



EMCO INDUSTRIES LTD.

Corporate Briefing Session
Nov 2023



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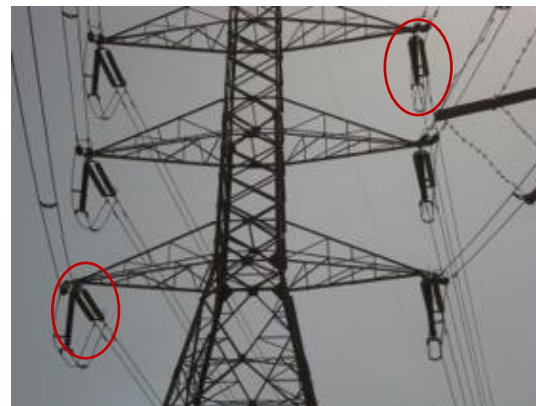
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Porcelain Insulators: What are they?

- An insulator is a material that resists the flow of electrical current.
- In electrical transmission, an insulator is a component that ensures the current in electrical lines is isolated from physical support structures.
- Porcelain is the oldest and most widely used material globally due to its physical properties. Alternates include polymer insulators and glass insulators.

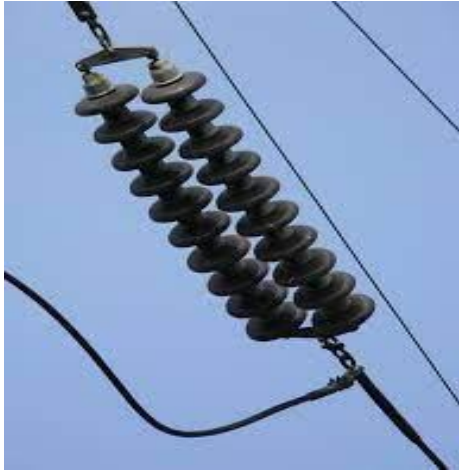


Typical Porcelain Application in Switchgear



Typical Porcelain Application in Transmission Lines

EMCO – Key Products & Services



Transmission & Distribution Lines

Porcelain Insulators



Substation Equipment

Post Insulators

Surge Arrestors

