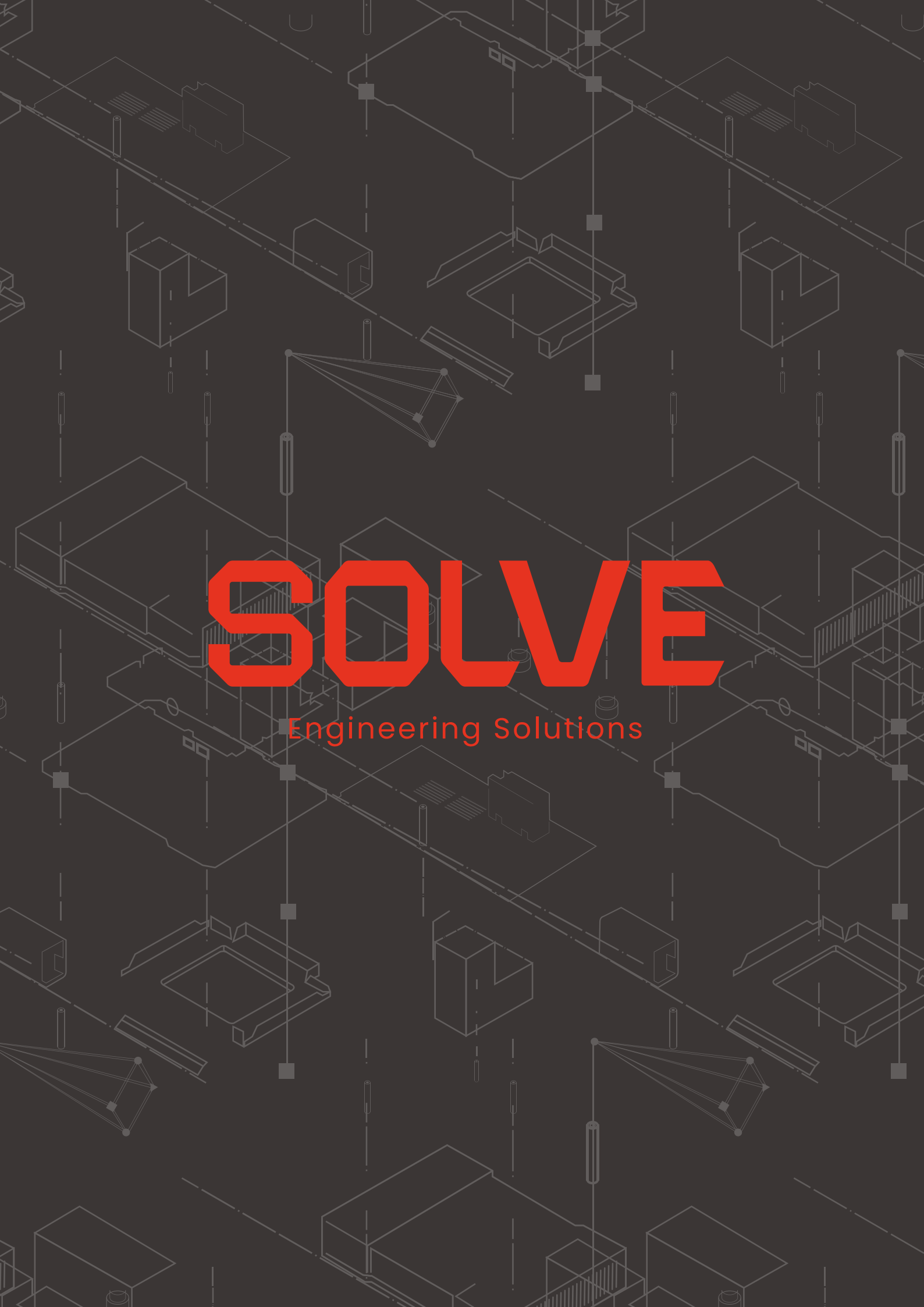

SOLVE
Engineering Solutions

We believe that any engineering problem can be solved with ingenuity, experience and an entrepreneurial mindset.

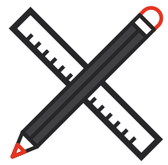
Experience the power of custom engineering

We are striving to be South Africa's leading manufacturer of custom engineering solutions by being solution-driven, innovative and adaptive.

Our core engineering capabilities



In-house design, manufacturing and engineering.



Professional 3D modelling and drafting office.



Turnkey solutions, transport and installation.



Detailed quality control plans.



Finite element analysis.



Short turnaround times of large scale projects.

