

# Industrial Cable Protection Solutions

## Flexible Conduits



## Authorized Distributor - UL Product Lines

**FIPSYSTEMS®**



*Corrugated Polyamide Flexible  
Conduits, Fittings & Accessories*

**electri-flex**



*Liquid Tight Metallic, Non-Metallic  
PVC Type A, Type B and Shielded  
Metallic Flexible Conduits*

**Ω DBK**

*PTC Space Heaters, Thermostats  
Electronic Hygrostats for Electrical  
Panel Cabinets*

**microsonic**

*Ultrasonic Sensors*

**ERKO®**

*Shear Bolt Mechanical Connectors  
& Terminals for 36KV Cables*



*Chassis Mount Disc & Capillary  
Thermostats*



*Bus Bar Mounting & Pass-Thru Insulators*

**CONNECT  
TO PROTECT**



**FIPSYSTEMS®**

Kabelschutzlösungen für Robotikanwendungen  
Cable protection solutions for robotic applications

## Protect your automation technology with reliable FIPSYSTEMS® cable protection systems

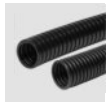
Robot applications require maximum performances from dress-packages and cables. The highly flexible FIPSYSTEMS® products of **FRÄNKISCHE Industrial Pipes** are best suitable for applications in an exceptional mechanical and dynamic environment. Maximize the life of the cable sets by using FIPSYSTEMS® cable protection systems.

### Kabelschutzlösungen für Roboter

#### Cable protection solutions for Robots

#### Wellrohre

##### Corrugated conduits



FIPMOTION® FPPO



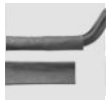
FIPMOTION® FPDR

#### Schutzschläuche

##### Protection Sleeves



FIPJACK® WPET-SC



FIPJACK® KPA-PC



FIPJACK® BPET-CC



#### Zubehör

##### Accessories



FIPLOCK® COPA-S



FIPLOCK® COPA-H



FIPLOCK® BSPA



FIPLOCK® BSPA-BJ



FIPMOTION® PAPA

Your path to longer application life starts with this QR-code:



## Kabelschutzlösungen für kollaborative Roboter (Cobots)

### *Cable protection solutions for Collaborative Robots (Cobots)*

#### Wellrohre *Corrugated conduits*



FIPMOTION® FPDR

#### Zubehör *Accessories*



FIPLOCK® COPA-S



FIPLOCK® COPA-H

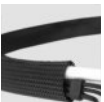


FIPLOCK® BSPA-BJ

#### Schutzschläuche *Protection Sleeves*



FIPJACK® KPA-PC



FIPJACK® BPET-CC



Our electronic CAD catalogue for 3D visualization and 2D drawings of the products can be found here:



## Highest performance for Railway technology

FRÄNKISCHE Industrial Pipes (FIP) offers comprehensive product solutions for efficient and effective mechanical protection of cables and sensitive data lines. FIPSYSTEMS® cable protection products primarily protect the electrical insulation of cables, wires and sensitive data lines, which are laid in conduits or fabric hoses, from a wide variety of external influences. They can furthermore decisively improve the RAMS/LCC characteristics (Reliability – Availability – Maintainability – Safety/Life Cycle Cost) of electrical applications and equipments.



### Roof transitions

Roof transitions of electrical cables are heavily stressed. Cable transitions between railway carriages require products with excellent flexibility, fatigue strength and weather resistance. They have to withstand a wide range of weather conditions and the mechanical stresses that occur. For the individual, installation-engineering requirements, the FIPSYSTEMS® product range also includes a large variety of suitable accessories for optimal fixation and installation.



### Carriage transitions

Lateral carriage transitions are subject to high dynamic stress in terms of dynamic bending and torsion. Suitable conduit supports and protectors ideally and permanently complement the connections with FIPLOCK® cable protection tubes and FIPLOCK® ONE connection fittings. This also applies to the expectable operating temperatures and climatic conditions.

### Couplers

E-couplers are often exposed and frequently subject to high mechanical and weather loads. FIP offers suitable application engineering solutions to meet the high requirements at all times. In this area of application, high system tightness in addition to excellent mechanical strength is crucial.