Disconnect Switches

Instrument Transformers



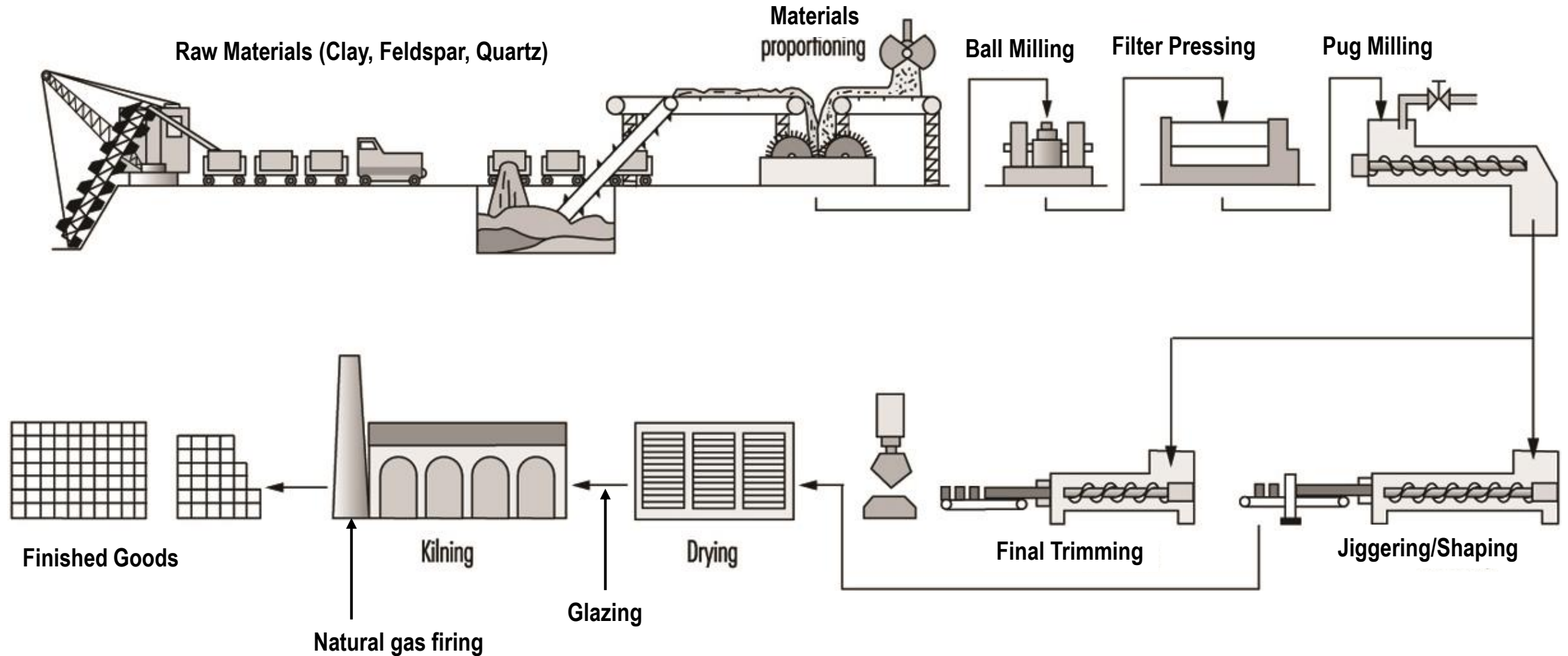
Ancillary Products & Services

High Voltage Testing

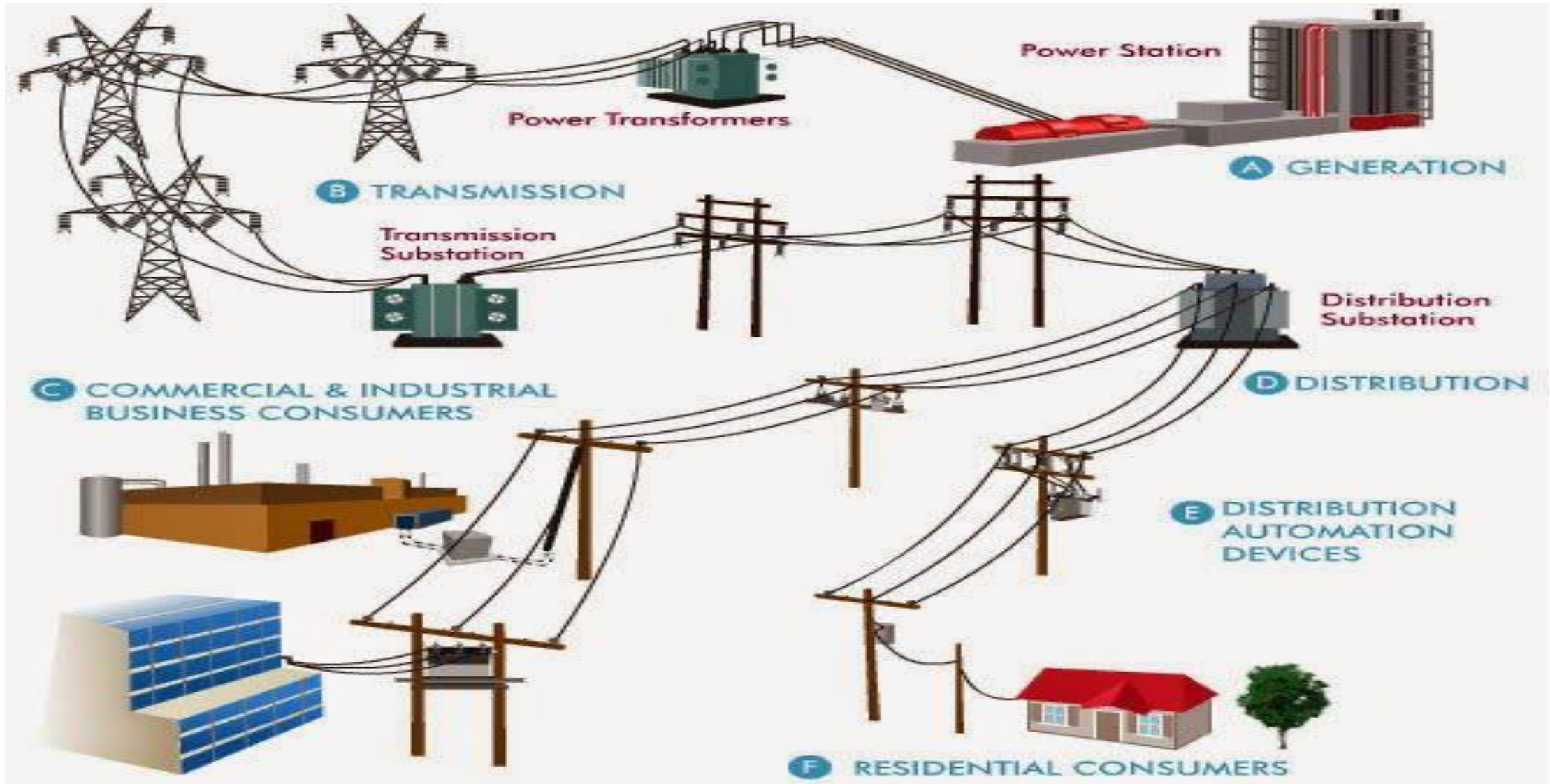
Metal Work Division

RTV Coating Division

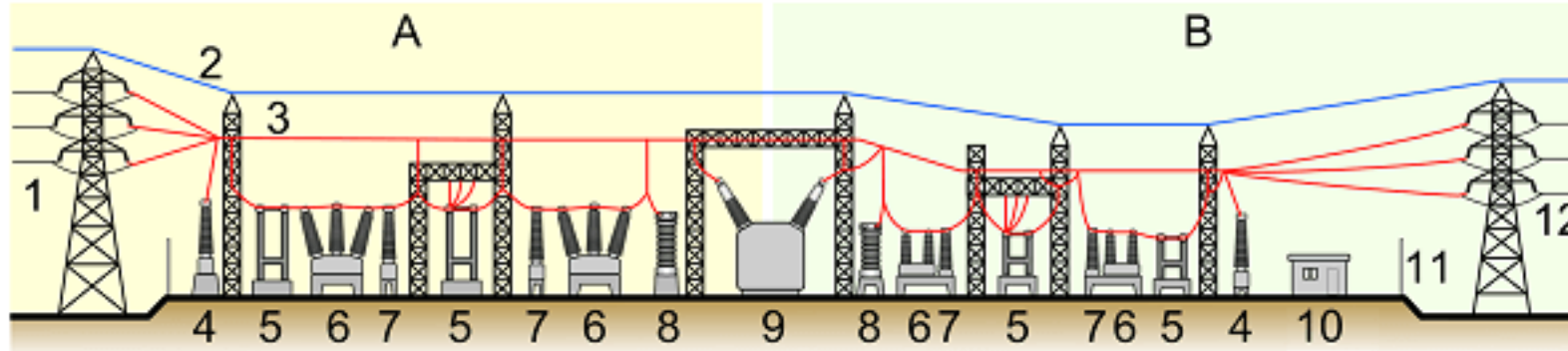
High level insulator manufacturing process



Energy System Overview



Typical High Voltage Substation



Elements of a substation A: Primary power lines' side B: Secondary power lines' side

