



Capability Statement

Engineering

OUR MISSION

Is to be known as the best engineering design company in Australia and to have happy clients that we get to develop long lasting relationships with.

WHAT WE DO

We have a complete design solution to suit any sized job. We work with individuals and large companies and have arrangements that can cater to all your needs.



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Our Aim

At SFDesign, we pride ourselves on providing high quality Engineering Services at affordable rates, underpinned by extensive design and engineering experience across a range of industry sectors, supported by our core operating values.

We deliver complete solutions through the expertise and flexibility of a focused and specialist Engineering team.

Our design team consists of over thirty Perth based employees ranging from Principal Engineers, Project Engineers, Design Engineers in each engineering discipline, Lead Designers, Piping / Structural / Mechanical Designers, and draftsman. We have a team to meet any sized project.

For a detailed Summary of our Key Personnel please refer to our Leadership Team on Page 13

Core Values

We always do the right thing

We're not here to just 'sell something'. We listen, speak openly and honestly and only offer the best solution for our client's needs. If that means they need to talk to someone else, we'll make sure they are connected.

We believe optimism and commitment beat any challenge

We love what we do and aim to be the best at it. Sometimes unplanned things happen, but we maintain an attitude at all times that keeps everyone focused on delivering solutions.

We stay on the edge

We are always out the front! We constantly assess innovations and stay closely connected to our clients to make sure we understand the best solutions for their needs.

We love being local

We live, work and love being local. We understand and support local business because we're one too.

We're part of a team

No ego's here. We work together to make sure our clients have access to all the expertise available in our team. As a team, we make sure everyone takes some time for relationships and dreams to ensure a balance that keeps us friendly and helpful.



Why choose SFDesign?

SFDesign is a privately owned, multi-disciplinary engineering and design house located in Perth, Western Australia. We have the unique position where we can offer our customers design and engineering capabilities all from under the same roof at our headquarters in Belmont.

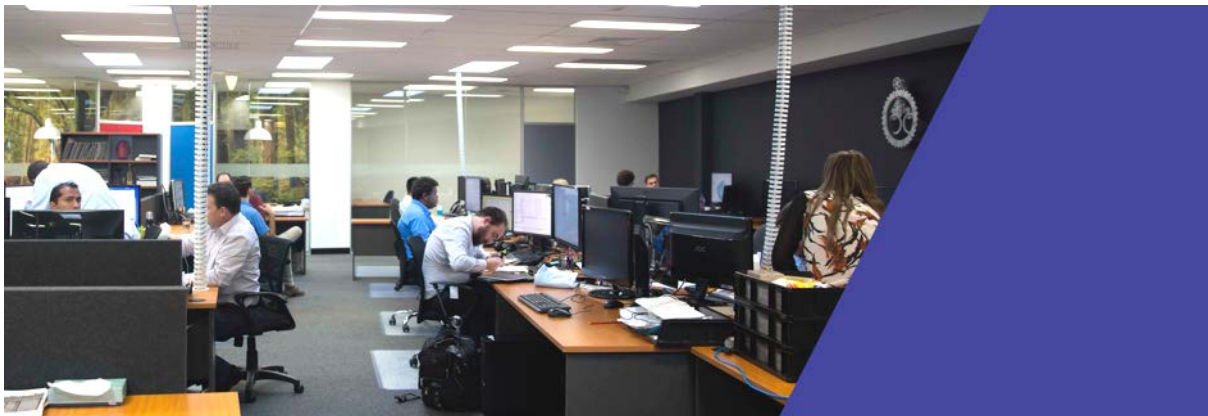
We invest in **local** people.

At SFDesign we believe in crafting long-lasting relationships with our clients, that's why we serve WA first.

We have key relationships with Curtin University and the University of Western Australia's Mechanical Engineering faculties, through our graduate engineering program – employing Western Australia's best rising talent and offering all the guidance and practical education our experienced team leaders have to offer.