## Wheel sensors and sanding systems

Wheel sensors, tachymetry, or heating cables to sanding systems are often very exposed to environmental impacts. The systems and electrical connections are partly also exposed to strong vibrations. The focus here is on an appropriate connection strength of the connection fittings, high system tightness and mechanical resistance. FIPSYSTEMS® cable protection pipes and connections meet the highest demands on the connections.



## Passenger areas

Cables and sensitive data lines for modern railway monitoring, telecommunication and information systems in and on the vehicles can be optimally installed in cable protection conduits with suitable fittings. This allows easy retrofitting or replacement of cables if necessary. Various FIPLOCK® mounting solutions allow a safe installation and optimal fastening of the conduits. Suitable products meet the highest fire protection requirements for high passenger safety.



## Control-/Monitoring systems

Selected FIP cable protection products are particularly suitable for the pre-assembly of cable harnesses, for proper cabling of control- and monitoring systems. The FIPSYSTEMS® program includes corrugated conduits and connections for a controlled protected supply line to the control/monitoring cabinets or textile hoses for a clean and abrasion-protected bundling of the conductors inside the cabinets.



## Track side

The increasing monitoring and control of vehicles and systems on the tracks requires secure and save real-time data transmission. Signaling systems, switches and railway barriers also require a high level of operational safety. FIPSYSTEMS® product solutions offer excellent protection of cables and sensitive data lines against weather conditions, heavy rain, snow and ice, mechanical impacts and excellent protection against rodents.



## TROUBLE-FREE PROCESSES

**EMC shielding solutions**  
for electromagnetic shielding of  
sensitive cables and data lines



## EMC braided shielding hoses, fittings and accessories

The **FIPSHIELD®** product line includes products for the electromagnetic shielding of sensitive cables and data lines in order to meet the requirements of industrial EMC directives (electromagnetic compatibility)

- FIPSHIELD® products offer an ideal shielding (shielding effect up to 75 dB at 100Mhz)
- FIPSHIELD® EMC braided shielding hoses offer very good shielding values for industrial systems and devices (coverage of 90 – 95 %)
- FIPSHIELD® accessories enable optimum electrical transition thanks to integrated contact brush or spring contacts for high shielding effectiveness with low transfer impedance
- FIPSHIELD® fittings include the proven FIPLOCK® ONE connector (including coverage of all IP protection classes) for the matching FIPLOCK® corrugated tubes
- FIPSHIELD® products are suitable for dynamic and also static movements



Use this QR code to get directly to our [FIPSHIELD® product range](#).





**CONNECT  
TO PROTECT**



## Cable protection for solar and photovoltaic systems



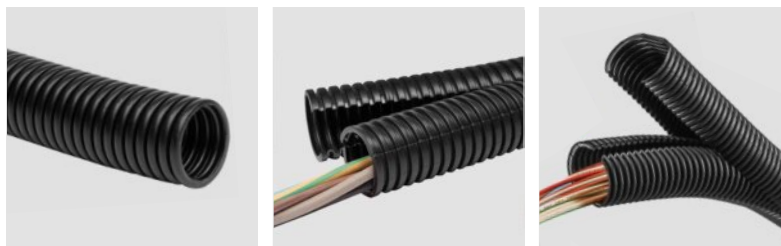
Over decades, cables and wires of solar and photovoltaic systems are exposed to various stresses, such as UV radiation, weather, mechanical influences, or even rodent bites and insect attacks.

With the flexible, weather-resistant **FIPSYSTEMS® corrugated cable protection conduits**, you can **extend the service life** of sensitive cables while **reducing maintenance**, and **cutting costs**. A great variety of product variants ensures targeted application for any possible demand in order to guarantee smooth operation of solar and photovoltaic systems.



Here you will find even more optimal solutions for [renewable energy systems](#).

