Senior Management

Joe Gangi
Managing Director
Bioprocess & Controlled Environments,
Australia and South East Asia

Frederic Jeunet
General Manager
Bioprocess & Controlled Environments,
Australia

Nenad Firez
Business Development Manager
Bioprocess & Controlled Environments,
Australia
Tel: +61 (0) 400 495 885
Email: nenad.firez@amec.com
Company overview

AMEC is a focused supplier of consultancy, engineering and project management services to its customers in the world’s oil and gas, minerals and metals, clean energy, environment and infrastructure markets. AMEC designs, delivers and maintains strategic and complex assets for its customers.

AMEC’s businesses employ over 27,000 people in more than 40 countries globally. AMEC shares are traded on the London Stock Exchange. The company has a strong reputation for operational excellence, and combining global excellence with local delivery.

In 2011, AMEC and Zektin Engineering combined strengths to improve delivery for our customers by offering combined expertise, wider global coverage and increased scale within the bioprocess and controlled environment sectors within Australia and South East Asia.

AMEC’s Bioprocess & Controlled Environments (BCE) business operates from Australia and China and services a wide variety of related industries:

- **Bioprocess**
  - Biotechnology and pharmaceutical
  - Laboratories and research facilities
  - Food and beverage
  - Biofuels
- **Renewables**
  - Biomass / Bioenergy
  - Solar
  - Wind
- **Industrial / Commercial**
  - Advanced manufacturing / Heavy industrial
  - Waste treatment and emissions control
  - Energy efficiency and optimisation
- **Government Services / Defence**
AMEC’s vision is to achieve sustainable, world class Health, Safety, Security and Environmental (HSSE) performance excellence throughout our global operations.

The AMEC Beyond Zero program aims to create an HSSE culture where strong leadership, personal responsibility and an unyielding commitment to excellence are cornerstones of how we conduct our business. We consistently take HSSE performance beyond the work place and out into the wider community.

Engagement at various levels within the organisation provides an opportunity to influence safety behaviour and create a culture of HSSE commitment greater than self-interest. AMEC has developed engagement tools to support this process, taking our HSSE performance ‘Beyond Zero’.

I believe real leadership can only be demonstrated by setting personal standards that capture the hearts and minds of our people, thereby encouraging the right attitudes and behaviours throughout the organisation.”

Neil Bruce, Chief Operating Officer
AMEC Natural Resources
AMEC’s project delivery is based on a proven gate system that ensures the deliverables are appropriate to the relevant project phase.

This system is well aligned with our clients’ requirements for funding approvals and improves our clients’ risk management profile due to our experience with and understanding of all phases of asset life cycles. This knowledge enables our clients to achieve their business objectives by confidently making decisions that provide optimal solutions for profit and sustainability.

From our successful execution of projects for various clients we know that the cornerstone of success is alignment with the end users’ drivers and the ability to address and incorporate these early in the project life. To do this as specialist designers we will:

- Ensure a thorough understanding of the nature of the facility requirements associated with the technology
- Adopt an open minded approach, challenging convention and looking for proven innovative solutions via value improvement
- Ensure fit for purpose design
- Deliver practical design - Incorporation of constructability, operability and maintainability
- Deliver designs that fully consider the risks and are optimised to offer flexible and reliable solutions
- Offer a complete delivery approach to see projects through from design and procurement to construction assistance and commissioning support, ensuring regulatory compliance requirements are met throughout the project life.
AMEC is a focused supplier of high value consultancy, engineering and architectural services to the world’s Bioprocess & Controlled Environment industries.”
AMEC offers a multi-disciplined engineering design team, which includes Mechanical, Chemical, Process, Electrical, Instrumentation and Automation Engineers, and associated drafting support.

Our engineers are skilled in providing design in compliance with a wide range of regulatory bodies and codes, relevant to our industries of specialisation.

The knowledge base gained from our widely varying range of speciality projects brings to our clients a source of design solutions that provide innovative and cost effective outcomes.

Our aim is to fully understand our clients’ scope, cost, time and quality requirements, and ensure that our assigned personnel have the experience and resources necessary to exceed our clients’ expectations. Our focus is to deliver a fully co-ordinated, process driven design with strong emphasis on compliance and safety.

