

ProAct™

PRODUCT DESCRIPTION

The MMO/Ti flexible anode is designed for impressed-current cathodic protection systems used on buried pipelines, storage tanks, and other underground metallic structures. Manufactured with MMO-coated titanium wire, it provides high current utilization efficiency, low stray-current interference, high current discharge density, and long service life.

The product range includes conventional flexible anodes and EcoFlex flexible anodes. EcoFlex MMO/Ti flexible anodes can be used as an alternative to conventional shallow and deep-well anode groundbeds and are also suitable for stray-current mitigation applications.

PRODUCT FEATURES

Sealing & Connection Design

- Triple-sealed connection using epoxy resin, PC engineering plastic, and heat-shrink tubing with hot-melt adhesive, providing sealing performance equivalent to high-voltage cable standards.

Backfill Filling Technology

- Petroleum coke backfill is filled using patented equipment combined with mobile vibration technology to ensure dense and uniform filling.

Installation & Reliability

- Flexible structure allows on-site cutting to the required length, enabling fast, safe, and convenient installation.



MMO/TI FLEXIBLE ANODE



PRODUCT PERFORMANCE

Current Utilization Efficiency

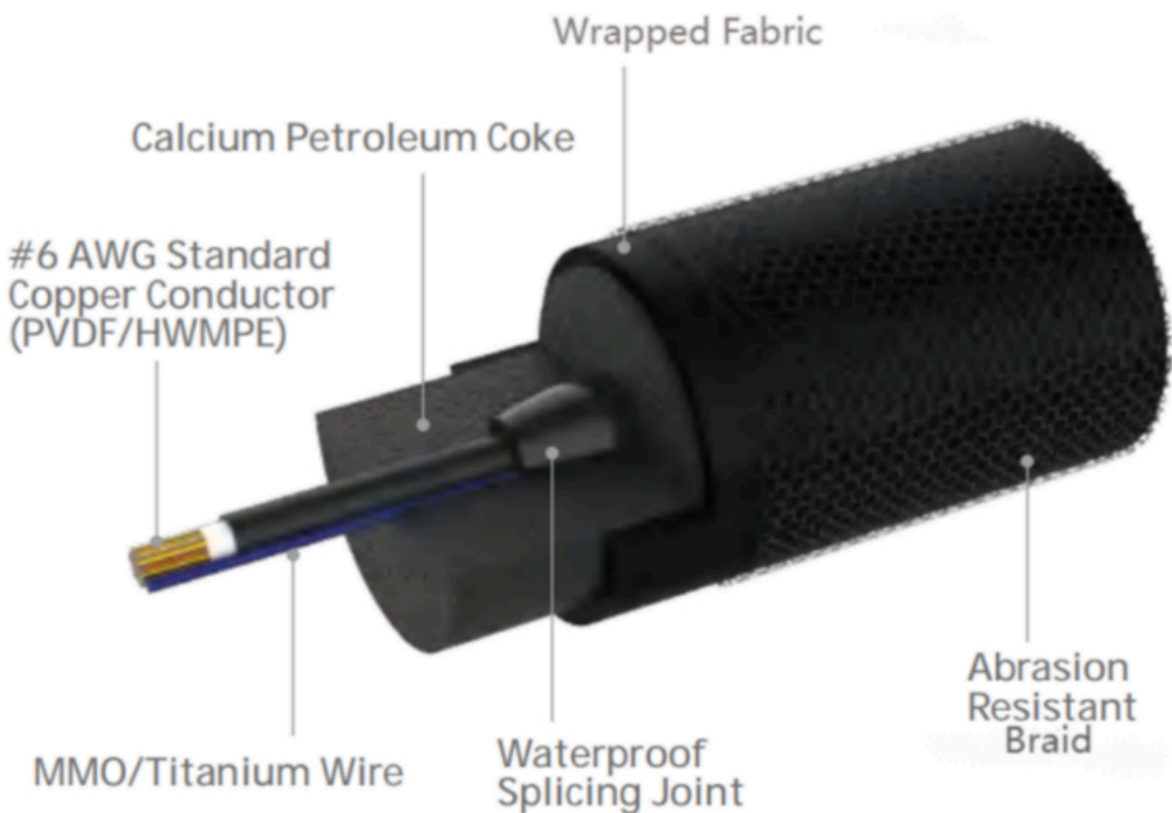
- High current utilization efficiency, with low stray-current interference and strong resistance to current surges.