**FIPSYSTEMS®**  
Cable protection solutions



## Application examples

### Initial installation



### FIPLOCK<sup>®</sup> FPPS-U

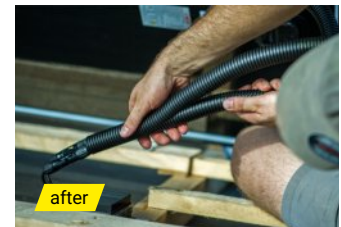
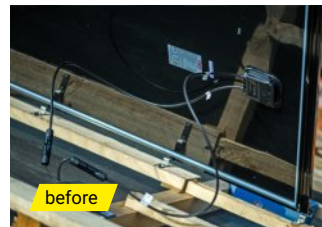
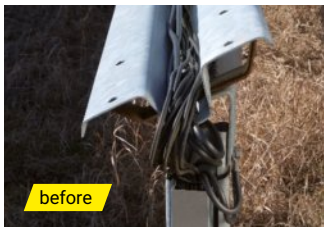
The one-piece corrugated FPPS-U cable protection conduit is well-suited for initial installation. In addition to providing protection against UV radiation, weather, mechanical stress, rodent bites and insect attacks, the product is even water-resistant when installed with customfit FIPLOCK<sup>®</sup> accessories.

### Retrofit installation



### FIPSPPLIT<sup>®</sup> – 2PPS-U / 2PDS

Especially for the retrofit installation, the two-part, resealable corrugated conduit was developed. It protects against mechanical stress, weathering, insect infestation and rodent biting and can be securely attached to connection fittings and housings by using the FIPSPPLIT<sup>®</sup> range of accessories. 2PPS-U offers a UV resistance of 20 years, 2PDS even 40 years.



### Special solutions



The oval two-piece corrugated conduit of the FIPSPPLIT<sup>®</sup> product group bundles larger or a great number of cable harnesses when only a low installation height is available.

DPPS-U can also be retrofitted, has the same protection range as 2PPS-U and can be safely connected by using associated accessories.

# FIPLOCK® ONE – ONE fits ALL

*EIN Anschluss für ALLE Anwendungen*  
*ONE fitting for ALL applications*



- pre-assembled
- ready-to-fit
- easy selection
- little handling
- fast installation
- cost savings



- vormontiert
- montagefertig
- einfache Auswahl
- geringer Handlingsaufwand
- schnellere Montage
- Kosteneinsparung



## FIPLOCK® XL

*Jetzt auch für Kabelschutzrohre ab Nennweite 56.*  
*Also for cable conduits from nominal diameter 56.*

**NEW**



*In gerader und 90° Winkel Ausführung erhältlich.*  
*Available in straight and 90° angle design.*

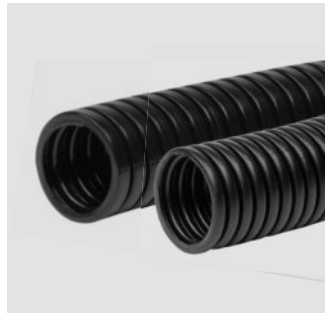


## Extended service life of wind turbines



### ASPA-M

FIPLOCK® ONE – fittings



### FPPS-U

FIPLOCK® – corrugated conduits in different material versions



### 2PDS

FIPSPPLIT® – divisible corrugated conduits in different material versions

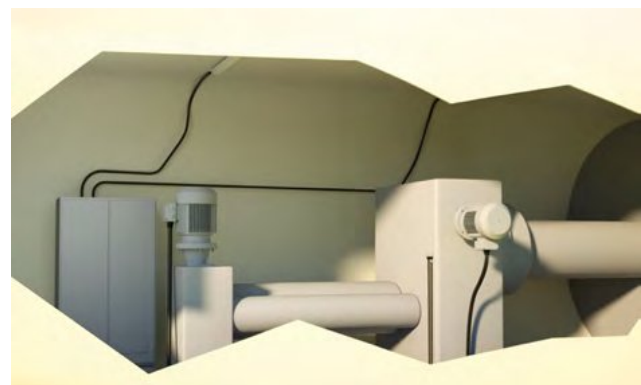


### BSPA

FIPLOCK® accessories – corrugated conduit accessories



Here you will find even more optimal solutions for [renewable energy systems](#).



Cross-section of a wind turbine



FLEXIBLE METALLIC CONDUIT



**electri-flex company**





# Products for Every Market

**E**lectri-Flex offers flexible conduit for any application. The diversity of the Liquatite® product line allows us to serve the more than 20 major markets listed in this catalog as well as many other specialty markets.

Electri-Flex conduits are manufactured with features and specifications that allow them to be used across multiple markets. Many products are tailor-made to specific markets, such as for food processing and pharmaceuticals, while others can be used across a wide variety of markets.