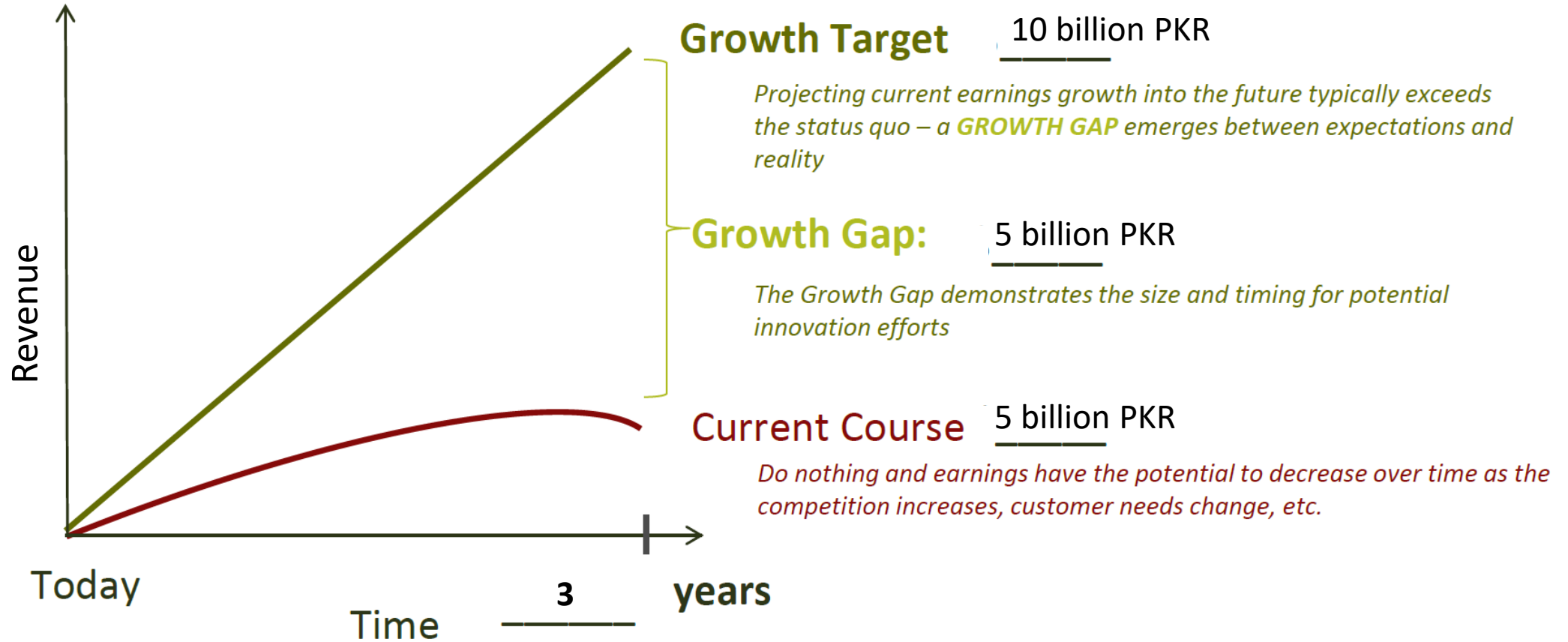
1. Primary power lines (EMCO Existing: Transmission Line Insulators)
2. Ground wire
3. Overhead lines (EMCO Existing: Substation support Insulators & Interconnect Insulators)
4. Voltage Transformer – VT
5. Disconnect Switch
6. Circuit breaker (EMCO Plan FUTURE: 2024+)
7. Current transformer – CT
8. Lightning Arrester
9. Main transformer
10. Control building
11. Security fence
12. Secondary power lines (EMCO: Transmission & Distribution Line Insulators)