AMEC’s scope of services span the entire asset life cycle from Phase 1 (Feasibility Study) through to Phase 5 (Operation).

We utilise best industry practices in all areas of our business, providing the following service range to our clients:

- Project management (incl. capital cost estimation, cost control and planning)
- Site infrastructure development strategies and planning
- Building services
- Feasibility and conceptual studies
- Schematic design
- Detailed design (2D or 3D modelling)
- Process design / production modelling
- Project risk analysis
- HAZOP Studies, SIL reviews & safety management studies
- Plant layout
- Tender documentation
- EPCM services.

**Engineering delivery model**

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility study</td>
<td>Concept design</td>
<td>Schematic Design</td>
<td>Detailed design / tender / execution</td>
<td>Operations</td>
</tr>
<tr>
<td>User brief</td>
<td>Project verification plan</td>
<td>Functional specification</td>
<td>Design specification</td>
<td>Design specification</td>
</tr>
<tr>
<td>Concept options</td>
<td>User requirements specification</td>
<td>Schematic design documentation</td>
<td>Design qualification</td>
<td>Design qualification</td>
</tr>
<tr>
<td>Feasibility analysis</td>
<td>Concept design documentation</td>
<td>Design basis</td>
<td>Detailed design documentation</td>
<td>Detailed design documentation</td>
</tr>
<tr>
<td>Modelling</td>
<td>Design criteria</td>
<td>Planning documentation</td>
<td>Authorities approval</td>
<td>Authorities approval</td>
</tr>
<tr>
<td>Execution strategy</td>
<td>Site selection</td>
<td>Cost estimating</td>
<td>Cost estimating</td>
<td>Cost estimating</td>
</tr>
<tr>
<td>Value assessment</td>
<td>Cost planning</td>
<td>HAZOP 1</td>
<td>HAZOP 3</td>
<td>HAZOP 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Risk assessments / safety reviews</td>
<td>Risk assessments / safety reviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HAZOP 2</td>
<td>HAZOP 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Risk assessments / safety reviews</td>
<td>Risk assessments / safety reviews</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Installation verification / operational verification / performance verification</td>
<td>Installation verification / operational verification / performance verification</td>
</tr>
</tbody>
</table>
Architecture

AMEC is committed to delivering truly exceptional professional design services which are tailored to the specifics of our clients and their projects.

We deliver successful projects through extensive client collaboration from inception to occupation, co-ordinated multi-disciplined integrated design teams, and the implementation of comprehensive consultancy processes.

AMEC’s architectural design professionals approach projects with careful analysis, creative and technical skill, innovation, and proven design experience, ensuring project information is continually shared, coordinated and updated across our multi-disciplined teams.

Services include the following:
- Design management, Design co-ordination
- Strategic facility planning, Master planning
- Feasibility studies, Brief formulation
- Schematic design
- Developed design
- Contract documentation
- Contract administration
- Post contract services
- Post occupancy evaluation
- 3D animation
- Interior design

Architectural delivery model

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predesign</td>
<td>Schematic design</td>
<td>Detailed Design</td>
<td>Contract documentation / tender / contract administration</td>
<td>Post contract</td>
</tr>
<tr>
<td>- Brief preparation</td>
<td>- Site layout</td>
<td>- Detailed design</td>
<td>- Working drawings</td>
<td>- Defects liability period</td>
</tr>
<tr>
<td>- Feasibility studies</td>
<td>- Schematic design</td>
<td>- Town planning application</td>
<td>- Specification</td>
<td>- As-built documentation</td>
</tr>
<tr>
<td>- Site analysis</td>
<td>- Site development options</td>
<td>- Outline schedules of materials, finishes, colours &amp; fixtures</td>
<td>- Schedule of materials / finishes / colours</td>
<td>- Post occupancy evaluation</td>
</tr>
<tr>
<td>- Space analysis</td>
<td>- Data sheets.</td>
<td>- 3D modelling</td>
<td>- Building permit application</td>
<td></td>
</tr>
<tr>
<td>- Functional relationship diagrams</td>
<td></td>
<td>- 3D animations.</td>
<td>- Tender process &amp; negotiations</td>
<td></td>
</tr>
<tr>
<td>- Flow diagrams</td>
<td></td>
<td></td>
<td>- Contract administration.</td>
<td></td>
</tr>
<tr>
<td>- Block planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Masterplan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Environmentally sustainable design services

AMEC offers a multi-disciplined and integrated approach to achieving ESD principles and Green Star Ratings to projects.