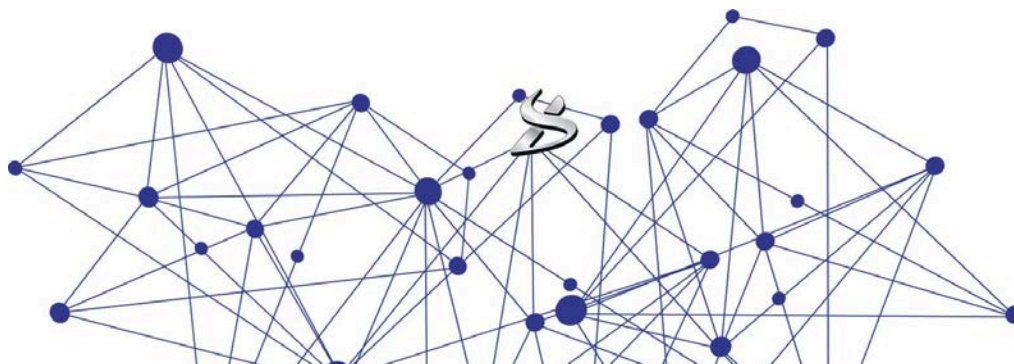


Our employees are all full time, or on the path to full time work, which has a wide reaching positive impact on the business. The culture at SFDesign is the product of a workplace that supports discovery and innovation, underpinned with consistent education and growth opportunities.





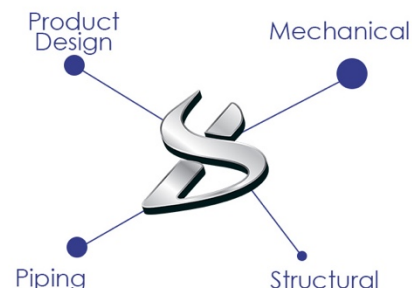
We are **Connected.**



SFDesign is the leader in parametric software and integrated PDM systems here in WA, with a history of providing SolidWorks sales and service to companies across WA and interstate. This has given SFDesign key relationships with software developers at internationally leading 3D design software providers. SFDesign is better positioned to take full advantage of capabilities in parametric software due to these relationships and our employees recognition as certified parametric software professionals in programs like SolidWorks, Inventor, Creo and SolidEdge.

Our **Multidisciplinary** Approach.

As part of our commitment to offer a full range of engineering and design services, we have assembled a diverse team of experts, and emerging talent from local universities across the full spectrum of engineering and design services. As a result, our capabilities span civil, structural, mechanical and piping for use across a range of different applications.



Cost-effective designs.

SFDesign currently employs over 30 engineers, designers and draftsmen. This results in the most cost-effective design solutions, as lead designers are not left working on shop detailing, and vice versa. SFDesign has been working as a team of this size for many years and have fine-tuned processes to ensure that we can deliver the best possible design produced in the most cost-effective way.



The right tools for the job.

SFDesign has extensive experience in engineering and advanced analysis across different disciplines for various applications. This wide range of experience has produced a process for FEA and other advanced analysis solutions that we know is the most efficient – here are some of the leading software solutions we use.



Ansys' FEA software is used to simulate engineering problems. The software creates simulated computer models of structures, electronics, or machine components to simulate strength, toughness, elasticity, temperature distribution, electromagnetism, fluid flow, and other attributes. Ansys is used to determine how a product will function with different specifications, without building test products or conducting crash tests.

Dassault Systèmes software **Solidworks** and **Abaqus** allow us to evaluate performance, improve quality and increase product innovation. We can establish real-world scenarios to test products prior to manufacture for a wide range of parameters such as durability, static and dynamic response, motion of assembly, heat transfer, fluid dynamics, and plastic injection.

Autodesk software **Nastran In-CAD** (previously known as Nei Nastran) is a general-purpose finite element analysis solver software, based on NASA's Structural Analysis program NASTRAN. Nastran In-CAD is used to analyse linear and nonlinear stress, dynamics and heat transfer characteristics of structures and mechanical components.