About us

Solve specialises in custom engineering solutions. The team works closely with customers and end users to develop and deliver bespoke, high-quality solutions that meet unique and specialised engineering requirements. No challenge is too big for Solve's exceptional team of more than 80 highly skilled professionals, including qualified engineers, designers, draftsmen, project managers, welders, electricians, and boilermakers. All manufacturing takes place under one roof in a 10 000 m² facility located in Germiston, Johannesburg, ensuring quality, efficiency, and complete end-to-end control.



Benefits of modular or prefabricated modules

Reduces project costs and improves manufacturing and deployment timelines.

Manufactured in a controlled environment, improving quality and manufacturing time.

We design in order to minimise site-work.

All products are factory-accepted and approved before shipping to site.

Reduces plant down-time and speeds up installation.

Focus on continued quality

From the first point of contact through to final project completion, we maintain a strong focus on quality. Our systems are supported by robust processes that drive efficiency, and we continually invest in skills development to ensure a quality mindset is embedded across all departments.



Our company values

01

Focus on growth and sustainability
Our growth comes from being innovative, flexible and adaptable – we embrace new ways of working and we're open to listening to our colleagues and clients.

02

Accountability
At Solve, what we say is what we do. We are always honest and accountable, showing integrity and transparency in all that we do. We treat our colleagues and clients with respect, dignity and fairness.

03

Teamwork
Teamwork and a can-do attitude are crucial to getting the job done right every time. We are always looking for ways to improve as a team and value every member's input and skills.



Solve's engineering capabilities include

- In-house design, manufacturing and engineering
- Professional 3D modelling
- Expert engineering and drafting
- Turnkey solutions, transport and installation
- Detailed quality control plans
- Finite element analysis in detail design phase
- Short turnaround times of large scale projects
- HVAC design and installation
- Fire detection and suppression design and installation
- ISO 9001 certified
- Mounting and securing of electrical panels for long distance traveling
- Transport and rigging of abnormal loads
- Coded welders
- Certified workforce
- Any corrosion protection to client specification

Products and services



E-Houses



Power modules



MCC substations



Skids



Walkways, platforms, handrails and staircases



Roof structures and canopies



High-end steelwork



Generator enclosures and packaging



Battery Energy Storage Systems (BESS)



Flat pack substations / Data halls

E-House Specialisation

Solve is a category leader in developing E-Houses tailored to specific company and industry needs. Our E-Houses are meticulously crafted, vigorously tested, and delivered as fully integrated solutions designed to address each customer's unique challenge. Each E-House is assembled from three major components: platform, walls, and roof. All components are CNC-laser cut, bent, sandblasted, and painted before precision assembly. The E-Houses are constructed using bolting, riveting, and structural adhesives, ensuring a strong, durable, no-welding assembly.



Containerised substations

Design, quality and efficiency.

Solve has manufactured numerous containerised substations that are in operation globally. 20 and 40 foot High Cube container configurations are commonly used to provide clients with the optimal solution. Support legs, walkways, handrails, roof covers and stairs are engineered to ease installation on site. Any corrosion protection system can be applied to the various components.



The key advantages of E-Houses

1 Manufacturing takes place in a dedicated quality-controlled environment

2 Factory Acceptance Testing (FAT) takes place at our factory before shipping

3 Reduce project execution lead times

4 Fast and efficient deployment on site

5 Limited resources required for deployment

6 Reduced project cost

7 Plug & play installation methodology

8 Reduces plant down-time and speeds up installation

9 Minimised site-work

10 Risk mitigation through controlled manufacturing and testing



E-House components and ancillaries

1 Heating, Ventilation and Air Conditioning (HVAC)

2 Fire suppression & detection systems

3 Small power (Wall plugs, isolators, internal and external lights, CCTV and access control)

4 Pre-installed secondary roof

5 Support legs

6 Handrails, walkways, stairs and landings



Typical E-House equipment

1 Variable speed drives (VSD's)

2 Motor control systems (MCC)

3 Switchgear

4 Generators

5 Transformers

6 Communication and integration

7 PLC's

8 Energy stations

9 Battery back-up systems

10 Battery tripping unit



Detail design and engineering

1 E-Houses are designed and manufactured as per the specific client requirements.

2 E-House dimensions (L,W,H) are flexible to accommodate client's needs based on the application and internal equipment.

3 The E-House platform is designed to withstand all point and distributed loads.

4 Bottom or top entry cable provision and locations are determined according to the electrical equipment specification and layout.