Sustainability is the base principle in our approach to delivery of projects. With our accredited GBCA Green Star Professionals, which include our Architectural, Process, Mechanical and Electrical disciplines, we deliver successful Green Star projects through extensive design team and client collaboration.

AMEC utilises best sustainable design practices in all areas of our business, providing the following service range to our clients:
- Life cycle cost analysis
- Energy efficient HVAC and building services systems using innovative design solutions
- Ecologically sustainable architectural design
- Water recycling and reuse solutions
- Integration of renewable energy solutions
- Waste treatment and waste products reuse
- Emissions control, Heat recovery systems.

Procurement and construction management

AMEC offers the following procurement and construction management services:

**Procurement management**
- Identification and approval of suitable contractors
- Development of tender packages and contract conditions
- Assessment and analysis of tender submissions
- Recommendation of tender offers
- Preparation of orders
- Expediting
- Assessment and approval of vendor data
- Inspections
- FAT / SAT.

These tasks can be carried out using AMEC’s proven systems or tailored to our clients’ preferred or existing systems:

**Construction management**
Construction management can be executed on behalf of our clients, or individual discipline support can also be provided where appropriate and can be in conjunction with client representatives or other service providers.
- Assistance during construction
- Site supervision
- Site management
- Contract management.

![Green Building Council Australia Accredited Professional](image-url)
Commissioning services

AMEC is widely experienced in the start up and commissioning of complex technical facilities and process systems.

Our inherent understanding of the way things work brings a thorough approach to commissioning, with the use of job specific methods and procedures, delivering safe and incident free start-up. This provides a high degree of confidence for plant operation and validation in regulatory controlled project environments.

Our commissioning services experience includes:

- Preparation of inspection and test plans
- Preparation of commissioning plans
- Preparation of commissioning procedures
- Commissioning management and direct supervision
- Plant start up and performance testing
- Commissioning documentation compilation
- Compliance documentation.
Compliance certification

AMEC is widely experienced in the compliance verification of laboratory facilities and services ensuring that the facility can obtain the necessary certification to operate.

Our experience and understanding of the various laboratory regulatory requirements for compliance, allows us to use job specific methods and procedures as well as client templates, where applicable. This approach provides a high degree of confidence that the specific regulatory requirements of a project will be met, and that regulatory approval will be simplified.

Verification or “documentary evidence” of the project’s critical aspects is of prime importance in projects for controlled regulatory environments such as OGTR, AQIS, NATA, SSBA, chemical weapons, HAZCHEM, EPA and TGA.

All compliance documentation are produced under a Project Verification Plan and are formatted in a manner that gives forward and backward traceability of critical aspects, in addition to defining specific roles and responsibilities throughout the project stages.

Our core compliance certification competencies include:

- Preparation of client user requirements/project brief
- Preparation of compliance matrix that shows which regulators/regulations apply to each laboratory areas
- Preparation of Project Verification Plan (based on the pharmaceutical industry validation “V” model), based on an agreed quality plan methodology
- Facilitation of compliance risk workshops with the users and design consultants to review the design solutions from the point of view of compliance with user needs, regulatory suitability and buildability/constructability

The pharmaceutical industry validation ‘V’ model

![Diagram of the pharmaceutical industry validation 'V' model]

User Requirements

Functional Requirements

Design Requirements

Performance Verification

Operational Verification

Installation Verification
AMEC is an AQIS accredited Third Party Assessor for Quarantine Approved Premisses for PC2/QC2 to PC4/QC4 containment facilities.