Our Services

1. Consignment Engineers*

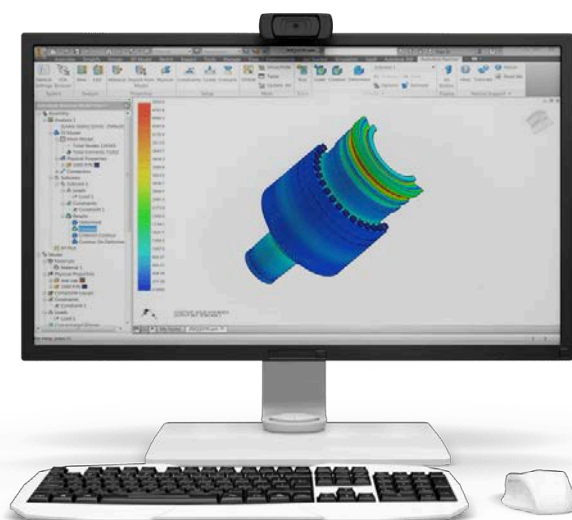
Our staff work in your offices

For when you need high quality engineers and designers and don't have enough work to justify a full-time staff member, or just need high quality staff without the stress - SFDesign is here to help.

2. In-house Engineering Team

Our full team's capabilities

For all projects requiring engineering work, across a range of disciplines and industries - SFDesign has the experience and team for you and your business.



*What is Consignment?

Consignment Engineers is a service SFDesign offers, like secondment or contractors, where our staff come and work in your offices – even bringing software and computers.

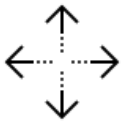
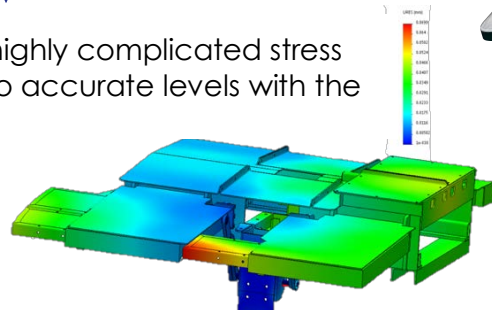
Consignment is a popular solution for businesses who need to scale up their team temporarily or have lots of work lined up where it might be easier to have a staff member permanently in their offices, working solely on their projects.

To read more about Consignment visit: sfdesign.com.au/consignment-designers/



Advanced Analysis Overview

Advanced analysis provides numerical solutions to highly complicated stress problems, and the ability to assess design solutions to accurate levels with the help of specialist software.



Dynamic Analysis

Buckling/Post-Buckling

Dynamic Analysis considers the response of structures and equipment that are in motion as a result of applied forces.



Computational Fluid Dynamics (CFD)

CFD is used to model fluid flows, anywhere from highly viscous to low viscous fluids.



Fracture & Fatigue Analysis

Fatigue analysis estimates the design life of a product before cracks occur and should a crack occur. Fracture mechanics will estimate the remaining life of the product before it fails.



Finite Element Analysis (FEA)

Solid/Surface 3D Models/ Linear & Non-linear static analysis

SFDesign makes extensive use of Finite Element Analysis (FEA) to design and verify the structural integrity of products/structures.



Structural Design/Verification

SFDesign can design and verify conceptual ideas to detailed structural design following Australian, ASME, API or DNV standards.



Pressure Vessels

Detailed pressure design for different projects to ensure compliance with regulations.

More Detailed Information about Advanced Analysis is available on our website:

www.sfdesign.com/engineering-services



SMP Structural Mechanical Piping Engineering

Our Value is defined through all phases of our client's projects

Conceptual Phase

Our extensive 3D library of scalable parametric models enables projects to be assembled and feasibility studies commenced.

Feasibility Phase

Combining our industry knowledge and key project requirements to enhance your 3D model

Definitive Engineering Phase

This is where we deliver proven design knowledge and advanced software knowledge and establish how to showcase the design to all major stakeholders

Projects:

Saraji Minesite Light Vehicle Wash Bay

The Saraji Coal Mine is a coal mine located near Dysart in Central Queensland. The mine has coal reserves amounting to 648 million tonnes of coking coal. SFDesign was engaged to design a light vehicle wash bay encompassing Civil and Piping design with the provision of installation and maintenance manuals.