5 E-House designs are executed with 40 years of mechanical and structural design experience.

6 E-House component and assemblies, lifting lugs, support legs and stairs are signed off by a Pr. Eng.

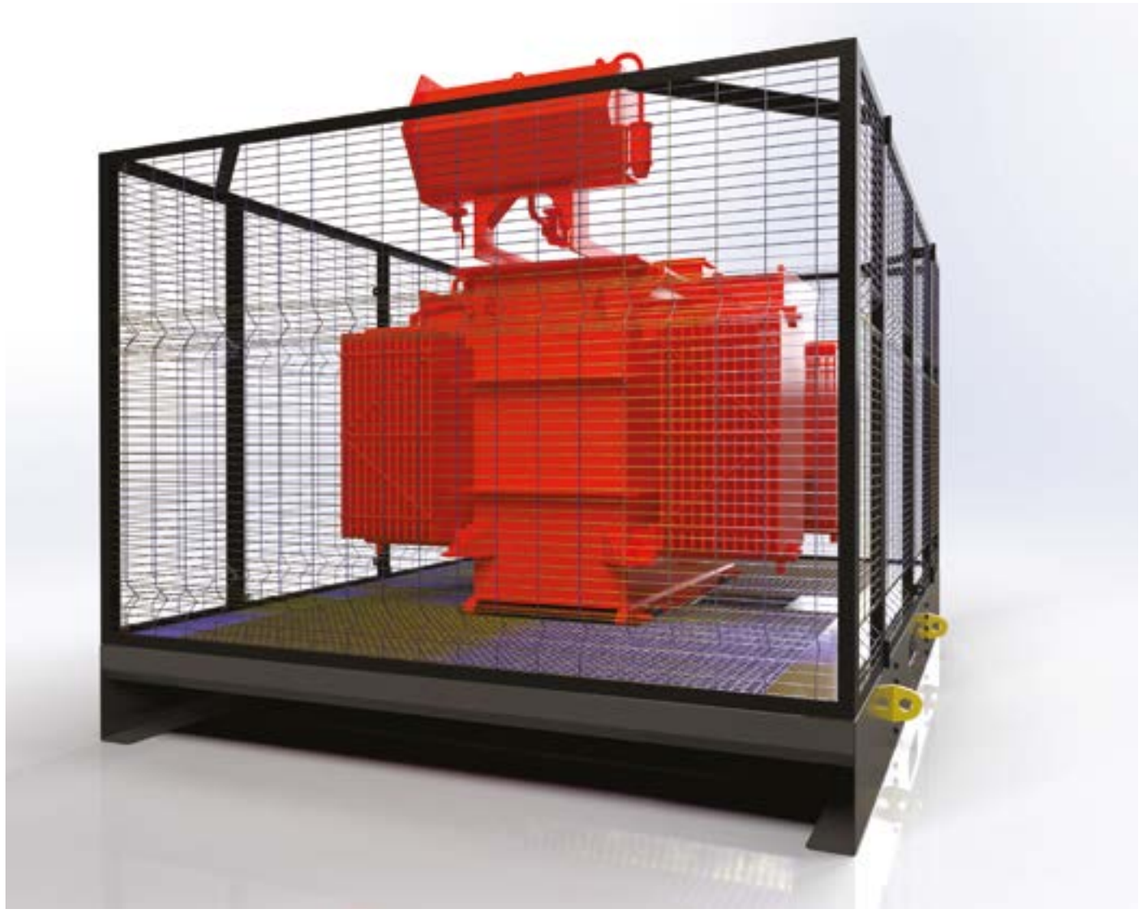
7 E-House component and assemblies designs are verified by Finite Element Analysis (FEA) reports.

8 E-Houses are designed with an allowable defection of 1 mm over 1000 mm.

9 Excellent accuracy is achieved with CNC cutting and bending.

10 Zero welding on Solve E-Houses.

11 E-Houses are supplied with detailed design drawing packs for approval before manufacturing starts.





Quality Assurance

1 Approved QCP by Solve and client

2 Detail design drawings

3 Finite Element Analysis (FEA) reports

4 Repair procedure

5 **Welding records**

- **5.1** WPS and PQR
- **5.2** Welder Qualifications

6 **Non-Destructive testing**

- **6.1** DT Procedures
- **6.2** NDT reports
- **6.3** Technician qualifications

7 Records of inspections

8 Material inspection certificates

9 Water leak tests

10 Pressure testing

11 **Corrosion protection**

11.1 Sand blasting and primer report

- **a.** QCP
- **b.** Dust test
- **c.** Blast profile reading
- **d.** Primer reading
- **e.** Intermediate reading
- **f.** Second intermediate reading
- **g.** Final reading
- **h.** Weather report
- **i.** Paint batch certification
- **j.** Calibration certification
- **k.** Data Sheets
- **l.** Paint instruction
- **m.** Final release note

