



Professional Process Engineering and Consulting

Company Profile

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Introduction

CrossPE is a world changing organisation that delivers engineering design solutions and projects in the petrochemical, oil and gas, as well as waste to energy industries. We do so in an environmentally and socially responsible manner, while creating a harmonious and ethical working environment in fulfilling God's vision for the organisation.

The company was born out of the need for a dynamic and flexible process design and simulation solution in a market dominated by rigid conglomerates.

The engineering and management strengths of different individuals were combined to form an association that can provide complete project and engineering solutions to their clients.

Our focus is on providing professional engineering design and simulation, and also project management services for multi-disciplinary projects in the chemical and petrochemical industries of Southern Africa. These services include feasibility/scoping studies, conceptual, basic and detailed engineering, process simulation and project management services.

Our key staff and alliance partners are well respected in their areas of expertise and have been involved with many successful key projects in South Africa and internationally.

Our Vision and Mission

Our Core Values are based on Christian principles:

- Worshipping God
- Respect all people and the environment
- Be humble
- Honesty/Integrity
- Live a moral life
- Compassion
- Forgiveness
- Professional and competent

CrossPE aims to be a world changing professional engineering organisation based on Christian principles and values that shows care for people and the environment.

Our company philosophy is to provide our customers with a high level of service that is consistent, reliable and cost effective. We maintain and improve our wide range of skills by investing in an ongoing program of training and professional development. This allows us to nurture a company-wide team spirit, which ultimately results in assisting our clients with achieving their business goals.

Our commitment

Cross Process Engineering is committed to working in close collaboration with our clients.

This ensures a mutual understanding of current and future business needs, whilst delivering high quality, cost-effective solutions through our own efforts and those of our supply partners.



Operating Strategy

We strive to continually improve our services by agreeing with our clients on the priorities for each project at commencement and focusing upon them. This focus applies equally to safety, quality, cost and time schedules.

We undertake to operate at all times in a professional manner and to provide sufficient and appropriate resources to succeed. We will, where possible, identify opportunities that will reduce cost and time schedules, thus providing a "Value Added" service to our clients.

The approach to a project and the execution thereof depends on the business driver for that project. This may include cost (capital and operating), process feasibility, schedule, process stability, other factors or a combination thereof.

We are committed to establish an appropriate execution approach, in close co-operation with our clients, to ensure that the business objectives are being addressed. We do this by structuring our approach along the following guidelines:

<p>Innovation Every project is different and therefore requires a different approach to execution whilst still retaining the fundamentals of quality, safety, governance and control.</p> <p>Our success is totally dependent on the commitment and innovation of our highly skilled and experienced personnel, and on that of our strategic alliance partners. Every shareholder, director and employee realises that commitment to innovation is key to success.</p>	<p>Flexibility & Responsiveness We are a small company, strengthened by our strategic alliances and close relationships with recognized service providers in the related fields.</p> <p>The one-size-fits-all approach is not part of our values and to further our belief in innovation, we commit to being flexible to our clients' business needs.</p>
<p>Partnering Strong and appropriate partnerships result in the best projects. Ongoing escalating costs enforce this simple truth.</p> <p>Professional and direct field service providers recognize that their ability to leverage their resources without undue capital investment is through suitable partnering initiatives.</p> <p>These associations bring a true one-stop-shop to clients, thereby minimizing efforts and costs associated with the appointment and management of numerous sub-contractors.</p> <p>We also extend our partnering approach to include our clients. Success is further enhanced by early and full co-operation between the client and the project team ensuring timeous transfer of knowledge and agreement of the scope of work.</p>	<p>Complete Solutions Cross PE offers a full range of engineering, design, simulation and project management services. Through our partnering approach we are able to draw upon the most appropriate expertise in process, mechanical, piping, civil, structural, electrical and instrumentation engineering and design resources.</p> <p>Our partners have been involved in the development and construction of processing plants across all sectors of the chemical processing industries.</p> <p>The total project life-cycle is accommodated within the range of services we provide, from idea generation to beneficial operation, and with world-class experience in execution of all the phases of a project.</p>

Professional Services

Engineering and Design



With vast experience in both manufacturing operations and design, our process engineers can address all aspects of your project from a practical as well as a theoretical perspective. We combine an extensive knowledge of unit operations with an ability to partner with technology suppliers to ensure you derive maximum benefit.