Some markets include:

- Construction
- Data Center
- Defense
- Fixture/AC Whips
- Food Processing & Pharmaceuticals
- Healthcare
- Machine Tools (OEM)
- Mining, Oil & Gas Refineries
- Power Plants, Steel Mills & Utilities
- Rail/Transit
- Renewable Energy
- Robotics
- Security Cameras
- Ship Building & Aerospace
- Telecommunications & Cell Towers
- Wastewater

The following page provides an overview of the primary markets served by Electri-Flex. Use it to find the best conduit for these markets.

# Type A Conduit Application Guide

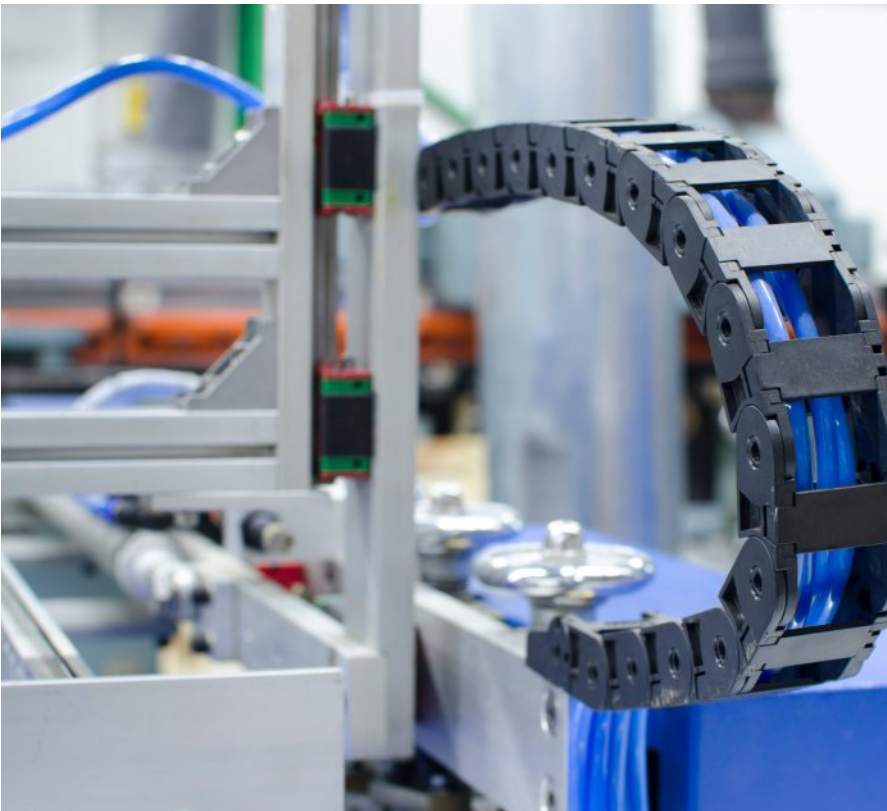
High Flexibility | UL listed | Conforms to NFPA-79 (Sec.14.5.5)

**electri-flex**



## Industrial Power Tracks

- Type A conduit
- Flexible non-metallic Orange PVC with internal nylon braiding
- Resistant to Oils & Mild Acids
- UV & Flame retardant
- Operating temperature -55°C to 105°C



## Food Grade Equipments

- Formulated for "Splash Zone" Food & Beverage contact
- NSF/ANSI 169 component
- Antimicrobial jacket with biocide additive
- Meets FDA CFR 21 & NSF 51/61 requirements
- Resistant to Sodium Hypochlorite (Bleach)
- Easy to wash down
- Flexible non-metallic Blue PVC with nylon braiding
- Resistant to Oils & Mild Acids
- Operating temperature of -37°C to 105°C





## Wire without interference.

Shielded conduit provides exceptional shielding effectiveness from electromagnetic and radio frequency interference (EMI/RFI). Use it to protect sensitive electronic circuits from outside noise in such applications as communications, radar and data transmission. But shielded conduit doesn't just keep interference out; it also keeps emissions in, which is vital to meeting European CE standards—an important issue for OEMs. Fortunately, there's SHIELD-FLEX. With three easy-to-install types, SHIELD-FLEX is simply a better way to wire.

**SHIELD-FLEX®**  
EMI/RFI ShieldedConduit



# SHIELD-FLEX®

## Keep the Noise Out



SHIELD-FLEX conduit allows for greater versatility than shielded cable in wiring configurations and retrofitting projects. With three levels of effectiveness to choose from, SHIELD-FLEX meets your needs.