Denotes EMCO
Existing Product
Line

Denotes EMCO
Future Plans

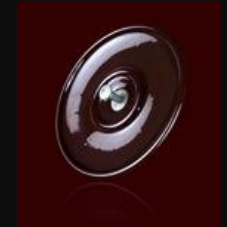


Innovation Intent: Growth expectations



EMCO Industries Ltd

Product Portfolio Overview



Core Insulator
Division:
Transmission &
Distribution Line
Insulators



EMCO: Anatomy of Disc Insulator



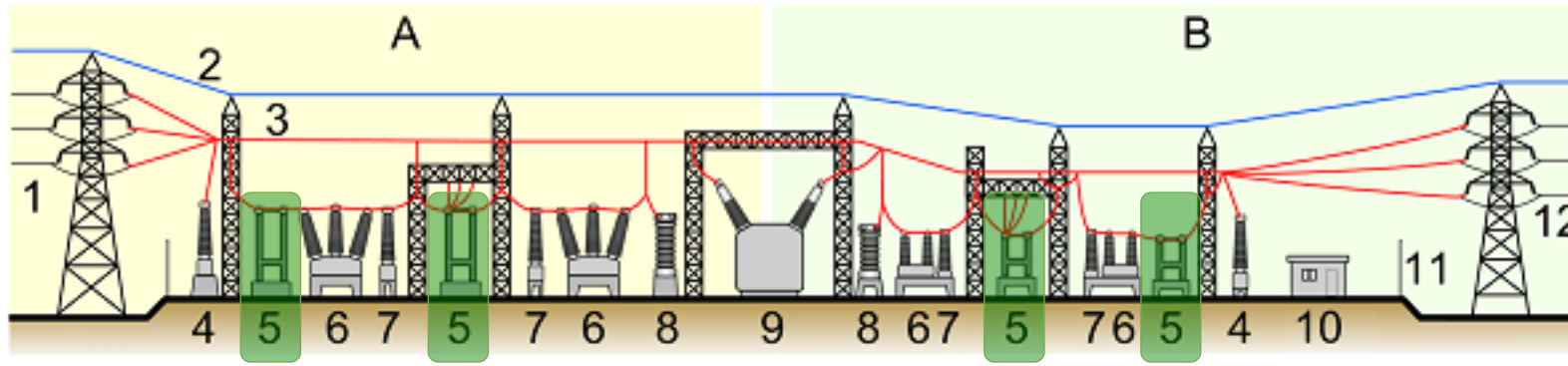
→ Porcelain Shell

→ Hardware Cap

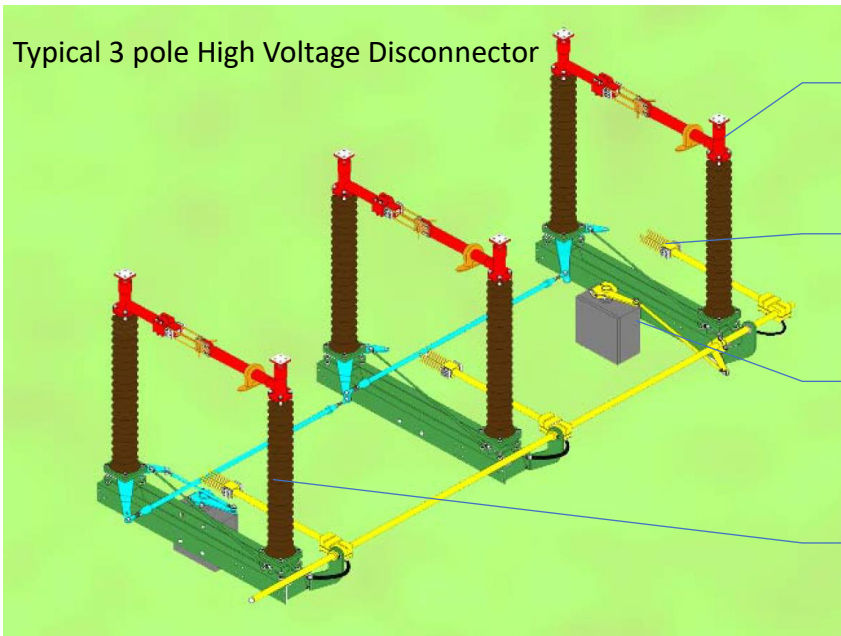
→ Hardware Pin & Locking Device

High Voltage Disconnect Switches – Forward Integration Initiative





Typical 3 pole High Voltage Disconnecter