- Preparation and execution of Installation Verification protocols to verify that the installed facility meets the approved design and regulatory requirements
- Preparation and execution of Operational Verification protocols to verify that the facility has been commissioned to operate reliably over the approved design range of controlled parameters and that regulatory requirements are met
- Preparation and execution of Performance Verification protocols to verify that systems are stable and robust in operational condition to satisfy relevant regulatory
- Ensuring that design changes and site changes are documented in a manner that allows traceability of reasons and authorisation to facilitate compliance documentation approvals
- Compliance management

AMEC has performed the role of Peer Reviewer or Client Representative on many projects. We understand the Client needs and have a thorough approach in ensuring that Client requirements are met in all aspects of the project, from safety to quality, compliance, budget, time and operability.

Our services at various project stages include:
- Representing the client during design, tender, construction and commissioning stages
- Performing design reviews/peer review
- Liaison with all stakeholders and development of user requirements
- Facilitating user brief meetings
- Chair compliance and regulatory committee meetings
- Project risk identification / assessments
- Performing / chairing / facilitating HAZOP studies and safety reviews
- Attending design meetings, review design team progress and schedule
- Assistance with contractor selection and tendering process
- Attending site to inspect and comment on construction works, samples and prototypes
- Performing independent site inspections and prepare defects list at critical milestones
- Reviewing builder’s construction documentation including as-built O&M manuals and commissioning documentation
- Reviewing builder’s quality plan for compliance requirements
- Assisting Client in answering construction queries
- Witnessing critical commissioning tests for critical services.

Client representative / peer reviews
AMEC has designed and validated facilities for compliance with the code of Good Manufacturing Practice (cGMP) in Australia, USA, China, European Union, South Korea, UAE, Saudi Arabia, Singapore, Malaysia, Thailand and New Zealand. Our project and design documentation is tailored to suit the relevant industry and regulatory requirements, ensuring compliance is maintained at all times.

AMEC’s core competencies in process and facility design include:
- Solid dose, liquids and creams
- Sterile processing
- Blood plasma processing and storage
- Serum processing
- Cell / tissue culture
- Fermentation
- Cytotoxic / steroids
- Containment facilities (PC1 to PC4)
- Medical device
- Clinical trial / pilot plant
- GMP facilities
- Biosecurity / Biocontainment
- Animal Facilities (PC/QC/BSL-Rated and SPF)
- Laboratories (R&D, QA, QC)
- Biological containment laboratories (microbiology, animals, plants and invertebrates) (PC1 [BSL1] To PC4 [BSL4]) (AQIS & OGTR certified)
- Warehousing, sampling, dispensing
- Primary and secondary packaging.

Some of our specific design and compliance certification expertise include:
- Architectural and building services (HVAC, electrical, instrumentation & controls, hydraulics)
- Facility gases (argon, helium, hydrogen, ethylene oxide, carbon dioxide, oxygen, breathing air, compressed air, acetylene, silane)
- Facility water (filtered water, purified water, water for injection)
- Waste treatment (biological liquid waste, chemical waste, toxic waste)
- Process vacuum
- Chemicals and solvents handling and reticulation
- Hazardous and flammable goods handling and storage
- Cryogenic systems
- Stringent environmental conditions control (temperature, humidity, pressure, particles)
- Ventilation and fume extraction
- Dust, vapour and emissions control, odour control, scrubbers
- Fumigation systems
- Explosion proof facilities
- Specialist utilities (pure steam, glycol chilled water, UPS).
Clients

- Acrux
- Akruti (India)
- Alpharma Animal Health
- Australian Defence Science and Technology Organisation (DSTO)
- Australian Department of Industry, Tourism and Resources (DITR)
- Australian Nuclear Science & Technology Organisation (ANSTO)
- Australian Red Cross Blood Services
- Australian Therapeutic Proteins
- AVT (Shenzhen, China)
- Biological Therapies
- Bioniche
- BioPharmaceuticals Australia (QLD Government)
- Biota
- Bristol-Myers Squibb Australia
- BTI A*Star (Singapore)
- Buildcorp
- Central Pharmacy QLD
- Cochlear
- Cockram Constructions
- Commonwealth Scientific & Industrial Research
- CSL Ltd
- Fresenius Medical Care (Changshu, China)
- GSK
- Hamilton Laboratories
- Hanseo Pharmaceuticals (Seoul, Korea)
- Herron Pharmaceuticals
- Hydration Pharmaceuticals
- IVF Australia
- Johnstaff Projects
- J RH Biosciences
- Juizhou Pharmaceuticals (Taizhou, China)
- KMUTT (Bangkok, Thailand)
- Kukje Pharmaceuticals (Seoul, Korea)
- Ludwig Institute for Cancer Research
- Melbourne Health
- Merck Sharpe and Dohme
- Murdoch Childrens Research Institute
- New Products Development
- Orica
- Pfizer Animal Health
- Pharmaxis
- Port Moresby Hospital
- Probiotec
- QED Asia
- Quantum Pharmaceuticals
- RMIT University, Victoria
- SAFC
- Saudi Arabian Blood Plasma Group (Riyadh, Saudi Arabia)
- Selborne Biological Services
- Sigma Pharmaceuticals
- Sypharma
- Victorian Department of Primary Industries (DPI)
- Victorian Infectious Diseases Research Laboratories
- Vrax
- Vrbac
- Walter and Eliza Hall Institute
- William Cook Australia (QLD)
- Watpac.
Laboratory capability