11.2 Paint

- **a.** Paint batch certification
- **b.** Thinners batch certification
- **c.** Film Thickness report
- **d.** Temperature readings
- **e.** Humidity readings

11.3 Galvanising report and certification



12 Change request

13 Non-Conformance report (NCR)

14 Electrical Certificate of Compliance

15 Fire detection and suppression system data book and certification

16 Supplier queries and communication

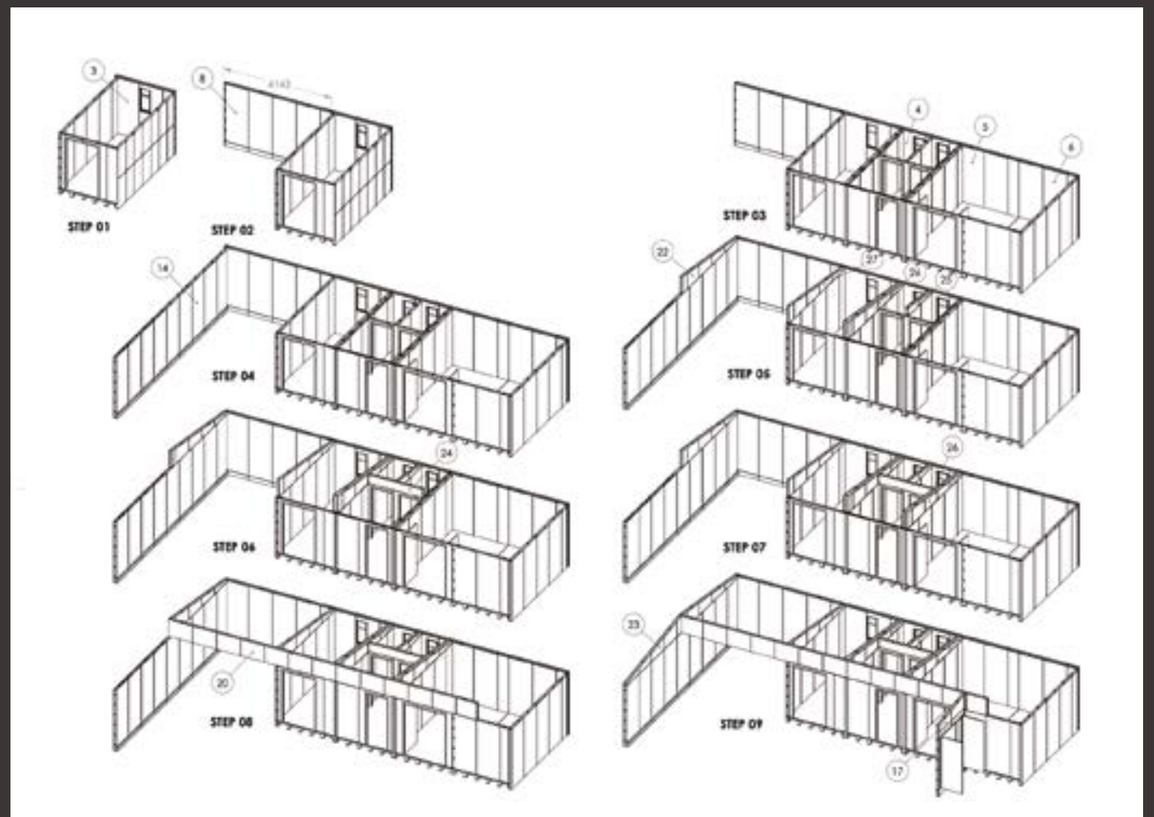
17 Punch list

18 Packaging and delivery notes

19 Project hand over

Flat-pack E-House / Data Hall

Solve's Flat-Pack E-House construction methodology offers unparalleled flexibility in meeting dimensional requirements. With previous experience delivering a flat-pack solution totaling 800 m² in a single project, Solve can accommodate almost any specification. The combination of detailed engineering and precision manufacturing allows components to be flat-packed into ISO 40-foot High Cube containers, ready to be shipped anywhere in the world for on-site assembly as high-quality substations or data halls.









Skids

Solve offers fully engineered skids, designed for seamless integration and rapid deployment. Each skid is meticulously crafted, ensuring maximum strength and durability.

Our skids are delivered as fully assembled units, ready to be lifted by crane, transported on-site, and integrated directly into the customer's system.

Solve's skids are the ideal solution for mobile, secure, and fully integrated transformer deployment, tailored to meet each customer's unique operational requirements.









Fully welded laser-cut skid with containerised MCC, RMU, and transformer. Designed for crane lifting, easy on-site manoeuvring, and shipment as a fully assembled unit. MCC skids prepared for delivery to Kenmare Mine, Mozambique.



