Amec Foster Wheeler is an industry leader in the efficient application of capital investment. Our Capital Efficiency process and tools focus on maximizing value while minimizing capital cost. We are experienced, innovative and are driven to deliver our clients’ project objectives.
Leadership & Alignment
Amec Foster Wheeler knowledgeably challenges our projects to improve capital efficiency. We apply an alignment process including all levels of the integrated project organization: client operations and project team, project sponsors, and the project execution team, including key contractors and major vendors. Trust, respect and transparency are central to this alignment process.

Systematic Implementation
The consistent application of the capital efficiency toolbox is in the core of Amec Foster Wheeler’s project delivery, from project concept to closure. The processes and tools of our approach are applied consistently and systematically on all our studies and projects, maintaining a balance between capital and operating efficiency. We use the right capital efficiency tools at strategic times in project execution to maximize results. We leverage our global expertise via knowledge-sharing, innovation and peer reviews, while meeting regulatory and Health & Safety requirements.

Innovation
The development and optimization of the project through peer reviews, trade-off studies and value engineering practices.

Zero-Based Design
The development of lean designs through project classification, layout densification, simplicity and standardization.

Integrated Execution
Construction-driven engineering, to deliver the design and procurement at the right time for construction; early contractor involvement (ECI); and maximum modularization.

Connected Estimating
Continuous knowledge capture and accountability for the capital value of the project, and responsiveness to diverging trends.

Rainy River, Ontario
Reduced foundation work by 3 months and 30,000 manhours

Cöpler, Turkey
Reduced the grinding circuit footprint by more than 50%

Mt. Milligan, British Columbia
Reduced material handling costs by 25%
Zero-Based Design

Zero-Based Design is Amec Foster Wheeler’s minimum project design to achieve the production throughput without compromising safety. Within our structured Zero-Based Design workshop, the project team reviews key design elements and aligns on the selected grade. We actively challenge deviations from Zero-Based Design that increase capital cost. This approach defers capital wherever possible to the operations stage.

Key considerations of our Zero-Based Design approach include:

**Elimination/Minimization**
- redundancy and installed spares
- future provisions
- custom designs
- non-production equipment
- design service factors

**Maximization**
- standardization/off the shelf
- vendor turnkey packages
- credible Tier 2/3 suppliers
- modularization, pre-assembly
- layout densification

Applying our capital efficiency principles to the preliminary design of this multi-billion-dollar project resulted in savings of 20% of capital cost.

Innovation

We add project value by using our knowledge base, subject-matter experts (SMEs) and recent project experience, and by applying considered approaches to a project’s economics. Our innovation tools include the following:

**Value Engineering**
- implement a facilitated, integrated team-based challenge of all aspects of the project, which generates a high number of potential opportunities
- develop the highest probable value-improving opportunities, balancing operating and capital costs

**Process Optimization and Trade-Offs**
- a small team of SMEs will review the project to assess key areas of process optimization
- perform the trade-off studies, considering capital-efficient, innovative technology and execution approaches

Innovation in Design
State-of-the-art Tools
Cost-focused Team Culture

One of the key tools of Zero-Based Design is our dynamic simulation modeling, such as RAM (reliability, availability, maintainability) modeling to reduce risk and optimize logistics, operations and infrastructure requirements. Cost effective safety is achieved by the right safeguards to the right hazards.
Integrated Execution
Our execution strategy requires the early involvement of construction, estimating, key contractors and vendors in the planning process to identify capital efficiency opportunities. The most important elements of our integrated execution approach are:

Construction-driven Execution
- construct-procure-engineer “right-to-left” construction-driven project planning

Supply Chain Management Optimization
- optimized procurement, contracting and logistics strategies
- early contractor involvement and early vendor involvement

Modularization/Pre-assembly
- improving schedule predictability while reducing construction risk
- expert resources supported by modularization and logistics guidelines and procedures reducing construction risk by moving work off site

4D Execution Planning
- utilizing the 3D model to visualize and plan the construction sequence

High Value Engineering Centers
- dedicated, multi-skilled execution teams in Chennai, Kolkata and Shanghai
- reduces engineering and related service costs
- increases engineering and procurement capacity to optimize schedule

Connected Estimating
The key focus of Connected Estimating is continuous knowledge capture and accountability for capital value of project from design through installation. This provides the project team with an understanding the target price, associated key quantities, and enables them to mitigate change throughout the project life cycle.

Target Price
- target price developed early based on project-specific sector and cross-market benchmarking
- align strategic business objectives early
- define/align base-line target price

Basis of Estimate
- comprehensive and transparent Basis of Estimate developed

Key Quantity Analysis and Cost Forecasting
- continuous reporting of variances from target price and key quantities to minimize occurrence of growth

Project Close-out and Data Capture
- actual project costs captured to continuously improve and update benchmark information
GLOBAL MINING SOLUTIONS
From concept through closure

CONNECTED EXCELLENCE
In all we do

For more than 60 years, Amec Foster Wheeler has provided a full range of services for mining projects, from front-end geology and environmental consulting through to design, project and construction management, operations support and mine closure.

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