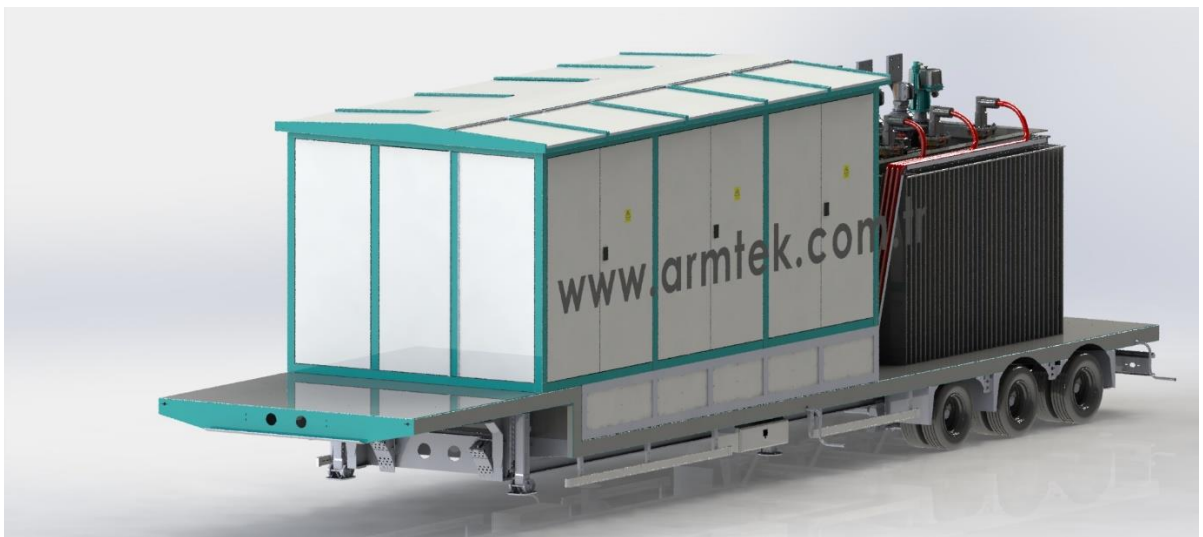

MOBILE TRANSFORMER SUBSTATION



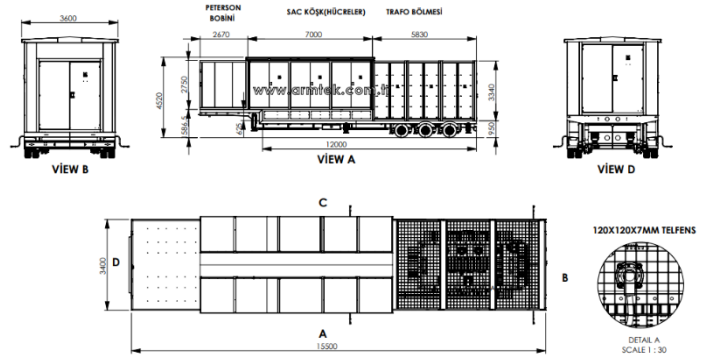
Bussines Partner



General Information

Mobile substations and distribution centers offer fast and flexible solutions to the user. In cases where the installed power of the fixed station is not enough, Construction of fixed station, Maintenance and repair of fixed station, Insufficiency of the installed power of the fixed station, thanks to the short manufacturing times and easy transportation.

Sample Project Details



Sample Project Design

Mobile stations are quickly deployed to the required area and can be easily integrated into the system.

Since the construction of fixed stations is long and costly, they are also used as fixed centers.



Armtek's experienced engineers analyze the customer's actual needs and field conditions to design the most suitable mobile system for them.

Areas of Use

- Temporary Power Requests
- Emergency Power Requests
- Additional Power Requirements
- Mining Applications
- Military Camps
- Industrial Plants

Mobile Station Types and Technical Details

Maximum Mobility

Mobile stations are designed with maximum mobility and operational safety in mind. They are manufactured in size and suspension structure compatible with international road / rail / sea regulations and also with the country of use.