A full spectrum of engineering and design services are available to ensure successful completion of designs and specifications for multi-disciplinary projects. All designers and engineers are selected on the basis of industry specific experience and know-how.

We continuously strive to produce the most accurate designs as soon as possible, to minimize costly changes and additions during later phases.

A thorough approach to the conceptual design phase of a project can prove critical to its overall success or failure. Our multi-disciplinary engineers come from a variety of backgrounds, many having worked directly for operating companies. This gives us a broad understanding of operational constraints which may exist both in project design and implementation, and allows us to formulate appropriate strategies to meet your key objectives.



Frequently we are able to propose alternative process schemes for evaluation. We can also address constructability issues at an early stage, in some instances identifying parallel activities which will allow for early project completion with a corresponding improvement in return on investment.

We have a structure built on the foundation of quality detailed engineering practices and management procedures headed by experienced, chartered engineers from specialist chemical /petrochemical industry backgrounds.

As a Cross PE client, you are assured of a professional, comprehensive, reliable and flexible approach utilizing modern operational practices. This translates into an extremely competitive service without compromise, often resulting in significant financial savings throughout the project life cycle.

Typical deliveries per project phase include:

Concept / Feasibility Studies

- Scope definition phase
- Engineering investigations / generation of ideas
- Block flow diagrams
- Preliminary mass & energy balance
- Preliminary equipment lists (major equipment)
- Overall plot plans
- Rough order of magnitude cost estimates
- Initial project viability assessment for basic engineering
- Process flow diagrams
- Overall process description
- Equipment list and data sheets
- Control philosophy
- Instrument index and data sheets
- Piping philosophy
- Utility summaries
- Basic piping layout and transposition drawings
- Long lead equipment identification
- Emissions effluent summary

Basic Engineering

- Process flow diagrams
- Overall process description
- Piping & Instrumentation Diagrams
- Equipment list and data sheets
- Control philosophy
- Instrument index and data sheets
- Pipeline and tie-in lists
- Utility summaries
- Piping layout and transposition drawings
- Long lead equipment identification
- Emissions effluent summary
- Order of magnitude cost estimates
- Project viability assessment



Detail Engineering

- Final plot plans
- Equipment specifications and fabrication details
- Isometric pipe drawings
- Control system drawings
- Electrical distribution and layout drawings
- Design and Hazop reviews
- Civil and structural design drawings
- Semi-definitive cost estimates
- Construction support
- As-built documentation



We have in-house access to appropriate software and systems to ensure the most accurate designs and engineering specifications. Of paramount importance is the maturity to accept that changes occur during the execution phases of a project.

Project Management

We are committed to ensuring that the project life-cycle is managed in a professional and efficient manner. This we achieve by actively fostering open relationships with your team in problem solving and resolution. In short, we place the emphasis on working *with* the client, as opposed to working for the client.

Enthusiastic and committed to project success, our engineers and Project Managers identify themselves fully with the client's key objectives. Our Project Management systems provide a single point of contact to coordinate and manage all aspects of project implementation.

We subscribe to the belief that in order to be successful, you need to know exactly what needs to be done, what has been done and what remains to be done.