AMEC has successfully designed specialist laboratories and technology intensive facilities across a wide range of industries and research sectors. We deliver projects through extensive Client collaboration, from inception to occupation, with a commitment to deliver building solutions and services design, tailored to meet end user needs and specific compliance requirements.

Our core competencies in design and compliance services include:

- Biological containment laboratories (microbiology, animals, plants and invertebrates) PC1 (BSL1) to PC4 (BSL4) (AQIS & OGTR certified)
- Biosecurity (SSBA), forensic testing laboratories
- Animal housing, quarantine and testing laboratories (PC/QC/BSL Rated and SPF)
- Clean – Contained laboratories, including sterile and aseptic manufacturing facilities
- Controlled environment rooms, warm rooms, coolrooms, freezers, stability storage rooms (TGA & NATA certified)
- Microbiology and PCR laboratories
- Cell culture manufacturing facilities and laboratories
- Third party assessment for AQIS quarantine approved premises up to QC4 containment level
- Wet and dry chemical laboratories
- QA/QC laboratories
- Cytotoxic/steroids facilities
- GMP facilities
- Hazardous, toxic and pyrophoric gas laboratories
- Pilot plants for manufacturing, technology proof of concept and clinical trials
- Physical test, radiation and electronics laboratories
- Laser, electron microscopy, nano fabrication and speciality instrument laboratories
- Material sciences, plastics, metals and fibres laboratories
- Online GC laboratories for fuel research
- Photo voltaic R&D and microelectronic component assembly laboratories
- Painting and welding laboratories

Some of our specific design and compliance certification expertise in specialist laboratory services include:

- Architectural and building services (HVAC, electrical, instrumentation & controls, hydraulics)
- Laboratory gases (argon, helium, hydrogen, ethylene oxide, carbon dioxide, oxygen, breathing air, compressed air, acetylene, silane)
- Laboratory water (filtered water, purified water, water for injection)
- Waste treatment (biological liquid waste, chemical waste, toxic waste)
- Process vacuum
- Chemicals and solvents handling and reticulation
- Hazardous and flammable goods handling and storage
- Cryogenic systems
- Stringent environmental conditions control (temperature, humidity, pressure, particles)
- Ventilation and fume extraction
- Dust, vapour and emissions control, odour control, scrubbers
- Fumigation systems
- Explosion proof facilities
- Specialist utilities (pure steam, glycol chilled water, UPS).
Clients

- Australian Government Department of Health and Ageing
- Australian Red Cross Blood Services
- Biosciences Research Centre
- Biota
- Box Hill TAFE
- BTI A*Star (Singapore)
- Central Public Health (PNG)
- Chisholm Institute
- CSIRO
- CSL Ltd
- Elizabeth MacArthur Agricultural Institute
- Hunter Medical Research Institute
- Hunter New England Health
- James Cook
- King Mongkut’s University of Technology (Thailand)
- Latrobe University
- Ludwig Institute for Cancer Research
- Major Projects Victoria
- Melbourne Health
- Monash University
- Murdoch Children’s Research Institute
- Northern Territory Department of Construction and Innovation
- Orica
- Olivia Newton John
- Pasteur Institute (Vietnam)
- Peter Doherty Institute
- Pfizer Animal Health
- Queensland Government Project Services
- RMIT University
- Swinburne University
- The University of Melbourne
- University of Newcastle
- Victoria University
- Victorian Government Department of Primary Industries
- Victorian Infectious Diseases Reference Laboratories
- Walter and Eliza Hall Institute (WEHI)
- WHO Influenza Collaborative Research Centre
- World Health Organisation.
Industrial and advanced manufacturing capability

AMEC has designed and delivered a wide range of Industrial and Advanced Manufacturing facilities in Australia and China. Our project and design documentation is tailored to suit the relevant industry and regulatory requirements, ensuring compliance and safety is maintained at all times.

