

MOBILE SUBSTATION



About Elsewedy Electric Indonesia

Elsewedy Electric Indonesia is a subsidiary of Elsewedy Electric Group, a leading global provider of energy, digital and infrastructure solutions company based in Egypt. With more than 80 years of experience, Elsewedy Electric Group operate in five key business sectors: Wire, Cable & Accessories, Electrical Products, Engineering & Construction, Digital Solutions, and Infrastructure Investments.

80+
**Years of
Experience**

Elsewedy Electric Indonesia is a hub to serve Indonesia, Australia, New Zealand, Malaysia, Vietnam, Philippine and other Southeast Asia and Pacific regions.

Being well-known for our high quality Transformers, Compact Substations, Mobile Substations, and a turnkey solutions provider for transmission and infrastructure projects.

Elsewedy Electric Indonesia provides sustainable solutions for design, manufacturing, construction, installation and commissioning, and servicing Substations.

With more than 30 years of experience, we are committed to provide exceptional solutions and services to our customers and community. Our products and solutions are designed for utmost safety and best in class efficiency. We come with the best European technology, and individually designed for unique applications following all international and national standards such as IEC, IEEE/ANSI, NEMA, S-PLN, BS, AS & NZS, DIN, and ASTM.

Supported by well qualified Engineers, Elsewedy Electric Indonesia offers innovative, reliable and efficient Transformer solutions. Advanced computer systems, design techniques and simulation of the field conditions contribute to rapid product development ensuring enhanced reliability that are critical to Transformers.

Our factory is equipped with first-class manufacturing capabilities fully integrated with internal manufacturing processes with modern machinery. Being the only manufacturer in Indonesia capable of producing Mobile Substation, we offer Mobile Substation up to 120 MVA up to 220kV our factory annual capacity is 10,500 MVA to 500 kV and 400 MVA production sizes.

Factory Annual Capacity
10,500^{MVA} > **400^{MVA}**
500^{kV}
Power Transformer

We have delivered Mobile Substations up to 90MVA/150 kV in ASEAN and Latin America.

We provide comprehensive services in delivering turn-key project with the complete offering as one stop solution providers including :



Design and
engineering



Manufacturing



Project management



Package equipment
supply



Services



Installation,
commissioning
and start up

**ELSEWEDY
ELECTRIC**

Mobile Substation

Mobile substation is fully equipped electrical substation mounted on trailers that used as substitute conventional substation and comply to international electrical standards and road transport regulations.

Comes with a unique features and applications a rapid integration into the grid network. Ease in relocation with mobility features allows it to be used at multiple locations and used for situation such as natural disaster, unforeseen breakdowns, and temporary power supply.

Mobile Substation is equipped with:



Power transformer



Communication system



High voltage equipment such as AIS/GIS, switchgear, DS isolator, etc



Back-up system



Medium voltage equipment



Power cables



Automation systems such as control and protection panel



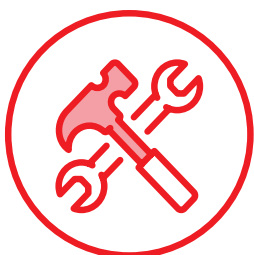
Semi-trailer

Applications

Mobile Substation can be used for:

- Back-up or stand-by unit of Power outage situation such as substation equipment failure or natural disaster, especially for countries prone to natural disaster
- Redundancy for preventive maintenance, expansion or re-configuration
- Unexpected surge in demand such as seasonal demand peak or demand during special events
- Remote locations such as Oil & Gas exploration, mining, irrigation projects, major construction sites
- Temporary source of power supply while substation is under construction

Industrial sector that use mobile substation for their energy source such as:



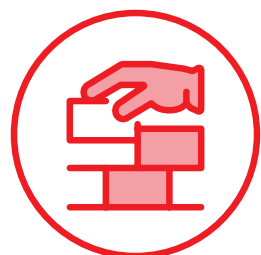
Utility



Oil and gas



Mining



Infrastructure

Advantages

Rapid Integration. Easy To Relocate

The advantages of Mobile Substation are:



Short delivery duration



Rapid installation



No civil work and dedicated permanent land



Improved flexibility in terms of equipment exchangeability



Easily removable and reusable



Substantially reduced on-site testing duration



Limited maintenance requirements



Cost saving

Ecodigital

Environmentally Friendly With Feature Technology

Elsewedy Electric transformers provide Ecofriendly product that conforms to our costumer's requirements according to international standards and deliver with competitive quality.

- Ecofriendly. We design and manufacture our products with biodegradable synthetic Esther oil since 2008 such as:
 - Sky resort near queen town in New Zealand
 - On a heritage art deco substation building that build since 1930's
- Digitalized with Substation Automation System (SAS), that can be monitored anywhere with any devices



Smart Grid Ready



Biodegradable



Low Sound Level



Fire Safety



Product Range & Configuration

Our mobile substation comes with European technology, ranging up to 220kV and with that capacity up 120 MVA and designed to meet unique requirements of individual customer.