Fully welded beam skid with welded wire mesh barrier cage, floodlights, and transformer bund for 24/7 operation. Crane-liftable, easy to manoeuvre, and shipped fully assembled in a 12m HQ container. Final mass: 12,500 kg.



Heavy-duty 16m × 5m galvanised steel skid platform with banded grating and C5M marine-grade coating for corrosion resistance. Includes a 4,000 L polyurethane-lined integrated sump for secure high-voltage infrastructure containment.



Fully engineered 4m × 3m laser-cut transformer bund with 2,000 L oil capacity, galvanised grating, and welded wire mesh barrier fencing. Weighing 9,500 kg with C3 corrosion protection, it is mobile and ready for shipment to MPACT for integration and commissioning.

Solve Power Solutions

Solve provides professional engineering services across the full power-solution lifecycle — from feasibility and planning through to integration, commissioning and ongoing optimisation.

Our solutions are tailored to the specific requirements of each customer and include:

Engineering & optimisation

- Feasibility studies
- Solution planning, integration and operations
- Energy efficiency and optimisation
- System philosophy, redundancy and reliability
- Earth mat and protection studies
- Detailed control and quality plans

Power solutions & integration

- Battery Energy Storage Systems (BESS)
- PV integration
- Gas and diesel generators
- Medium-voltage switchgear
- Transformer solutions
- Neutral earthing resistors
- Substation automation
- Turnkey solutions

Customised & mobile solutions

- Customised container and E-House solutions
- Customised power skid solutions
- Mobile solutions and mobile substations
- Remote monitoring and diagnostics

Project delivery

- Project management
- Site installation and commissioning
- Complete system integration and commissioning
- Site Acceptance Testing (SAT)

Turnkey project solutions

- In-house engineering and design
- Solution manufacturing, packaging and testing
- Transport and shipping
- On-site installation and commissioning
- Operations and maintenance support



Power system operations & maintenance support

Solve provides end-to-end power solutions, from component sales to complex installations, upgrades and consulting. Whether operating a data centre, industrial plant or off-grid facility, customers can rely on tailored products and services to meet their power requirements with precision and expertise.

Engineering services

- Mechanical and electrical installations
- Refurbishments
- Mechanical and electrical upgrades
- On-site repairs and troubleshooting
- Custom packaging for generator systems

Specialised engineering

- Sound attenuation design and implementation
- Airflow analysis and optimisation
- Dual-fuel gas conversions

Monitoring & control

- Real-time and remote generator plant monitoring
- Electrical upgrades, including firmware, PLCs and MCCs

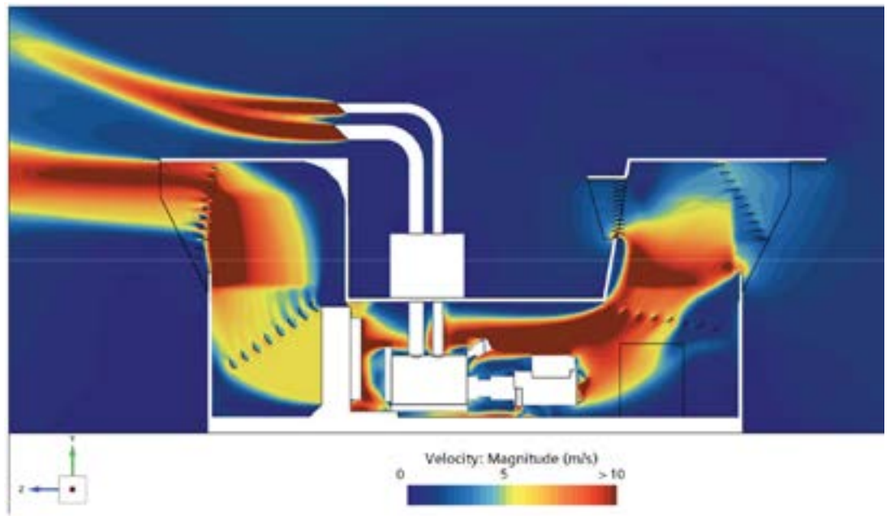
Consultation & diagnostics

- On-site problem-solving
- Acoustic and vibration analysis
- Airflow engineering and design

Custom integration

- Client-specific packaging, including data centre specifications, general specifications and bespoke solutions





Projects

01

Skid mounted motor control centre (MCC) and transformer

This skid-mounted MCC assembly was engineered and manufactured for Iritron, with Hatch as consulting engineers and Kenmare as the end user. Solve was responsible for the complete engineering and fabrication of the skid, access structures, and MCC container (excluding the MCC panels). All components were built to Kenmare's specifications. During the design phase, the focus was on minimizing site installation time and ensuring ease of mobility. The lifting lugs were designed for dual functionality — enabling the entire unit to be lifted by crane or used as tow lugs. Galvanised bollards were installed to allow bulldozers to manoeuvre the skid on site. All components were pre-manufactured, fitted, and tested prior to shipment, ensuring a smooth and efficient installation process.