Current Output Capacity

- High current discharge density supports stable operation under high current output requirements.

Service Life

- Long service life under rated operating conditions.

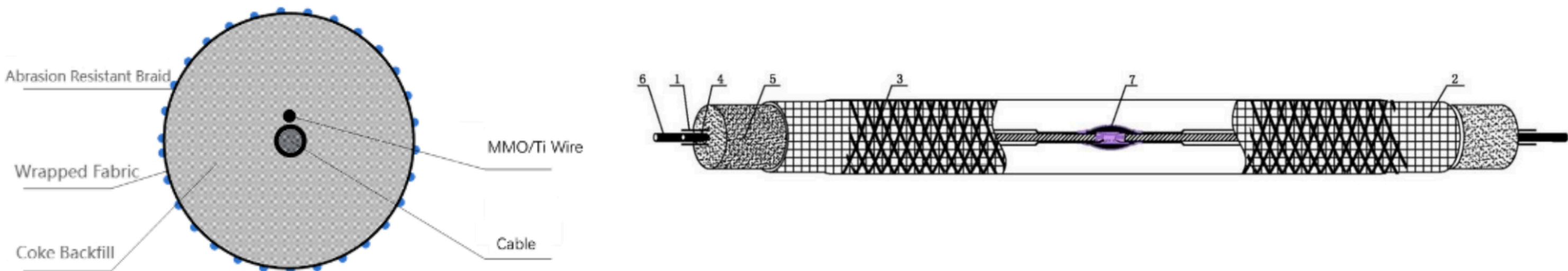


Reference	Title
NACE SP0285-2021	EXTERNAL CORROSION CONTROL OF UNDERGROUND STORAGE TANK SYSTEMS BY CATHODIC PROTECTION
NACE SP0169-2024	CONTROL OF EXTERNAL CORROSION ON UNDERGROUND OR SUBMERGED METALLIC PIPING SYSTEMS
NACE SP0572-2024	DESIGN, INSTALLATION, OPERATION, AND MAINTENANCE OF IMPRESSED CURRENT DEEP ANODE SYSTEMS
EN 12954:2019	GENERAL PRINCIPLES OF CATHODIC PROTECTION OF BURIED OR IMMERSED ONSHORE METALLIC STRUCTURES
EN 13636:2004	CATHODIC PROTECTION OF BURIED METALLIC TANKS AND RELATED PIPING

PRODUCT PARAMETERS

Conventional MMO/Ti Flexible Anode

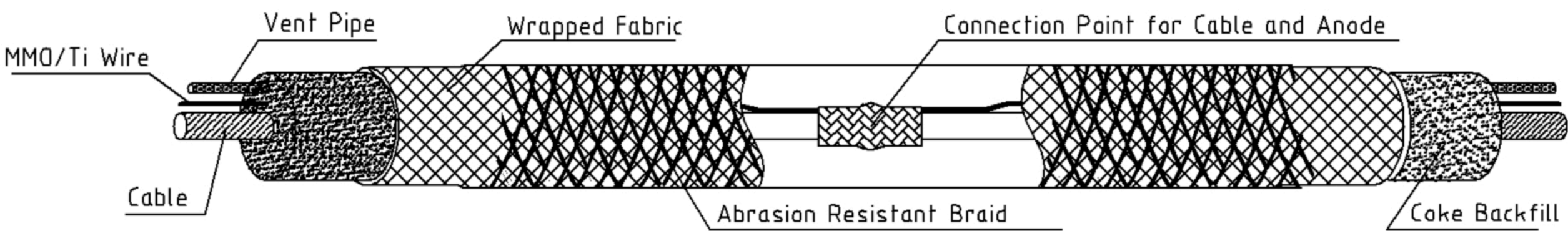
The conventional MMO/Ti flexible anode consists primarily of MMO/Ti anode wire, cable, coke backfill, an acid-resistant fabric layer, and an external mechanically braided protective mesh layer.