“
**BIGGEST MOBILE
SUBSTATION
EVER PRODUCE IS**
132/33^{kV}
90 MVA

We provide mobile transformer with ODAF and High or Low Voltage equipment available based on application requirements.

Our product has single trailer or multi-trailer arrangement that comes with GIS or AIS type technology and also equipped with real-time fault detection and system assessment monitoring and hydraulic or standard steering.

We have three configurations of our mobile substation to accommodate customer needs and requirements:

Primary Side for GIS and AIS type

Secondary Side with two options

Auxiliary



Configuration and Features

Primary Side

PRIMARY SIDE	
GIS TYPE	AIS TYPE
Lightning arrester post type	Lightning arrester
Disconnecting switch with earthing switch incorporated in the GIS	Disconnecting switch with or without earthing switch
Circuit breaker incorporated in GIS	Circuit breaker or combine circuit breaker, Disconnecting switch (Hybrid)
Current Transformer incorporated in GIS or mounted in the GIS bushing	Power fuse
Capacitive voltage transformer post type or incorporated in the GIS	Current Transformer incorporated in the HV bushings of the power transformer or mounted on Circuit Breaker
Local control cubicle for GIS	Capacitive voltage transformer

Secondary Side

SECONDARY SIDE	
OPTION 1	OPTION II
Outdoor switchgear	Indoor switchgear containerize trailer
Control, Protection, SAS, Batteries, Charges	Control, Protection, SAS, Batteries, Charges
Communication equipment housed in weatherproof outdoor cabinet	Communication equipment housed in weatherproof outdoor cabinet
Generator set for initial auxiliary supply	Cable reel to store MV cable during transportation
	Generator set for initial auxiliary supply

Auxiliary

Control, Protection, and Measurement - Main Protection for transformer (Differential) - Back up protection - O/C and E/F protection for feeder - Main protection for line (Distance of Differential)	Computerized substation control SAS	Telecommunication equipment
	Grounding Transformer and/or NGR	Battery and Charger, AC/DC Distribution panel

Design Aspects

Our experience and expertise in high complexity and tailored design that comply to seismic and road regulations and other requirements enable us to work excellently.

We provide design, manufacture, delivery, installation, commissioning, and servicing with exceptional expertise and service to our customers, and communities, safely, and efficiently.

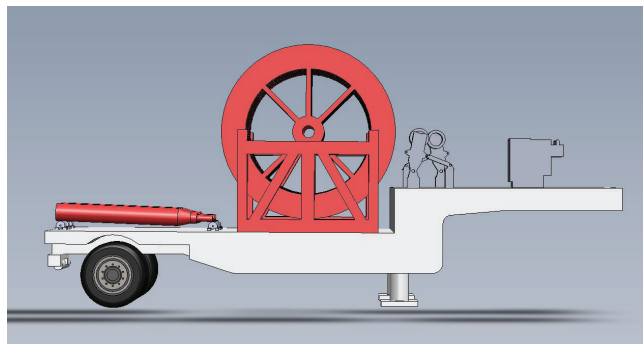
Our products are equipped with the best European technology used worldwide and individually designed for needs and applications with all international and national standards to IEC, IEEE/ANSI, NEMA, S-PLN, BS, AS & NZS, DIN, and ASTM.

Trailer

Heavy duty trailer with manual and hydraulic support system Provides ease in leveling and parking.

Special rear wheel steering arrangement to provide maneuverability.

Anti-theft grounding design to prevent loss.



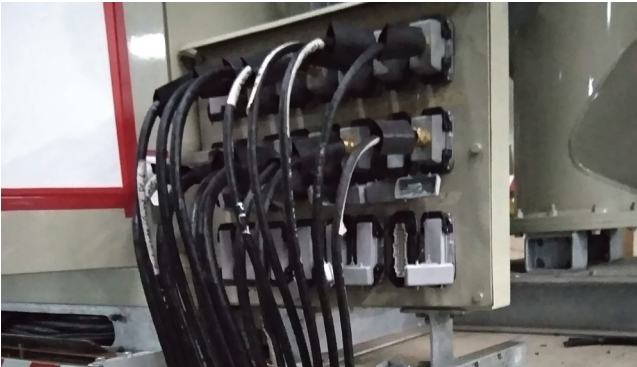
Special design for transportation

During transportation mobility, we ensure the safety by bracing High Voltage and Medium Voltage equipment's, protective metallic and wooden cover on all bushings and reduced SF6 pressures if applicable.



HV, LV and Control Cable Connection

High voltage, low voltage and power cables between trailers use plug-in connection that is easy to install or dismantle to speed up on-site preparation of mobile substation.