AMEC's core competencies in Process, Architectural and Building Services facility design include:
- Cleanroom manufacturing
- Technology intensive facilities
- Photovoltaic cells and semi-conductor manufacturing
- Heavy manufacturing
- Nanotechnology
- Controlled environment manufacturing (NATA certified)
- Site infrastructure (including remote locations).

We have developed specific expertise in the following services:
- Cleanroom and controlled environment facility design (including clean utilities, HVAC, controls and monitoring systems)
- Industrial ventilation and air-conditioning for heavy manufacturing plants in extreme ambient and operational conditions
- Hazardous and flammable goods handling and storage
- Acid and chemical storage and distribution
- Dust and emissions control, odour suppression, fume extraction
- Solid and liquid waste recycling and treatment
- Waste composting systems
- Water recycle and re-use
- Cryogenic Systems
- Compressed air and process gases supply and distribution
- High voltage and low voltage reticulation
- Warehousing and materials handling
- Raw materials storage and workshops

Our scope of services extend to the following ancillary components:
- Administration buildings
- Staff amenities
- Laboratories
- Site camps and accommodation
- Control rooms
- Data centres.
Clients

- Alcan Alloy Manufacturing (Tianjin, China)
- ANSTO ARI
- Australian Office
- Brisbane Water Enviro Alliance
- Bristol-Myers Squibb Australia
- CSIRO
- CSL
- Dyesol
- EMAI
- HMRI
- Melbourne Zoo
- Monash University
- Orica Consumer Products
- Origin Energy
- Ozmotech
- Pfizer
- PPG
- PQ Australia
- Queensland Gas Company
- Santos
- Sigma
- Solar Systems
- Spark Solar
- Swinburne University
Food and beverage capability

AMEC has developed significant expertise in the Food and Beverage Industry, where we have delivered projects in areas such as dairy, beverages (water, beer, wine and soft drinks), dry foods, bakeries, flavours and consumer foods. Our process engineers get involved in the early stages of projects in order to ensure that good manufacturing practices and food safety standards are implemented throughout the design and project delivery.

Our core competencies in process and facility design include:
- CIP Design
- SIP Design
- Sterile Filling
- Powders Blending and Dispensing
- Liquids Formulation and Filling
- Raw Materials Handling and Dispensing
- Primary and Secondary Packaging
- Decontamination and Fumigation
- Dust Control
- Hazardous and Flammable Goods Stores
- Cleanroom Environment

AMEC has designed GMP Facilities processing plants and facilities in compliance with FSANZ (Food Standards Australia and New Zealand), BRC (British Retail Consortium), Food Safety Standards, and the US FDA (Food and Drug Administration).
**Clients**

- 3 Ravens
- Brickwood Holdings Pty Ltd
- Coca Cola
- Bonlac Foods Ltd (now Fonterra Foods)
- International Flavors and Fragrances (IFF), Victoria
- National Foods Ltd, Cobden, Victoria
- Snowbrands
- Tooheys.
AMEC is a full capability firm offering the highest quality military and civil works, engineering, design and construction management services available to our defence force clients around the world.