Structural & Mechanical

Analysis of Machines

- Identification and classification of defects
- Risk assessment of defects and prioritisation for improvements
- Preparation of remedial measures
- Preparation of inspection reports

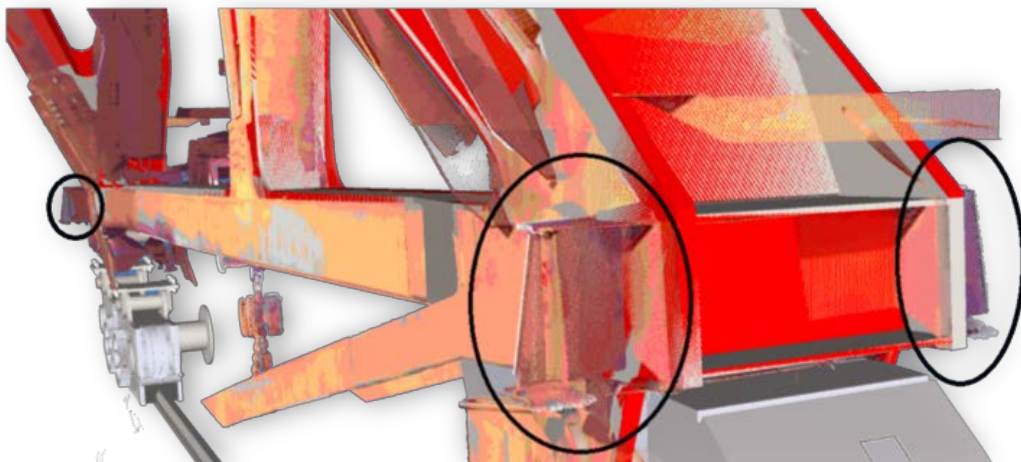
Design Improvements

Using leading 3D design software, such as SolidWorks and Inventor, SFDesign can offer Design Improvement recommendations.

- Design of structural modifications/upgrades
- Adequacy check of existing structural and mechanical components using FEA and other techniques
- Preparation of fabrication drawings for structural and mechanical systems/components

Design Improvements can assist with:

- Optimisation – reducing operation and maintenance costs or increasing capacity.
- Life extension – Explore options to extend life of assets until replacement needed.





Design & Drafting

Complete Drafting & Design Solutions

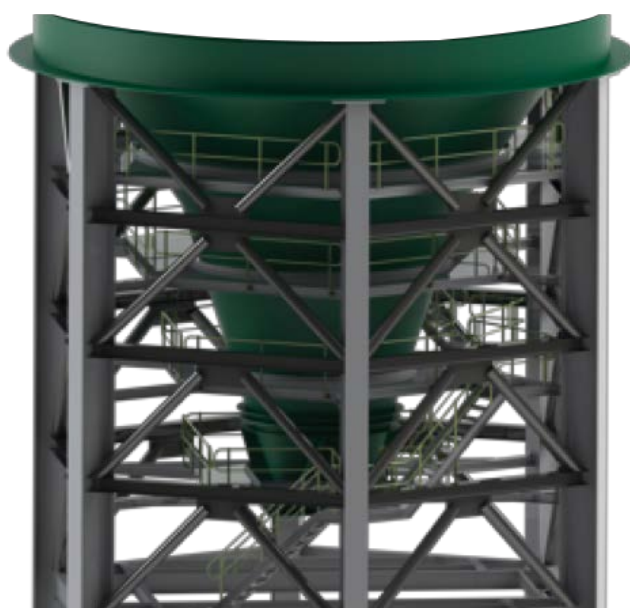
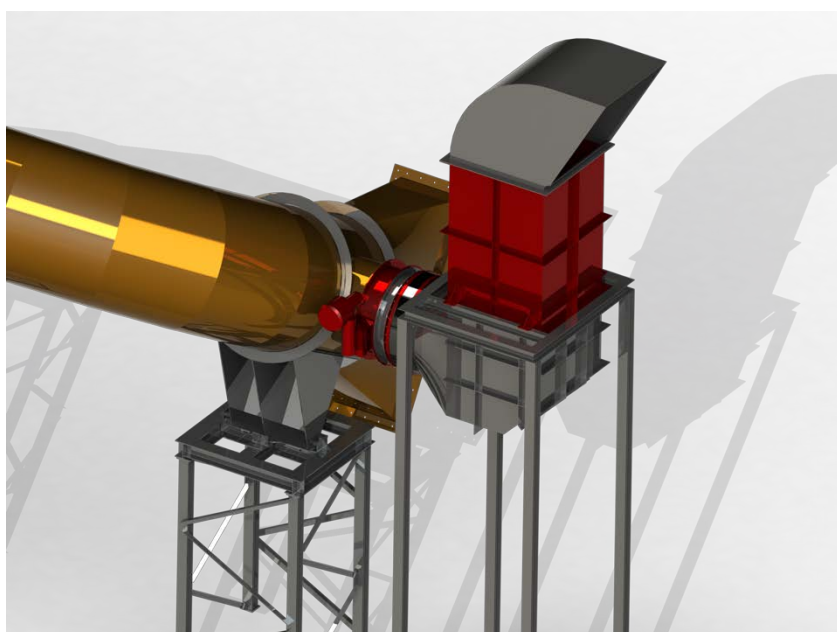
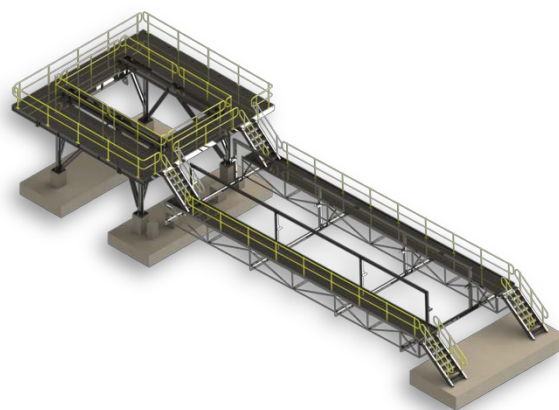
We have a great team of experienced & talented designers, drafters, engineers and managers.