02

E-House, HVAC integration

Solve designed and manufactured this unique module with a 100 KW HVAC unit and 7 x 4.5 metre E-House, all integrated and fitted on a rigid base. The E-House is equipped with a Siemens Perfect Harmony GH 180 Variable Speed Drive (VSD). In addition, the E-House, walkways, handrails and stairs are all protected with a C5 corrosion protection system.





03

Generator Enclosure

Solve was approached by PPE Tech to design and manufacture a fully sound-attenuated Generator Enclosure for RDMC in Pakistan. The enclosure features a complete polyurethane-lined interior, achieving an impressive noise rating of 75 dB at 7 metres. Our in-house design included critical details such as sand traps, a filter wall, and exit louvres, all engineered to client specifications. A removable roof section allows easy access for maintenance. Comprehensive sound analysis and airflow calculations were conducted to ensure performance compliance, including pressure drop testing over the filter wall.





04

Battery Storage Systems (BESS)

With the ongoing energy crises in South Africa along with the global drive towards cleaner energy, Battery Energy Storage Systems are becoming increasingly popular.

BESS is the link between renewable power plants like wind and solar. During nighttime and low wind conditions, energy stored in the BESS can be utilised for various applications. Solve has the capability to manufacture the BESS enclosures at large sale and short turnaround times.

Solve manufactured a variety of 6 and 12 metre custom-built battery energy storage systems for Blue Nova. These BESS varied between 500 KVA and 1 MW storage capacity.



05

Modular Sub Station

ControlGear commissioned Solve to design and manufacture a 20m x 4.4m x 4.4m (66-ton) Modular Sub Station constructed from durable 3CR12 stainless steel. The unit is equipped with a ducted HVAC system and finished with a C5 corrosion protection coating for long-term durability. A modular support construction was engineered to facilitate efficient cable installation and management within the factory, allowing the structure to be shipped in separate sub-assembly blocks. The completed sub station was delivered to Anglo American Platinum's Mogalakwena operation in Limpopo.