1. MMO/Ti Wire;
2. Wrapped Fabric;
3. Abrasion Resistant Braid;
4. Heat Shrink Sleeve;
5. Coke Backfill;
6. Internal Conductive Cable;
7. Connection Point for Cable and Anode;

EcoFlex MMO/Ti Flexible Anode

The EcoFlex MMO/Ti flexible anode consists of MMO/Ti anode wire, cable, a dedicated vent pipe, coke backfill, a wrapped acid-resistant fabric layer, and an external mechanically braided protective mesh layer. It is suitable for use as an alternative to prepackaged shallow-buried anodes and deep-well anodes.



PRODUCT PARAMETERS

Description	Conventional MMO/Ti Flexible Anode (AT-FA)	EcoFlex MMO/Ti Flexible Anode (AT-EcoFlex)
Anode Nominal Outer Diameter	Φ40 mm ± 2 mm	Φ80 mm - Φ100 mm
Anode Weight	1.3 kg/m ~ 1.5 kg/m	6.2 kg/m ~ 6.6 kg/m
MMO/Ti Wire Diameter	1.0 mm ~ 3.0 mm	3.0mm (single or multiple)
Anode Designed Lifespan (Under Rated Operating Current)	≥40 years	≥40 years
Consumption Rate of Anode in Coke Backfill	≤6 mg/A·a	≤6 mg/A·a
MMO Coating Mass Loading	≥8 g/m ²	≥8 g/m ²
Maximum Current Output	0.3 A/m ~ 1 A/m	≥1 A/m
MMO Resistivity	10 ⁻⁵ Ω·cm	10 ⁻⁵ Ω·cm
Contact Resistance of Anode to Cable Gland	≤0.9 mΩ	≤0.9 mΩ
Anode Resistance	≤0.007 Ω/m	≤0.007 Ω/m

MODELS AND SPECIFICATIONS

Model	Cable Copper Core Sectional Area	MMO/Ti Wire Diameter	Applications
AT-FA-1010	10 mm ²	1.0 mm	Tanks; Oil and Gas Stations
AT-FA-1015		1.5 mm	
AT-FA-1020		2.0 mm	
AT-FA-1030		3.0 mm	
AT-FA-1610	16 mm ²	1.0 mm	Tanks; Oil and Gas Stations
AT-FA-1615		1.5 mm	
AT-FA-1620		2.0 mm	
AT-FA-1630		3.0 mm	
AT-EcoFlex-3530	35 mm ²	3.0 mm	Long Distance Pipeline, Oil and Gas Station, Drainage
AT-EcoFlex-3530-2	35 mm ²	2×3.0 mm	Long Distance Pipeline, Oil and Gas Station, Drainage

MMO/TI FLEXIBLE ANODE SPLICE KIT

MMO/Ti Flexible Anode Splice Kits are used for connections between flexible anodes, or between a flexible anode and a cable. The long-term performance of flexible anodes depends on keeping the copper conductors and electrical connections isolated from water. The MMO/Ti Flexible Anode Splice Kit is specially designed to maintain reliable electrical connection and insulation for direct-buried flexible anode connections throughout the anode design life under rated service conditions.



After the anode cables are connected using a cable lug, the connection is covered with heat-shrink tubing and sealed by pouring epoxy into a dedicated mold. With the MMO/Ti Flexible Anode Splice Kit, field installation is simple, safe, and efficient.