### Good

Tinned copper shielding braid over steel strip inner core

### Better

Fully interlocked bronze strip inner core

### Best

Tinned copper shielding braid over fully interlocked bronze strip inner core

## Versatile

SHIELD-FLEX is a liquidtight conduit that goes places other wiring can't. It can contain an unlimited combination of conductors for versatile circuit wiring. Plus, it protects wiring from crushing, impact, abrasion and the elements, and uses off-the-shelf (OTS) standard connectors intended for liquid tight flexible metal conduit.

## Efficient

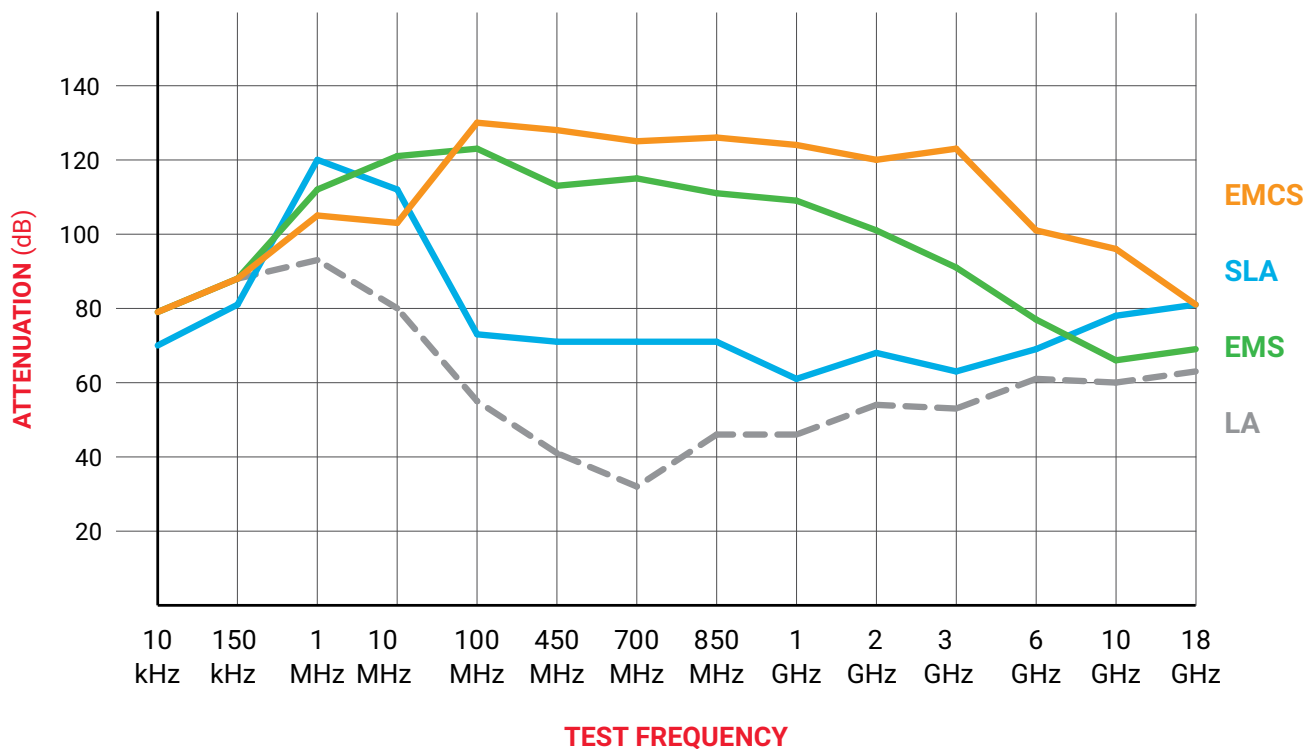
SHIELD-FLEX offers a cost-efficient solution compared to other wiring types. Its flexibility and simple assembly means it takes less time to install, shortening schedules and project budgets. And the OTS connectors are less expensive than high-end, MIL spec shielded conduit or cable that require costly custom fittings.

## Effective

SHIELD-FLEX shields sensitive equipment and circuits from EMI/RFI emissions, both ingress and egress. Connector assemblies include a grounding ferrule that contacts the conduit's internal metallic material with the connector body, producing a direct shield-to-drain (ground) simply by tightening the connector.