Current Carrying Arm

Earthing Switch

Base Frame, Motor Operating Mechanism & **Steel Structure (not shown)**

EMCO Manufactured Insulators x 6



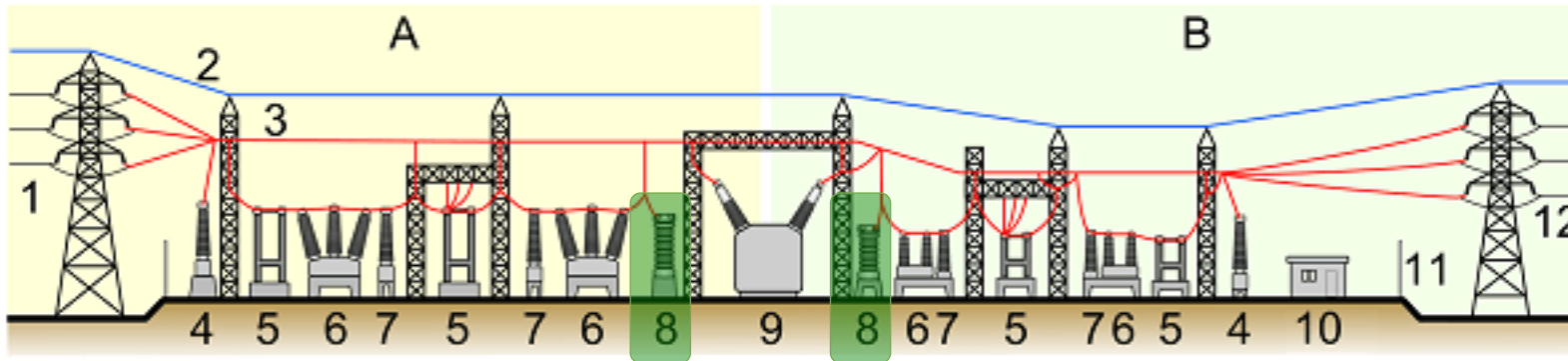


FUNCTIONALITY OF A DISCONNECTOR

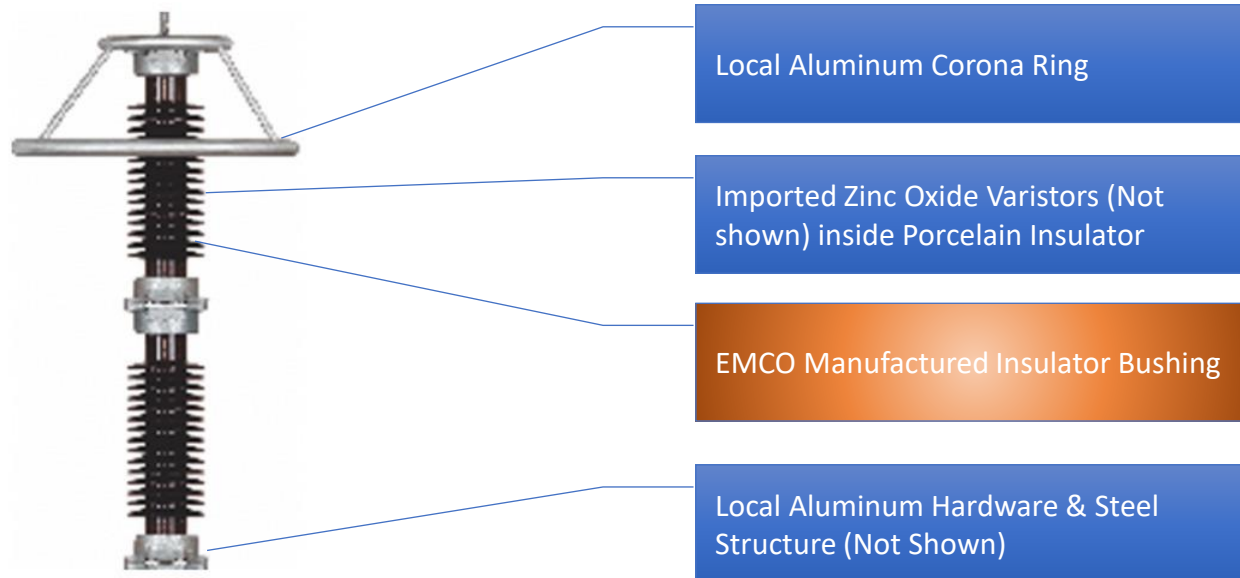
Disconnect switches rapidly **disconnect** circuits from power supplies in the event of an emergency. **Disconnect switches** can **function** in conjunction with circuit breakers, devices which interrupt the flow of electricity along a circuit when the current exceeds the circuit's capacity.