Features

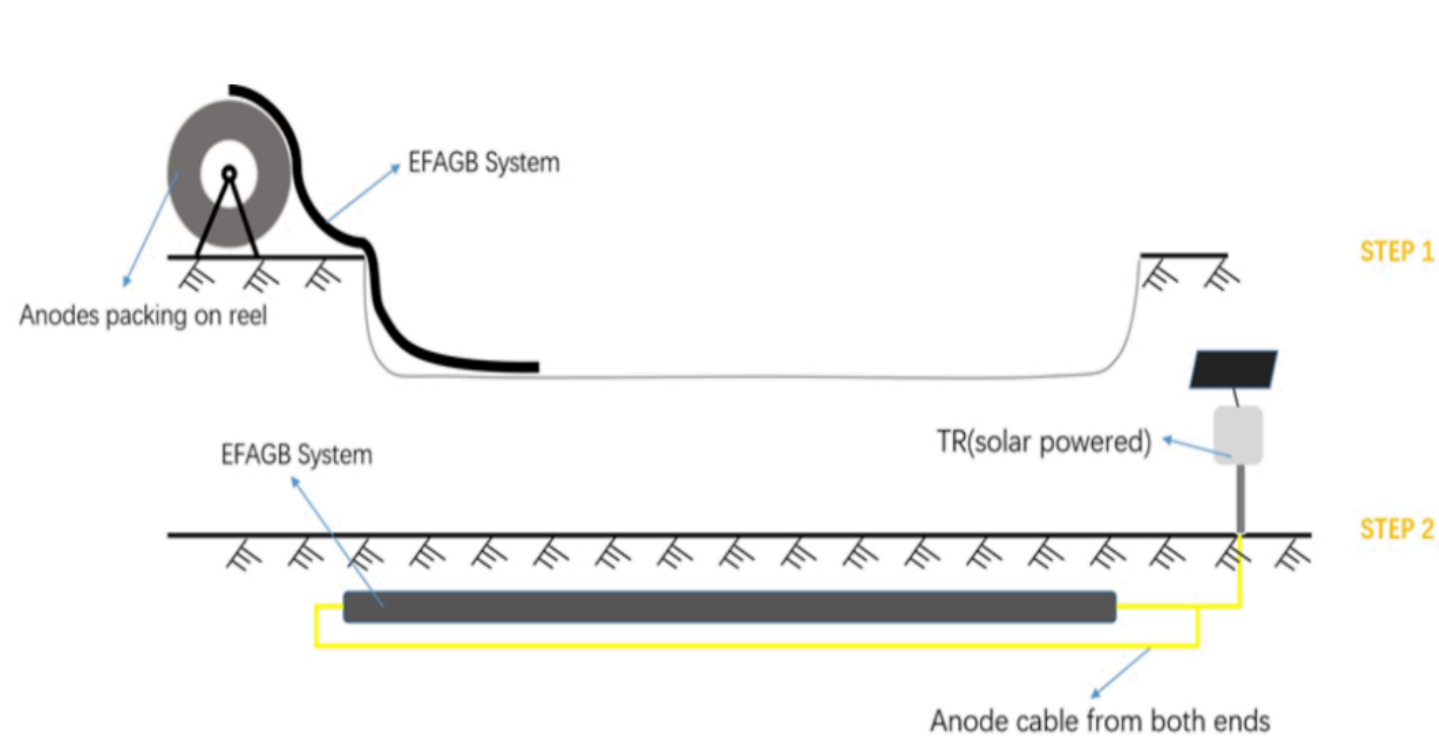
- High insulation performance.
- Electrical connections remain visible for inspection during installation.
- High mechanical strength.
- Easy to install and operate.
- Excellent corrosion resistance.

Straight line	Tee type	Cable size	Copper lug
AT-CP-FCK1	AT-CP-FCK2	6-25 sqmm	Available on request