Mechanical Design has never been easier with our innovative 3D design solutions. We can rapidly produce concept and detail models, all the way through to plate developments and detail drawings for all of your fabrication needs.

On completion of your 3D design models, we can produce technical documentation, operating manuals, realistic rendered images and Walkthroughs/Flythrough to effectively communicate your designs to your stakeholders

Capabilities

- Chutes, Hoppers, Bins and Tanks
- Piping Isometrics
- Machine Design
- As-built Refits and Modifications
- Mechanical 3D Animation
- Engineered Designs
- Concept Designs





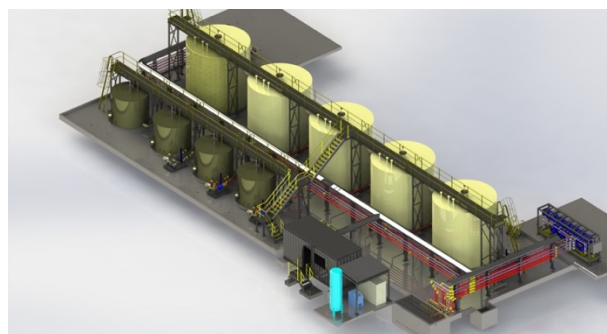
Turnkey Design Solutions & Project Execution

We utilise a sound and proven methodology to deliver successful projects across Australia. Our process has been refined through years of our team's projects experiences, whilst incorporating current best practices.

Our technical Expertise sets the standard in engineering knowledge through parametric modelling techniques. Through our extensive experience we have gained a reputation in delivering quality solutions.

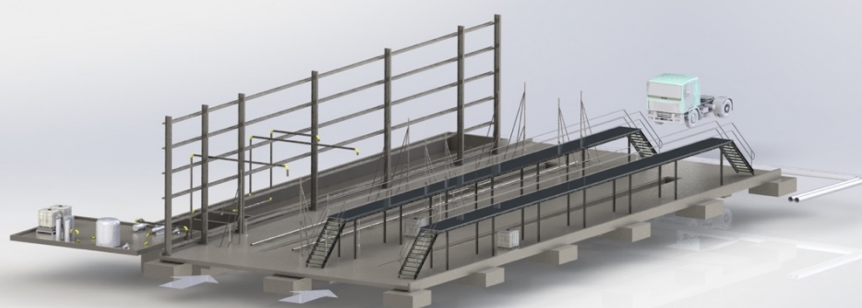
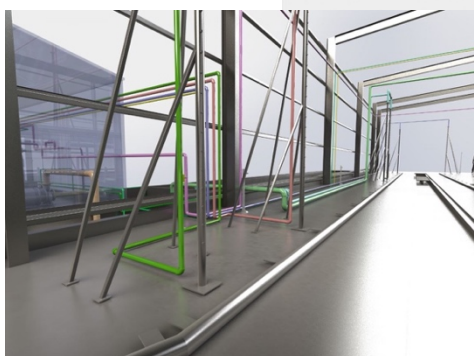
This capability combined with our highly qualified industry experienced principal Engineers in each of the engineering disciplines, ensures the final design far exceeds our client's expectations.