AMEC have considerable experience in the development of large building and greenfield complexes that incorporate varying amounts of the following facility types:

- Administration and head quarter facilities
- Dining and canteen facilities
- Living accommodation
- Secure conference, lecture theatre and seminar rooms
- Health and dental facilities
- Technical libraries
- Electronic weapon training facilities
- Simulation facilities
- Training facilities
- Gymnasium and swimming pool
- Soldier support facilities
- Warehouses/transport storage facilities
- Vehicle maintenance facilities
- Workshop test facilities
- Research laboratories
- Environmental and EMC test facilities
- Dangerous goods, fuel and gas storage depots
- Internal firing ranges
- Site works and infrastructure
- Armouries and munition magazines
- High security command centres
- Radar facilities
- Aircraft control towers
- Preflight facilities
- Aircraft hangers
- Fuelling facilities
- Navel berthing facilities.
Clients

- Ministry of Defence United Kingdom
- United States Department of Defence
- Department of National Defence - Canada
- Ministry of Defence - Iraq
- Department of Defence Australia.

Our staff experience

Our senior personnel have significant experience in undertaking Department of Defence projects and have a sound knowledge of regulatory compliance and Defence policy issues. All staff working on Defence projects have relevant and recent experience with the following Department of Defence management processes, manuals and requirements:

- Department of Defence infrastructure management processes
- Manuals and requirements of fire protection engineering (MFPE)
- Defence security manual (SECMAN)
- Accommodation guidelines for open plan office environments
- Defence OH&S guidelines
- Defence environmental policies including defence green building requirements
- Disabled access requirements
- Worksafe national standard for occupational noise
- National code of practice for noise management and protection of hearing at work.
Biomass capability

AMEC works with utilities, independent power producers, and process industry clients to develop biomass energy applications in biopower and biofuels. Wood is still the largest biomass energy resource today, and AMEC’s experience with wood handling, storage and conveyance dates back nearly a century. The company’s experience as a leading provider to the world’s forest industry has established an impressive project portfolio of power plants using biomass feedstocks such as wood, paper mill residue, municipal solid waste and agricultural products.

AMEC is a full-service provider - from planning, initial design, permitting and licensing through to construction and long-term asset support – we help develop the best solution for your project.

Our core competencies in services are:

Engineering
- Simple and combined cycle plant design
- Alternative energy facility design
- Biomass system design
- Cogeneration and industrial power plant design
- Air Quality Control System (AQCS) design
- Strategic planning and market assessments
- Feasibility studies
- Owner’s engineer
- Power costing studies
- Process development
- Geotechnical engineering
- Environmental services
- Thermal cycle analysis
- Procurement
- Project management
- Multidiscipline engineering

Construction
- Design-build services
- Plant start-up and commissioning
- Operator training
- Material management
- EPC construction
- Constructability reviews
- General construction
- Prime contractor
- Construction management
Clients

- Alstom
- APS
- Babcock Power Inc.
- Basin Electric Power Cooperative
- Black Hills Energy
- Chevron
- Dominion
- East Kentucky Power Cooperative
- EG
- Energie NB Power
- EPCOR
- ExxonMobil
- Kvaerner EnviroPower
- Mirant
- Mitsubishi Power Systems
- MPU
- NV Energy
- Old Dominion Electric Cooperative
- Ontario Power Generation
- Progress Energy
- RWE
- Santee Cooper
- SEC&G A Scana Company
- Seminole Electric Cooperative Inc.
- Shell
- Siemens
- Southern Company
- TECO Tampa Electric
- TransAlta
- TVA
- Veolia Environnement
- University of Wisconsin
- Xcel Energy.
AMEC has capabilities that support the growing solar energy market. This technology is fast approaching grid parity, and the innovations that are coming on stream will make it a significant source of “green” power in the years ahead. AMEC’s experience in traditional power generation and process industries has us well positioned to support developers and owners in the solar market.

Since entering the solar market, AMEC has installed and designed more than 113 MW photovoltaic solar power plants. Our team recently completed turnkey engineering, procurement, and construction for a 2 MW photovoltaic solar power plant on the campus of Colorado State University power plant. The plant is now operational.

AMEC is a full-service provider - from planning, initial design, permitting and licensing through to construction and long-term asset support. We help develop the best solution for your project.