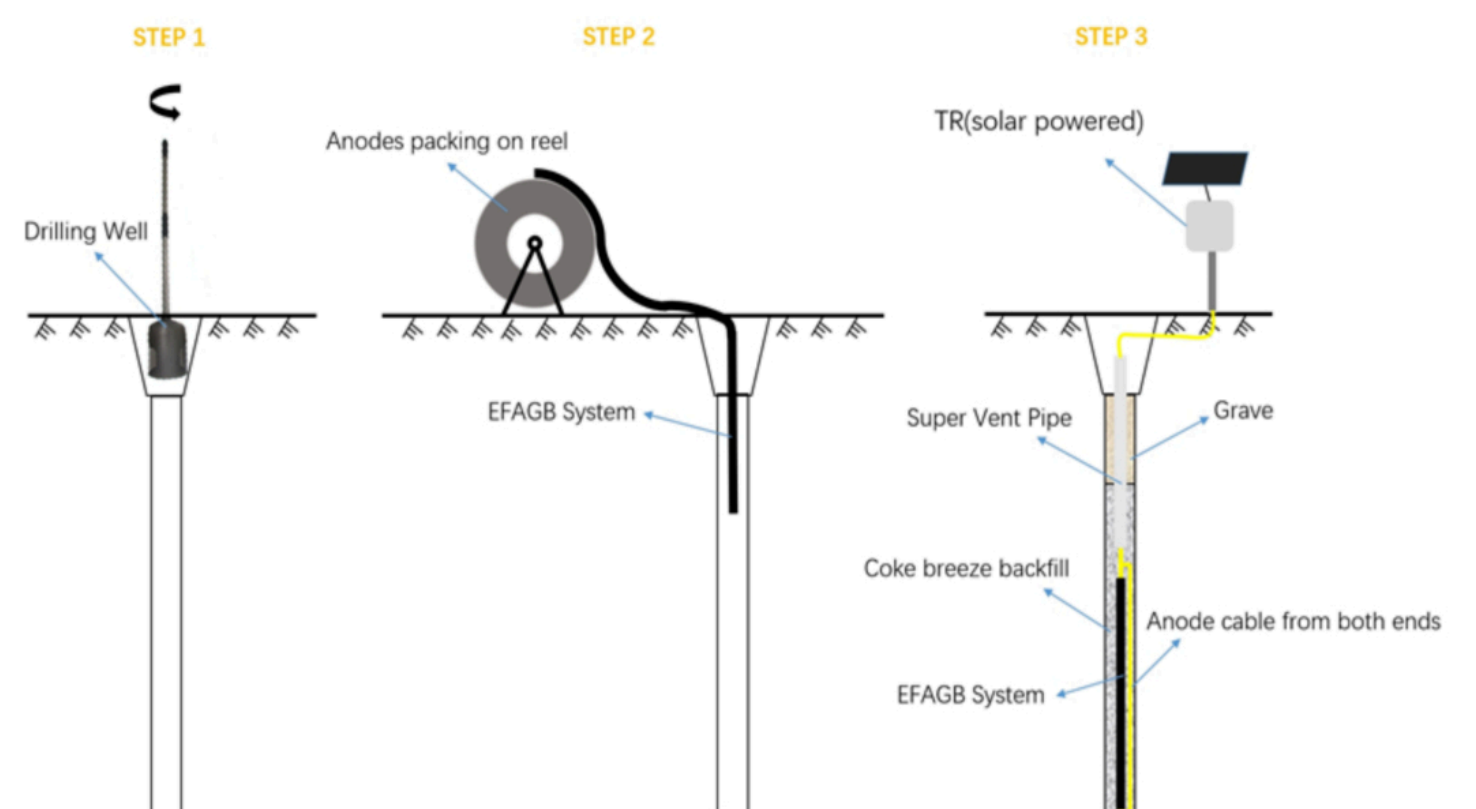
ECOFLEX CATHODIC PROTECTION ANODE GROUND BED SYSTEM (EFAGB)

An anode groundbed is an electrical conductor in an impressed-current cathodic protection system that transfers protection current from the power supply into the soil. In cathodic protection design, anode groundbeds are typically arranged as either horizontal shallow groundbeds or vertical deep-well groundbeds.

Advance Technology has developed the EcoFlex Anode Groundbed System (EFAGB), a flexible anode groundbed solution for both shallow and deep-well applications. The system is designed to improve installation efficiency and reduce construction cost and risk. It is available in two configurations: horizontal shallow groundbed and vertical deep-well groundbed.



Horizontal Shallow Anode Groundbed



Vertical Deep Well Anode Groundbed

Features

- Fully factory-prefabricated for direct on-site installation and consistent quality.
- Simplified installation greatly reduces the workload required for anode groundbed construction.
- Cost-effective design reduces material costs while improving installation efficiency.
- AT sealing system provides reliable sealing between cables and anodes.
- Dual-ended cable connection helps reduce the risk of electrical discontinuity.
- Compact reel packaging allows easy handling, transportation, and direct laying on site.

Model	Designed Current Output (A/m)
AT-EcoFlex-3530	1.0
AT-EcoFlex-3540	1.5
AT-EcoFlex-3530-2	2.0
AT-EcoFlex-3540-2	2.5
AT-EcoFlex-5050-2	3.0
AT-EcoFlex-5030-3	3.5



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