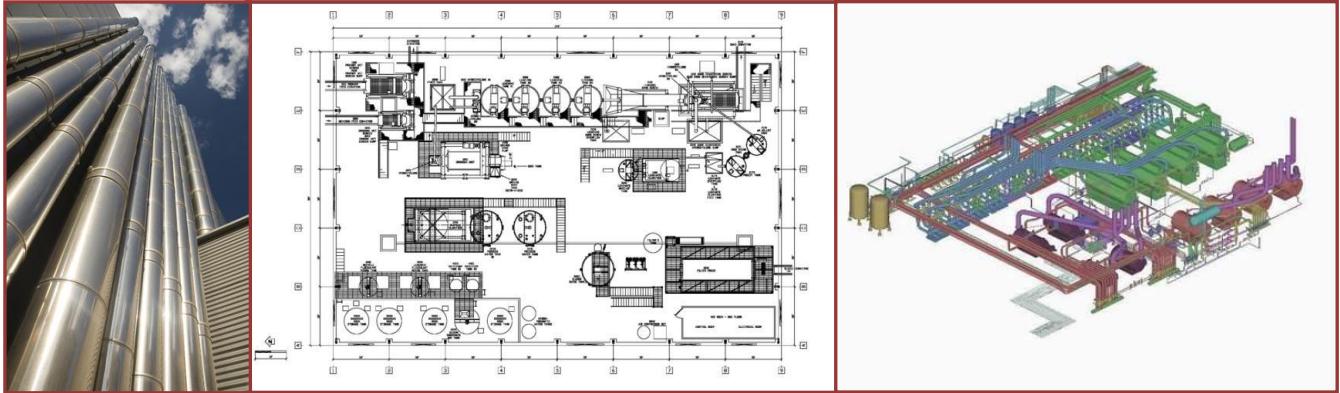
Front-end Engineering Packages

Front-End Engineering Design (FEED) is the process for conceptual development of processing industry projects. It refers to including robust planning and design early in a project's lifecycle (i.e., the "Front End" of a project), at a time when the ability to influence changes in design is relatively high and the cost to make those changes is relatively low.

It typically applies to industries with highly capital intensive, long lifecycle projects (i.e., hundreds of millions or billions of dollars over several years before any revenue is produced). Though it often adds a small amount of time and cost to the early portion of a project, these costs are minor compared to the alternative of the costs and effort required

to make changes at a later stage in the project.

It also typically uses a Stage-Gate process, whereby a project must pass through formal Gates at well defined milestones within the project's lifecycle before receiving funding to proceed to the next Stage of work.



Project and Experience Gallery

Projects completed by Cross Process Engineering

- Natural Gas Pipeline Compression Station Basic Engineering
- PFS for Soybean to Biodiesel Plant
- Natural Gas Pre-Cooling Detail Engineering
- Gas Processing Facility Expansion (Natural Gas) Basic Engineering,
- Early Production Facility (Natural Gas) Detail Engineering
- Pipeline flow assurance (± 208 km),
- Existing and future plant capacity and economics,
- Downstream pipe line verification (network simulation),
- LPG Extraction Concept Design
- Heat exchanger (tube wall thickness) test,
- Criticality analysis for existing plant.
- Heat exchanger verification,
- Distillation Column Re-rating,
- Platform and pressure vessel design and FEA,
- Distillation Column replacement (ECP),
- Gas line design for feed into LM6000 turbines for natural gas or flare gas - Detail Engineering
- CBM - Pre-feasibility study for a 220 km pipeline to a Botswana power plant (250 MW).
- Hazop - ABA Power Station, Nigeria

The Engineering team of Cross Process Engineering has working experience on the following plants and projects from previous companies:

- LPG Extraction
- Coal Tar Filtration Plant
- MiBK Production
- Benzene Alkylization Project
- PBMR Fuel Plant Utilities and EPCM
- Clean Fuels Project (Chevron, Cape Town)
- Acrylic Acid and Acrylates Plant (Sasol, Sasolburg—designed from Thailand)
- Various Refinery Expansion Projects (Sasol, Secunda and Sasolburg)

Full Conceptual design and feasibility studies for the following plants:

- meta/para-Cresol purification plant
- meta-Cresol and para-Cresol separation plant
- PCX phenolics extraction from tar acids via TEG
- Methyl/butyl acetate plant
- Tri-Ethoxy Butane plant
- MiBK production
- n/iso-Butyraldehyde hydrogenation plant
- Naphtha hydroteater facility
- Acrylic acid/ Alkyl acrylates via esterfication of alcohols and acrylonitrile
- Methyl iso-Propyl Amine production
- Acryalmide production from Acrylonitrile
- Poly-Acryalmide production

Tank Farm related projects:

- Full engineering design of bulk fuel facility - St. Helena Airport project for Basil Read.
- Basic Engineering of Condensate tanks for PAT, Tanzania
- BE & EPC for Tank farm for MiBK Extraction, Sasol, Sasolburg
- BE & EPC for Benzene storage tank for Sasol, Secunda
- BE and DE for PBMR Fuel Plant Utilities Tank Farm and Gas Storage Facility, Necsa, Hartebeespoort.
- Bunker Gas Oil Tank Farm conversion to Marine Diesel at Caltex Refinery, Cape Town
- Clean Fuels Tank Farm conversion including blending headers, Caltex Tank Farm, Cape Town
- Black Oil to White Oil service change out at Kilarney Tank Farm, Cape Town
- Conversion of Natref Tank Farm from leaded petrol to LRP with MMT, Sasolburg
- Tank Farm modifications for import of White Oils from Cape Town Harbour to Caltex Refinery Tank Farm

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