# Shielding Effectiveness

The graph below depicts a general comparative shielding effectiveness (attenuation in dBs) of all three types of SHIELD-FLEX conduit. The dotted line indicates a comparison to standard unshielded liquidtight flexible conduit Type LA. The spectrum of test frequency is from 10 kHz to 10 MHz Electric Field, to 100 MHz to 1 GHz Planewave Field and 2 GHz to 18 GHz Microwave Field. Tests were performed per MIL-STD-285 and in general accordance with IEEE 299. 1" trade size conduit was tested using standard liquidtight fittings from Thomas & Betts Series 5300. Results are based on controlled laboratory conditions and may vary in actual field-installed conditions.



# Jacketed Metallic



Electri-Flex offers the broadest variety of liquidtight flexible metal conduits, ranging from UL listed and CSA certified products to specialized conduits designed for extreme temperatures, non-halogen, low smoke, RFI shielding and food grade applications.

These conduits offer the advantages of a flexible sealed raceway coupled with the strength of a metal core. For more information on our Jacketed Metallic Conduits, see below for an overview or continue through this section.

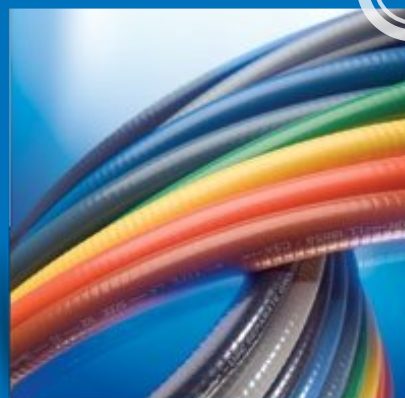
	TYPE LA
	TYPE LT
	TYPE EF
	TYPE ATLA
	TYPE AT
	TYPE ATX
	TYPE ALT
	TYPE ZHLA
	TYPE CEA
	TYPE ACEA
	TYPE LOR
	TYPE CSA
	TYPE VJC
	TYPE LAFG
	TYPE LTFG
	TYPE LSSFG
	TYPE LTSS
	TYPE ZHSS
	TYPE ATXSS
	TYPE ATSS
	TYPE CBLA

## Distinctive Characteristics May Include:

- UL listed, CSA-HD certified
- CE
- NSF Certified Component
- WEEE and RoHS Compliant
- Halogen-free
- Flame-resistant
- High impact and crush strength
- Resistant to many chemicals
- Sunlight-resistant
- Withstands extreme temperature ranges

## Applications / Vertical Markets:

- Passenger Rail Vehicle Wiring
- Industrial Control Equipment
- Machine Tools
- Textile Machinery
- Molding / Extrusion Equipment
- Fiber Optics
- Medical Equipment
- Food and Pharmaceutical Equipment
- Healthcare
- Data Centers
- Waste Water Treatment
- Utility



We can blend to any color preference for quick identification of circuits.

**electri-flex company**

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[www.electriflex.com](http://www.electriflex.com)

## Who we are

Established in 2009, Avlicon Technologies offers industry certified system integration components, for use by OEM's in various market sectors, namely Industrial Automation, Renewables, Transportation & the Power industry.

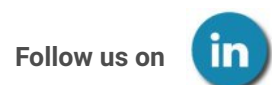
As an authorized distribution partner for select global brands, we specialize in offering consistent quality and high performance electrical & electro-mechanical components, offering durability and reliability in the long term.

Our UL certified product solutions include

- Electrical cable protection flexible conduit systems and accessories
- Climate control systems for electrical cabinets
- Cable glands and accessories for use in safe and hazardous installations
- HL3 Stand-Off insulators for bus bar mounting in electrical cabinets
- Ultrasonic sensors for industrial automation
- 36kV Shear-bolt cable termination connectors for aluminium and copper cables

As a business committed to honesty, integrity and ethical dealings with our customers, suppliers and colleagues, we continue to make strides in the industry, with the latest technology products, being offered as building blocks, for a next generation state-of-the-art infrastructure, keeping in mind our responsibility towards the environment.

With team work, we strive to provide a rewarding experience to our esteemed customers, with our value added services and sustainable business practices. Quality and customer satisfaction is always our ultimate goal.



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