SFDesign will take full responsibility for the procurement throughout a capital project. Our services span from the creation of technical and commercial bid specifications through vendor qualifications, bidding selection to final contract negotiations.



Capabilities

- Small to medium sized Design and Construction Projects
- Lime Slaking facilities
- Hydrocarbon storage and distribution facilities
- Bulk handling facilities
- Mining Infrastructure





Leinster Skip Work Platform

Purpose

The purpose of the Skip Style Working Platform was to be lowered in the skip side of a mineshaft to gain access to the main support steel structure every 5 meters. This allowed access to inspect and upgrade the supports within the shaft.

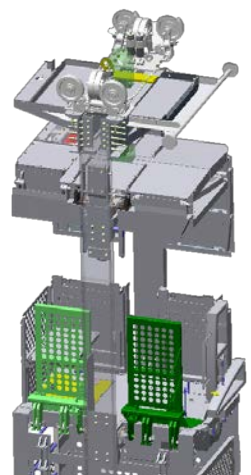
Scope and Deliverables

Engineering and certification, detailed design and drawings. Maintenance and upgrade of the mine site.

- Engineering Verification of each component mechanically within the Skip Style Working Platform
- Scope included both fatigue, vibration and stress analysis of each of the components
- Lifting and testing structural engineering verification
- Conceptual design of the Skip Style Working Platform used to complete the 3D model for fabrication



'Skip Style Work Platform'





Recent Project Highlight

Bucket Reclaimer Upgrade

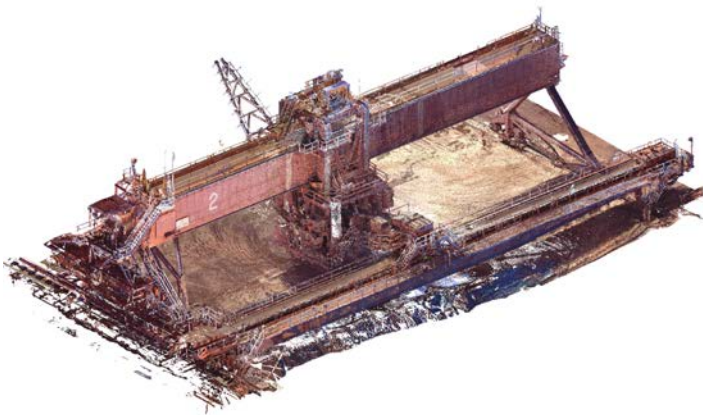
Purpose

SFDesign was engaged to draw drawings for the upgrade of two bucket reclaimers at Rio Tinto's Paraburdoo mine site, requiring 3D Modelling, Point Cloud conversion to compare against shop drawings and design upgrades for life extension.

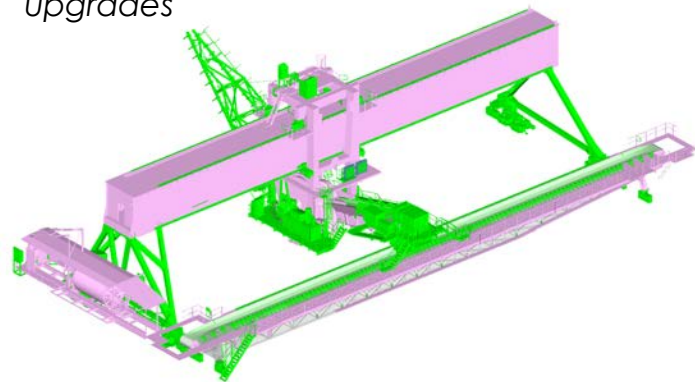
Scope and Deliverables

- 3D Scan of two Bucket Reclaimers
- Point Cloud of Scanned Area
- Point Cloud Review against 3D Model