Connection

150/20 kV 30 MVA mobile substation, Indonesia

Length (mm)	Witdh (mm)	Height (mm)	Witdh (tons)
12,000	4,200	2,700	20
12,000	4,500	2,700	80
12,000	4,200	2,700	20



Storage and Handling

We provide operating manual for the storage and inspection guidelines. It is preferable to store the mobile substation in a strategic location to allow rapid intervention and on a stable ground to maintain substation weight.



Testing

We do our in-house testing such as Routine Test and Special Test based on customer needs and requirements.

Routine Test



Measurement of winding resistance



Measurement of voltage ratio and testing of voltage vector relationship



Measurement of impedance voltage,



Short circuit impedance and load loss



Measurement of no-load loss and current



Dielectric tests



Separate source voltage withstand test



Induced overvoltage withstand test

- Insulation Resistance Test
- Burden Test
- Function Test
- Stability Test

Special Test



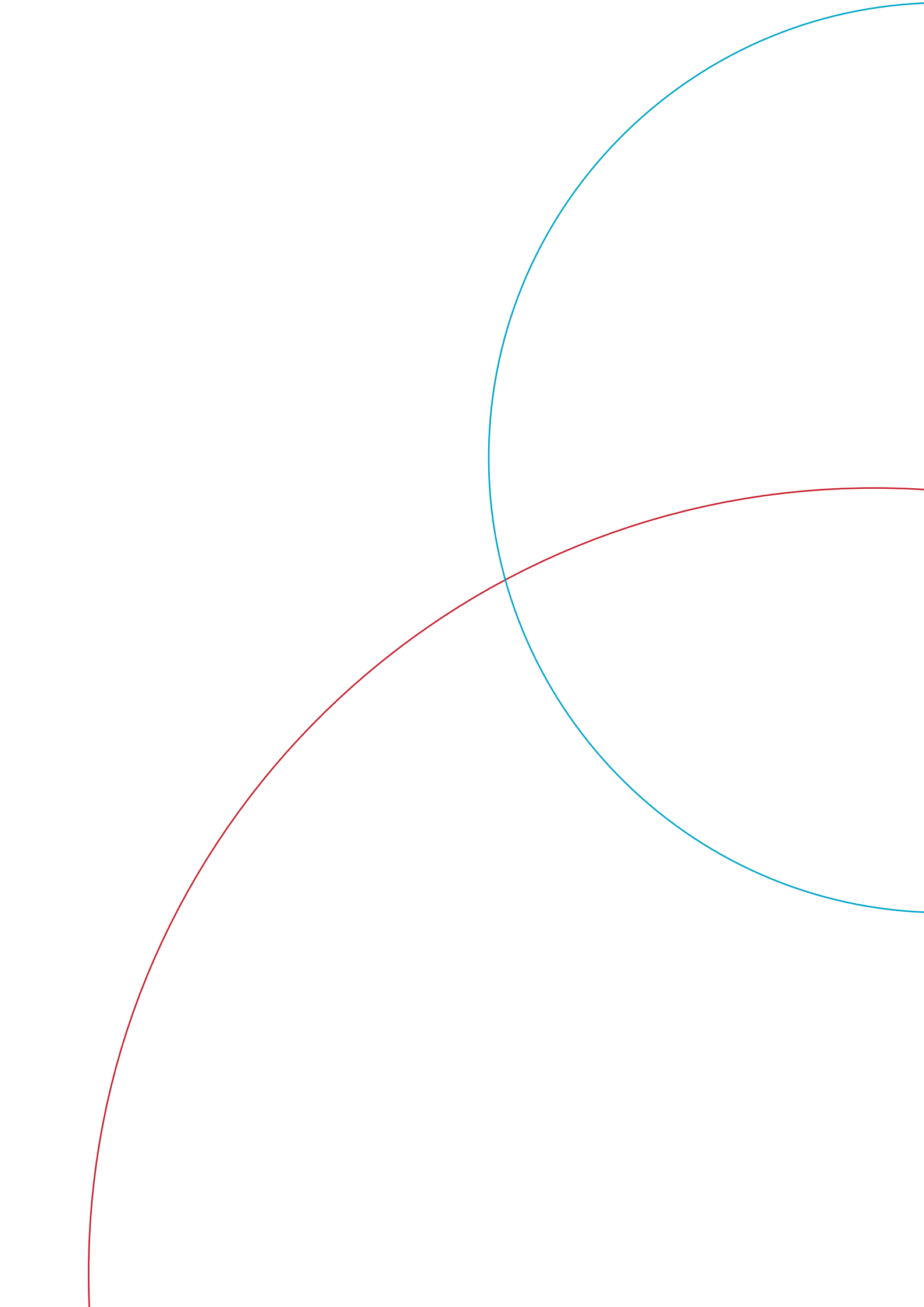
Measurement of sound level



Measurement of harmonics in the no-load current



Measurement of zero-sequence impedance



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