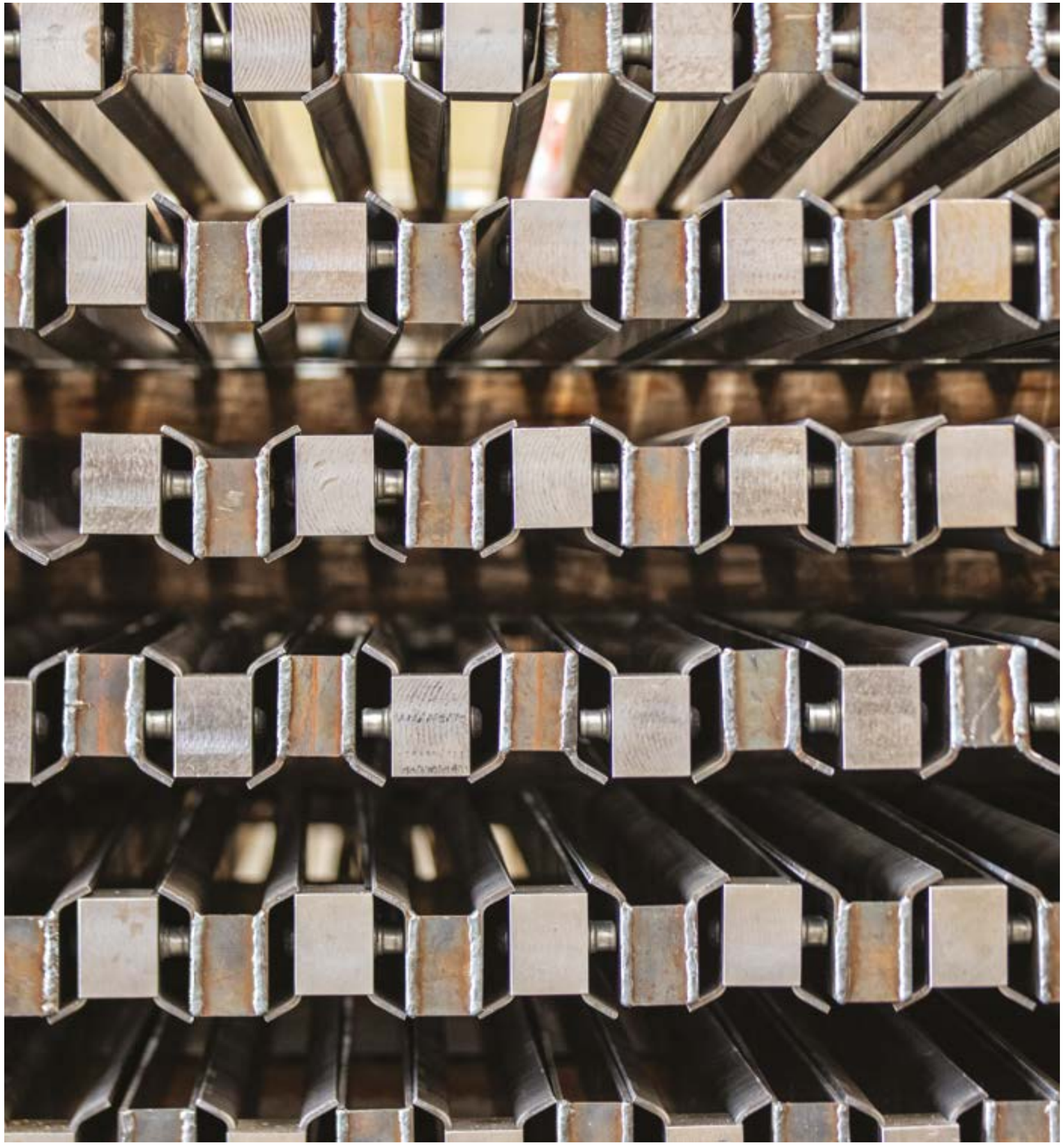
06

ESP Components

Solve also designs and manufactures various Electro Static Precipitator (ESP) components for power plants. With an intricate focus on design and manufacturing processes, Solve guarantees high-quality components with the specified tolerances and accuracy.

Solve ESP Components:

1. Complete rapper bar assembly
2. Complete carrier beam assembly
3. Insulator components
4. Pedestal bearings
5. Bushes and clips
6. New hammers
7. Refurbishment of hammers and bushes
8. ESP hammers
9. Drive shaft
10. Shaft couplers

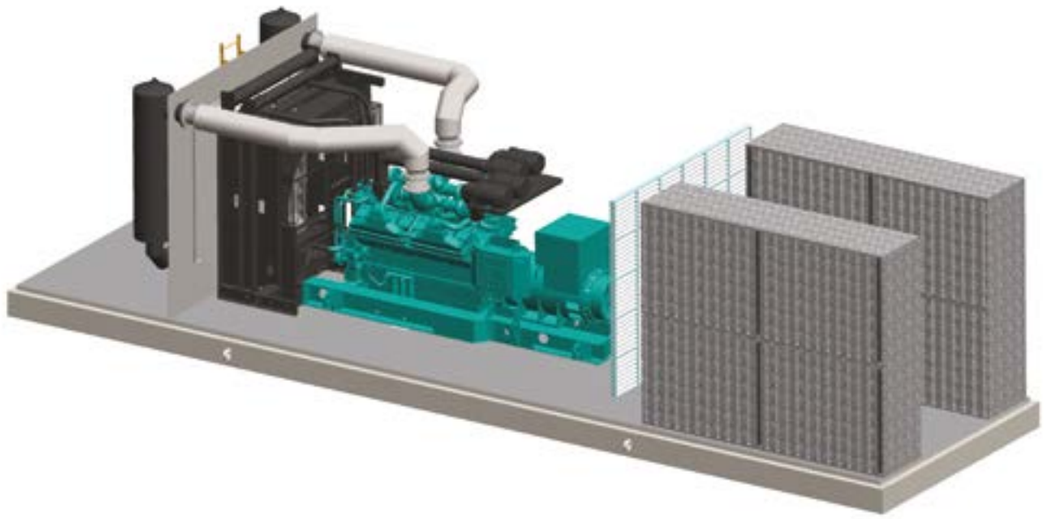


3D modelling & design

3D modelling and detailed design

We are proud to have our own in-house design and drafting office with highly specialised staff, software and design tools to create 3D models for any of our future projects. This gives us the ability to visualise the final product and define the scope of work.

With over 40 years of experience in mechanical and structural engineering, we take on complex projects to serve clients with the best solutions possible.







Driven to find smarter solutions





Global presence. Local execution.