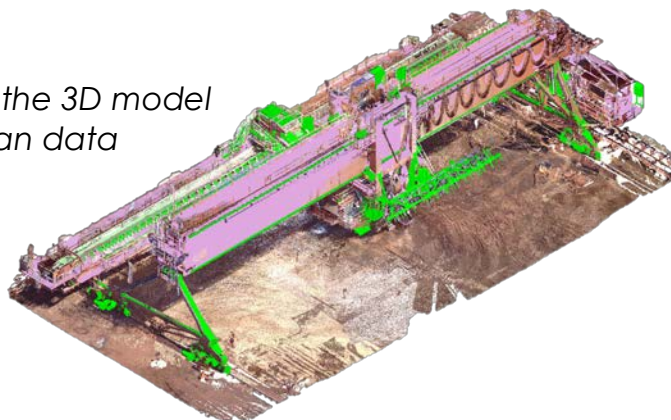
Scan Data output



Pictured in pink is the existing structure and green showing the parts requiring upgrades



Overlaying the 3D model with the Scan data





Leadership Team



James Staples – Design Manager

James founded SFDesign in 2008 based on a need for Perth intelligent engineering and design services that were skilled across a range of industries and provided scalable resources across the life cycle of projects. With over 14 years of experience using SolidWorks, James has developed systems that enable the team at SFDesign to provide cost effective engineering and drafting services in multiple industries. James also brings many years of experience in workshop fabrication and shop detailing to SFDesign. James also has extensive on-site experience as a Project Engineer and Commissioning Engineer on multiple projects. James possesses a unique combination of professional experience in business, engineering and construction in both the design office and on-site environments. With extensive experience which includes mining, manufacturing, machine design, and software implementation.



Magnus Whittall – Operations Manager

Starting as a Welder/Fabricator for the Aluminium Shipbuilding Industry in Henderson, Magnus went onto study Product Design at Curtin University and upon graduation worked in London as Point of Sale designer winning Shop-fitting display awards. For the last 7 years Magnus has become a highly qualified SolidWorks technician winning ANZ Top Applications Engineer in 2010. His strengths are his ability to understand how CAD software can provide solutions for companies and in doing so has implemented PDM design and drafting procedures for SFDesign. The SFDesign office acts as a showcase example of the benefits this software can provide to small, medium and large Engineering companies.

Their key strengths include:

- Extensive experience which includes mining, manufacturing, machine design, product development and software implementation.
- Established background working as workshop fabricators and shop detailers
- 21 years of combined SolidWorks experience.
- Experience implementing PDM design and drafting procedures.

Individual Résumés available upon request.



Engineering Team

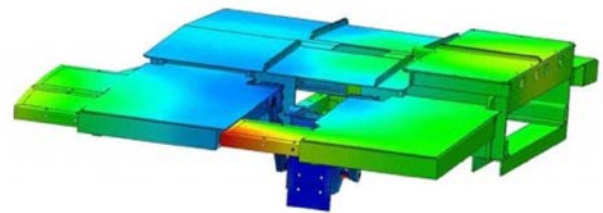


SFDesign's engineering team has a wide range of experience with just some of the following highlights;

- Solving mechanical and structural problems using finite element (FE tools)
- Solving problems in the automotive, aerospace, defence, medical, oil & gas, semiconductor, monorail and general machinery industries.
- FE skills in the oil and gas industry as subsea pipeline specialists, solving problems in advanced analysis fields of lateral buckling, pipeline walking, structural analysis and fracture mechanics (ECA).
- FEA, mechanical design and pressure vessel verification expertise.
- 14 years working across structural, mechanical, piping design and construction projects for the mining and resources industry in WA.
- Exposure to a variety of disciplines such as mechanical assembly, fabrication and site construction.
- Experience working on projects the automotive, oil & gas, mining and general machinery industries
- Leading training in parametric software
- Photo realistic renders for websites

Their key strengths include:

- Producing concepts and detailed models
- Technical documentation, operating manuals and realistic rendered images for marketing purposes
- Innovative 3D design solutions
- Engineering drawings, GA's and shop drawings
- Mechanical Design
- Workbench with FEA Testing
- Solidworks/AutoCAD
- Advanced finite element analysis (FEA)
- Mechanical design
- Subsea pipeline lateral buckling, pipeline walking analysis and general subsea pipeline design.
- Structural and dynamic analysis using finite element (FE) tools.
- Fatigue and Fracture Mechanics.
- Familiar with DNV and Australian Standards (AS1210, AS3990 and AS4100 among others)