ARMT series Mobile Substations are specially designed and manufactured according to the application and/or customer needs. Mobile substations are produced in 4 different designs according to mobility.

- On trailers
- Platforms / skid type
- Wagon type
- Vessel type

ARMT series Mobile Substations are classified into 3 main types based on voltage levels by design and production in accordance with IEC standards.

Technical Values		ARMT-1	ARMT-2	ARMT-3
Rated Primary Voltage	kV	3.6 – 40.5	3.6 – 40.5	52 – 245
Rated Secondary Voltage	kV	0.23 – 0.6	1 - 24	3.6 – 40.5
Rated Short Circuit Current	kA	1 – 10	16 – 50	25 – 50
Rated Power	MVA	0.5 – 4	1 – 31.5	1 - 45
Power Consumption (max)	kVA	10	15	15
	Hz		50/60	

ARMT-1 Series

ARMT-1 Series MV/LV Mobile Substations

ARMT-1 Series MV/LV Mobile Substations are used for power generation or distribution in LV.

ARMT-1 Series Mobile Substations are designed and manufactured with a power up to 4 MVA, primary voltage up to 40.5 kV and secondary voltage up to 0.69 kV. There are 3 different solutions for primary MV distribution cells;

- Air Insulated Metal Enclosed Metal Chamber Switchgears
- Air Insulated Metal Enclosed Switchgears
- Gas Insulated Switchgears Secondary Low Voltage Distribution panels are designed and manufactured as standard or drawer type up to 6000 A according to customer requirements.

Mobile Station Types and Technical Details

ARMT-2 Series

ARMT-2 Series MV/MV Mobile Substations

ARMT-2 type mobile stations are designed for use in medium voltage distribution networks.

They are manufactured in two different types according to the placement of the transformer. MV / MV Mobile substations can be used in voltage raising or lowering facilities.

The primary and secondary voltage of MV/MV mobile stations is between 1-40.5 kV and the rated power is up to 31.5 MVA. There are 3 different solutions for MV cells in primary and secondary MV distribution busbar;

ARMT-3 Series

ARMT-3 Series MV/MV Mobile Substations

They are manufactured for use in High Voltage Transmission lines and Medium Voltage Distribution networks.

In ARMT-3 series HV/MV Mobile Substations, primary voltage can be selected between 52kV-245 kV, secondary voltage between 1-52 kV and rated power up to 60 MVA. Two different solutions are offered in Primary High Voltage switching elements;

- Gas insulated system
- Air insulated system

There are 3 different solutions for secondary MV distribution cells;

- Air Insulated Metal Enclosed Metal Chamber Switchgears
- Air Insulated Metal Enclosed Switchgears
- Gas Insulated Switchgears

Mobile Station Types and Technical Details

Equipment and Accessories	ARMT-1	ARMT-2	ARMT-3
Power Transformer	-	✓	✓
Distribution Transformer	✓	-	-
Auxiliary Supply Transformer	-	0	0
Generator	0	0	0
Grounding Transformer	0	0	0
Neutral Grounding Resistance	0	0	0
Neutral Grounding Reactor	0	0	0
High Voltage Switching Element	-	-	✓
Medium Voltage Switchgears	✓	✓	✓
Low Voltage switchboards	✓	-	-
Voltage Transformer	✓	✓	✓
Current Transformer	✓	✓	✓
Capacitor Bank	0	0	0
AC Auxiliary Supply Board	-	✓	✓
DC Auxiliary Supply Board	✓	✓	✓
Battery and Rectifier Group	✓	✓	✓
Protection and Control Panel	✓	✓	✓
Sheet Metal Kiosk	✓	✓	✓
Trailer	✓	✓	✓
Skid	0	0	0
Wagon	0	0	0
Cables	✓	✓	✓
Cable Headers	✓	✓	✓
Cable Reel	0	0	✓
Phase Sequence Controller	0	0	0
Gantry	0	0	0
Scada and Communication system	0	0	0
Air-Conditioner	0	0	0
Lighting	✓	✓	✓
Fire Detection and Extinguishing System	0	0	0
Safety Equipment	0	✓	✓
Insulated Mat	0	0	0
Operation Equipment	✓	✓	✓
Maintenance Equipment	0	✓	✓
Spare Parts	0	0	0
Documentations	✓	✓	✓

Mobile Station Types and Technical Details

Transformers

Power Transformers

In ARMT-2 and ARMT-3 type Mobile Substations, power transformers with a maximum power of 60 MVA at the voltage level suitable for the project are used.