Engineering:
- Concentrated solar power design
- Photovoltaic power design
- Cogeneration and industrial power plant design
- Strategic planning and market assessments
- Feasibility studies
- Owner's engineer
- Power costing studies
- Process development
- Environmental services
- Thermal cycle/stress analysis
- Project management
- Geotechnical/civil engineering
- Piping design
- Pipeline design
- High voltage power design
- Instrument & electrical engineering
- Automation & controls design
- Mechanical engineering
- Balance of plant design
- Facilities planning and architectural design

Construction:
- EPCM contractor
- EPC construction
- Procurement
- Design-build services
- Plant start-up and commissioning
- Operator training
- Material management
- Constructability reviews
- Construction management
- Commissioning
Clients

- Abengoa
- Acciona formerly Solargenix
- Air Force Civil Engineering
- Colorado State University
- Dominion Resources
- Dyesol
- FPL/Next Era
- Origin Energy
- Photovoltaic Solar Power Plants
- Recurrent
- Solar Systems
- Spark Solar
- Support Agency (AFCESA).
AMEC provides life-cycle wind energy sector services for both onshore and offshore projects and has more than twenty years of wind project experience.

From site identification and assessment through to detailed design and construction, AMEC offers the following services to the wind energy industry:

- **Environmental**
  - Licensing evaluation and strategy
  - Environmental impact assessment
  - Comprehensive permitting support
  - Avian studies
  - Wetlands and ecological assessments
  - Threatened and endangered species clearances
  - Cultural resources clearances
  - Visual impact simulations
  - Land use compatibility assessment
  - Public involvement program planning and implementation.

- **Engineering and Consulting**
  - Front-end investigations
  - Feasibility studies
  - Detailed engineering and design

- **Owner’s Engineer**

- **Construction Management**

- **EPC (Engineer/Procure/Construct) Approach**

- **Interfacing with Government Agencies and Utilities**
  - Utility and Transmission Companies
  - Municipalities
  - Other Agencies
Clients

- Aberdeen Offshore Wind Farm, Aberdeen, Scotland
- AIM PowerGen, Ontario
- AMEC and Hainsford Energy Ltd., England
- AMEC, Nuon, England
- Barbados Light & Power Company, California
- Canso Wind Farm, Nova Scotia
- Capital Power, Ontario
- Centrica Energy, England
- Chanarambie Wind Power Project, Minnesota
- City of Summerside, Prince Edward Island
- Clashindarroch Wind Farm, Scotland
- Confidential Clients in Alberta, Ontario, Canada, Pennsylvania, Texas, Minnesota and Illinois, Montana, New Brunswick, Quebec, West Virginia
- Creststreet, Quebec and Nova Scotia
- DeBeers Canada, Ontario
- Department of Energy and Climate Change, England
- Donlin Creek LLC, Alaska
- E.ON Renewables Ltd, England
- EDF Energy and Hexham Wind Ltd, England
- Enbridge Ontario,
- Energias de Portugal, USA
- EPCOR Power Development Corporation, Ontario
- EPCOR, British Columbia
- Erie Shores Wind Farm LP, Ontario
- F. E. Warren Air Force Base, Wyoming
- Fisherman’s Energy of New Jersey, New Jersey
- FPL Energy, Texas and West Virginia
- Gaia Power, Ontario
- Gamesa Energy, Colorado
- Gamesa Eolica, Minnesota and Iowa
- Great Plains Wind Energy, Montana
- Hainsford Energy Ltd, Caton Moor Wind Farm, England
- Henry Hills Power Partners, Iowa
- Huron Wind Inc., Ontario
- Iberdrola, Scotland
- International Power (formerly AIM Powergen), Ontario
- International Power, Ontario
- Kibby Wind Power Project, Maine
- Kruger Energy, Ontario
- Kyle Wind Farm, Scotland
- Lewis Wind Power, Montana
- Marathon Pulp, Inc., Ontario
- Moray Council, Scotland
- Navitas Energy, Illinois
- NedPower Mount Storm, West Virginia
- Nova Scotia Power, Nova Scotia
- NPower Renewables and EDF Energy, England
- Renewable Energy Services, Nova Scotia
- Ripley Wind Farm and Malahide Wind Farm, Ontario
- Scottish Power, Scotland
- Shaokatan Power Partners, Minnesota
- Talisman Energy, Scotland
- Vattenfall, Scotland
- Walpole Island First Nation, Ontario
- Wind Energy Constructors, New Mexico
Please contact Nenad Firez
Business Development Manager, Australia
Tel: +61 (0) 400 495 885
Email: nenad.firez@amec.com