Leadership Team

Design



SFDesign's Design leadership team has a wide range of experience with just some of the following highlights;

- 27 years' work experience across structural, mechanical, piping design, and construction projects – primarily for the mining and resources sector.
- Design and verification of Pressure Vessels to AS1210, ASME, PD 5500 standards.
- Design of tanks to API 650 standard.
- Excellent skills in parametric 3D modelling, model structure and library features/components.
- Sound knowledge of 3D point cloud data conversion from terrestrial scanners

Their key strengths include:

- FEA Simulation for engineering review
- Engineering drawings for engineering sign off
- Conversion of 3D cloud point data into conceptual design for client comments

Projects:

Alpha Tanks – Mobile Lubrication and Diesel Vehicle – Conversion from a Cat 775 Haul Pack

Fuel Tank and Pipe – Fuel unloading and loading Facilities; BHP Jimblebar Mine

Malcolm Thompson Pumps – Fabrication drawings for numerous pump units

Austin Mintech – Maintenance upgrade projects onsite.





Leadership Team

Drafting



SFDesign's Drafting leadership team has a wide range of experience with just some of the following highlights;

- More than 10 years' experience developing projects and designing machines with Solidworks and AutoCAD
- Drawings prepared for laser cutting machines
- Photo realistic renders for websites
- More than 10 years of detailed tooling design
- More than 10 years of multi-disciplined experience in subsea design, both mechanical and structural
- Fabrication drawings for steel structures including weld detailing and surface finishing

Their key strengths include:

- Producing concepts and detailed models
- Technical documentation, operating manuals and realistic rendered images for marketing purposes
- Innovative 3D design solutions





Technical Resources

Our expertise in design software includes:

FEA - Linear and Non-Linear

- NX
- Abaqus
- Ansys
- SolidWorks
- Strand7

Mechanical and Piping

- Inventor
- SolidWorks
- Product Data Management
- Smap3d (Isometric and PI&D's)
- AutoCAD
- Microstation including CAD Conform
- Creo
- SolidEdge

Turnkey Solution

- NavisWorks

Structural using BIM

- Revit
- Advanced Steel
- Tekla

Civil

- 12D
- AutoCAD

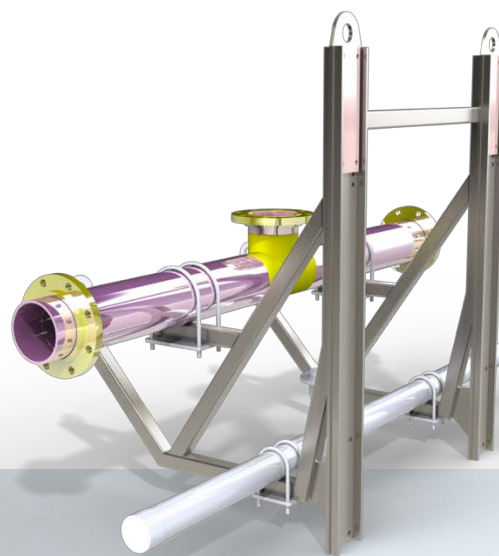


What **Industries** do we work with?

Mining/Resources
Infrastructure
Mineral Processing
Heavy Equipment
Oil and Gas
Product Design
Agriculture Equipment
+ Many More

Our Capabilities Include

- Consignment Designers
- Engineering Certification
- Technical Documentation
- Drafting Services
- CAD Conform
- Laser Scanning
- Animations
- Marketing Material
- Fixed Price Engineering
- Consignment Engineering
- Engineering Design
- Construction Management
- FEA Analysis
- Work Safe Compliance





We are the Complete 3D Solution

SFDesign is a privately owned, multi-disciplinary engineering and design house located in Perth, Western Australia. We have the unique position where we can offer our customers design and engineering capabilities all from under the same roof at our headquarters in Belmont.

SFDesign have a proven history of successful projects and service a growing list of over 300 clients who rely on us for our expertise and industry based solutions, and we are often an integral part of our client's processes.

To see how SFDesign can help you and your business, please contact us at your convenience for a fast and specialised reply.