Power Transformers are specially designed and manufactured for mobile applications with dimensions and weight in accordance with international transportation rules to ensure maximum mobility.



Power transformers can be manufactured with different cooling systems such as ONAN, ONAF, OFAF, OFWF and different connection groups according to the system. Tap changing is usually done with OLTC (on-load tap changer).

Dry Type Power Transformers can be used in Mobile Substations according to voltage and power requirements.

Distribution Transformers

In ARMT-1 type Mobile Substations, distribution transformers are used at the voltage level suitable for the project and with a maximum power of 4MVA.

Distribution transformers are designed and manufactured in special sizes and weights for mobile applications, as oil filled and cast resin type. One of the most important issues in mobile applications is the noise level of transformers. In addition to the noise level of the transformer during routine tests in the factory, measurement of winding resistances, measurement of voltage conversion ratio and control of phase difference, measurement of short circuit impedance and loss at load, measurement of no-load loss and current, temperature rise test, control of core and body insulation, insulation of auxiliary circuits, applied voltage test, induced voltage withstand test tests and other routine tests are also applied as standard.



Mobile Station Types and Technical Details

Switching Equipment

High Voltage Switching Equipment

Depending on the structure of the High Voltage system, 1-pole or 3-pole SF6 gas insulated circuit breakers are used for switching under load and under fault. The height of the circuit breakers can be adjusted thanks to the platform on which they are mounted, providing ease of use.

Disconnectors are one of the main elements of the primary equipment used at high voltage, together with the earthing disconnector for isolation of the substation from the grid without load and also for maintenance and repair of the circuit breaker. The operating mechanisms can be manual or motorized according to demand.



Medium Voltage Switchgears

Medium Voltage Switchgears are switching and control equipment manufactured in accordance with IEC 62271-200 standard and the following 2 product groups can be used according to the project;

- ARMC Series Air Insulated Metal Enclosed Metal Compartment Switchgears 40.5 kV, 4000 A, up to 40 kA AFLR, PM, LSC 2B

- ARME Series Air Insulated Metal Enclosed Modular Switchgears 36 kV, 1250 A, up to 25 kA AFL, PI, LSC 2A



Mobile Station Types and Technical Details

Sheet Metal Kiosk

Sheet metal kiosks are manufactured based on the customer request in various sizes and specifications according to the project.



Trailer

The trailers used in Mobile Substations are designed with axles that will automatically adapt to the road surface in bad road conditions, suitable for heavy road transportation on general roads, main roads and difficult, irregular roads. The steel frame, which is formed from steel profiles suitable for the load to be transported, is produced with high corrosion resistance with special painting applications.



Trailers are equipped with mechanical or hydraulic outriggers and double-speed landing jacks for the separation of the tow wagon and long-term parking of the trailer. In addition, all outriggers and jacks have reinforced steel bottom plates. If required in the specifications, independent hydraulic legs and automatic balancing system can be used to fix the Mobile Substation to the ground. Trailers are selected according to the weight of the SMS series Mobile Substation and the area of use, with tire and axle selection and ABS braking system at maximum safety level. Rotary axle system can also be used according to the number of axles. Gooseneck height and length, axle pin distances, gooseneck turning angle are designed for every type and brand of tractor. Mobile Trailers are equipped with lighting, flashers, signalization and warning signs determined by international road standards.

Trailers are designed for a maximum speed of 60 km/h unless otherwise specified and have bumpers to be used for towing or pushing when necessary. Each trailer is equipped with 2 spare tires with rims as spare. There are standard cabins suitable for tool kits on the trailer.