experts can guide mining companies through the maze of permitting and environmental studies, as well as closure and remediation. We have designed and delivered some of Asia’s most iconic water and wastewater infrastructure and our legacy on managing water resources in Indonesia dates back more than 40 years.

**Integrated Infrastructure.** Components include power, water, railways and ports which are connected by a modern communications network that allows for automation and vital data analytics. Black & Veatch specializes in integrating the many pieces of infrastructure needed to complete mining projects.

**Sustainability.** Our team of experts works with clients to convert their sustainability goals into real solutions including solar and wind energy, water recycling and reuse, desalination, geothermal and microgrids. This is especially important in Indonesia as future concerns over indigenous natural resource ownership will be regularly visited by policy makers over the lifespan of a mining site.
IMPROVING AND SUSTAINING THE QUALITY OF LIFE FOR INDONESIANS FOR MORE THAN 40 YEARS

Acceh Provincial Irrigation
Earthquake and Tsunami Emergency Support Project, Irrigation Component
Earthquake and Tsunami Emergency Support Project, Spatial Planning and Environmental Management - Z
Marine and Coastal Resources Management Spatial Data and Information Management
Metropolitan Medan Urban Development
Northern Sumatra Irrigated Agriculture Improvement

Sahayo Coal Upgrading + PLTU

Coal Gasification to Ammonia/Urea

PLTU Indralaya
PLTU Banjarsari #1&2
PLTU Gunung Megang
PLTU Tanjug Enim
PLTU Surataya #5-8
PLTU Krakatau Daya Listrik
PLTU Ashimas
Jatigede Multi-purpose Reservoir
Sagara Anakan Conservation and Development

PLTU Blue Ray
LPG Plant Conversion
PLTU Muara Karang
PLTU Lontar #4
Water Supply and Sanitation
PLGU Tambak Lorok #1&2
PLTU Tanjung Jati B #1-6
PLTU Rembang #1&2
Tuban LPG Plant
East Java Mini LNG

PLTU Ashimas

East Java Mini LNG

LNG to Bali

Bali

East Java LNG

LNG to Bali

Padang LNG
PLTGU Senipah
Coal/Gas Fueled Steam Power Plant

Tanjung Selor

MANOKWARI
PROVINCIAL CAPITAL
Energy Projects
Water Projects
EPC
Engineering
Study/Consulting

GORONTALO
HALMAHERA
PLTU Tanjung Jati B #1-6
PLTU Lontar #4
SERANG
SERANG

IMPROVING AND SUSTAINING THE QUALITY OF LIFE FOR INDONESIANS FOR MORE THAN 40 YEARS

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Black & Veatch is committed to helping mining and energy resource companies create value through lifecycle solutions that target energy and water efficiencies and reduced operating costs. Some of our projects include:

**THERMA SOUTH UNITS 1 & 2 (300 MW), PHILIPPINES** — Black & Veatch completed its prime EPC role at Therma South near Davao City, Philippines. The plant features the country’s first coal dome, designed to minimize surface area in which dust can settle and for the safe storage of the plant’s fuel supply. Black & Veatch was the overall project and commissioning manager for the circulating fluidized bed coal-fired plant built on challenged soil conditions in an earthquake zone.
TANJUNG JATI B UNITS 3 & 4 (2 X 660 MW), INDONESIA — Delivered ahead of schedule in 2012, the project is a template for EPC power delivery in Indonesia. Almost five years into operation, the units are performing at an industry leading availability rate. Black & Veatch’s proposal to provide high-quality Chinese equipment for the project allowed the client to enjoy the benefits of high-quality reliable equipment at an efficient cost, meeting project financial goals.

INDRALAYA NO. 4 COMBINED CYCLE ADDITION PROJECT (128 MW), INDONESIA — The best-in-class facility upgrade was delivered in challenging circumstances. Road access to the site did not suit the delivery of some key components. River level variances had to be calculated so that the transportation of the generator, for example, could be timed around the river’s peak level during the wet season. In spite of the challenging conditions, more than 1 million work hours were completed without a Loss Time Incident (LTI) and quality equipment and designed systems resulted in the steam turbine generator producing 41.8 MW, 4.5% above the performance guarantee.

ESKOM KUSILE POWER STATION, SOUTH AFRICA — A mine-mouth coal plant, Kusile is the largest, most advanced fossil power development project in the Southern Hemisphere. Black & Veatch is providing detailed EPC management services for this greenfield, supercritical power station. The $12 billion, 6 x 800 MW plant will include the first flue gas desulphurization system on a power station in South Africa, an ash dam, rail sidings and a 30 km water pipeline. Its environmental management solutions include air quality control, renewable energy and zero-liquid discharge technologies.

ESCONDIDA WATER SUPPLY PROJECT, CHILE — Black & Veatch is the engineer of record — leading engineering design, procurement, field inspection and pre-commissioning — for the marine works and desalination components on the $3.4 billion Escondida Water Supply (EWS) project. In addition, the project includes a water conveyance and storage system with associated high-voltage infrastructure. The EWS will deliver 2,500 liters of water per second to Escondida, the world’s largest copper mine, which is owned by two of the world’s largest mining companies BHP Billiton and Rio Tinto.

Black & Veatch’s fresh water supply project for the Escondida Copper Mine will desalinate 2,500 liters per second; pumping over 180 kilometers to a 3,200 meter elevation.
YOUR PARTNER IN SUSTAINABLE MINING

**Power Generation and Delivery**
- Conventional Power Solutions
- Renewables – Solar, Wind, Hydro, Geothermal
- Transmission
- Distributed Generation
- Water Solutions

**Water Supply**
- Dams, Tunnels and Pipelines
- Treatment and Reuse
- Mine Water Management
- Tailings Management and Storage Facilities

**Environmental**
- Climate Change
- Environmental Impact Studies
- Permitting, Closure and Remediation
- Air and Water Quality Management

**Integrated Infrastructure**
- Infrastructure Corridors
- Outsourcing/Finance Solutions
- Strategic Planning and Options Analysis
- Remote Operations Control and Automation
- Monitoring and Data Analytics

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