Australia	Chad	Mozambique	South-Africa
Botswana	Djibouti	Namibia	Zambia
Cambodia	Ethiopia	Pakistan	Zimbabwe
Cameroon	Morocco	Rwanda	

Our valued clients & end users

ABB
Africa DataCentres
AMS
AngloAmerican
BARRICK
B&W BABCOCK & WILCOX
CGI
De Beers A DIAMOND IS FOREVER
DEBSWANA
DRA
EHL ENGINEERING GROUP
Eskom
FIRST QUANTUM
HATCH
INNOMOTICS
iritron
KSEA
LESEDI
LVS
PAE
SENET
Schneider Electric
SIEMENS
SINANI ENERGY
TGOOD
TRONOX
XCEED INFRASTRUCTURE TECHNOLOGIES
ZIMPLATS

Let’s solve your challenge.

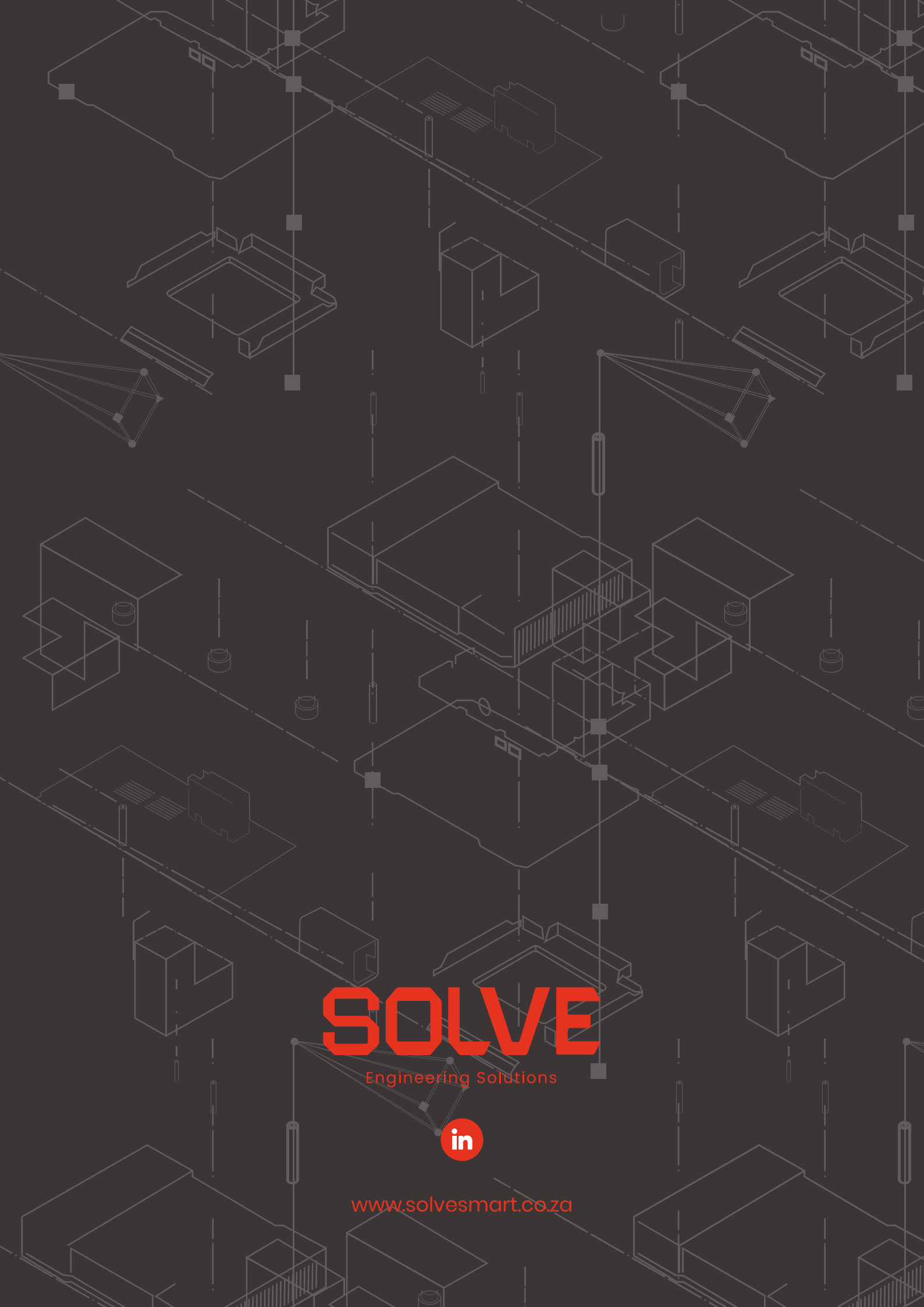
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