High Voltage Surge Arrestors - Forward Integration Initiative





Typical Surge Arrester Configuration



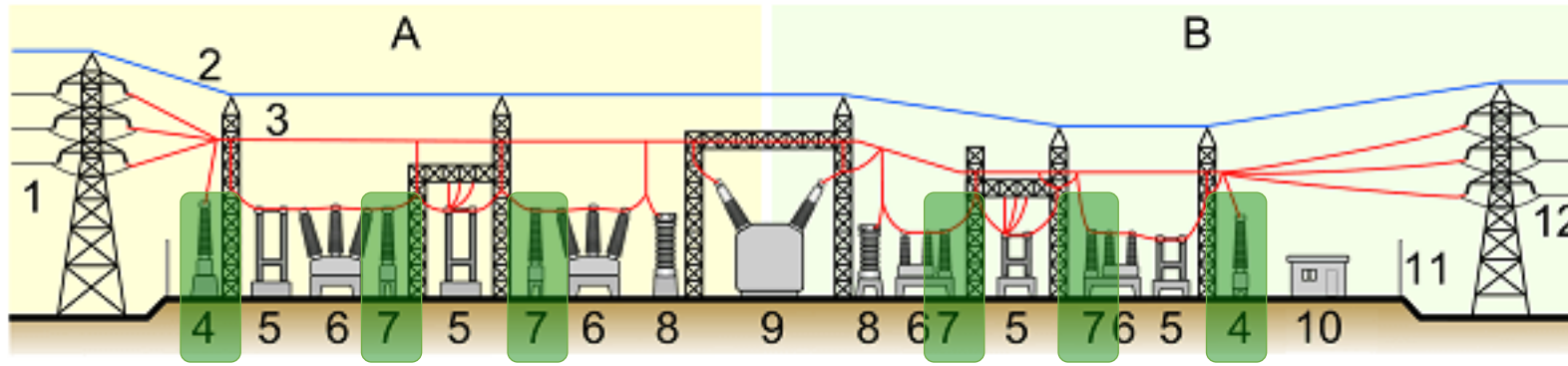
A photograph of a high-voltage electrical substation. In the foreground, a large, vertical surge arrester with many horizontal ceramic discs is mounted on a metal structure. In the background, there are several high-voltage power lines supported by steel lattice towers. The sky is clear and blue.

FUNCTIONALITY OF A SURGE ARRESTER

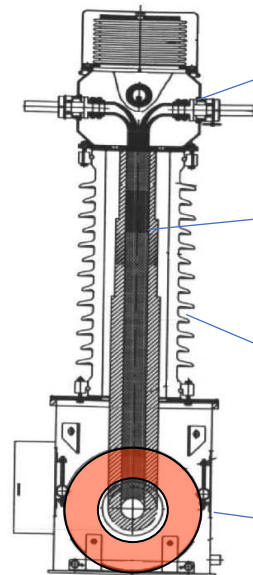
- A **surge arrester** is a device to protect electrical equipment from over-voltage transients caused by external (**lightning**) or internal (switching) events.
- A surge arrester works by diverting the extra voltage into the earth wire, rather than flowing through the electronic devices, while at the same time allowing the normal voltage to continue along its path. To protect a unit of equipment from transients occurring on an attached conductor, a **surge arrester** is connected to the conductor just before it enters the equipment.

High Voltage Instrument Transformers - Forward Integration Initiative

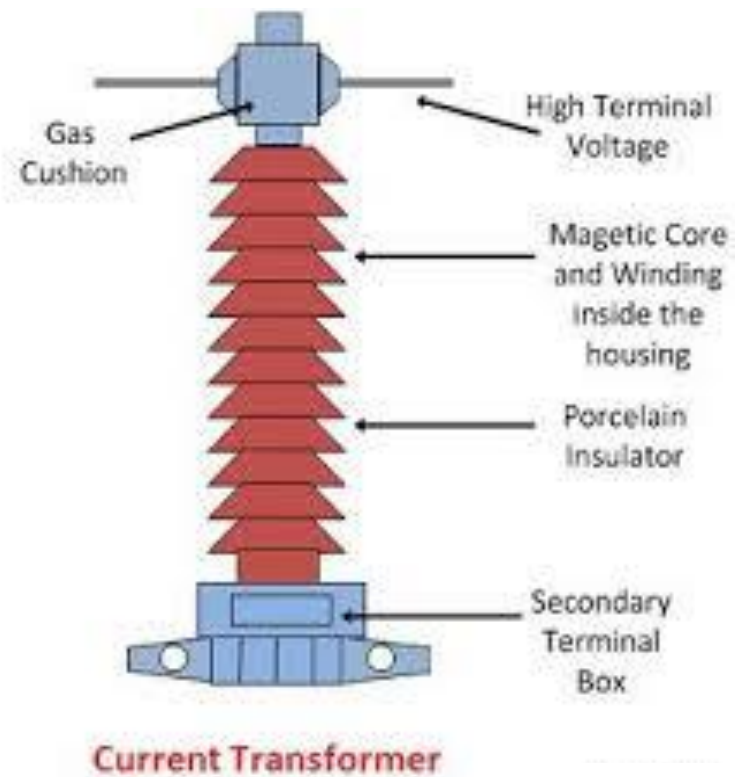




Typical Current Transformer Configuration



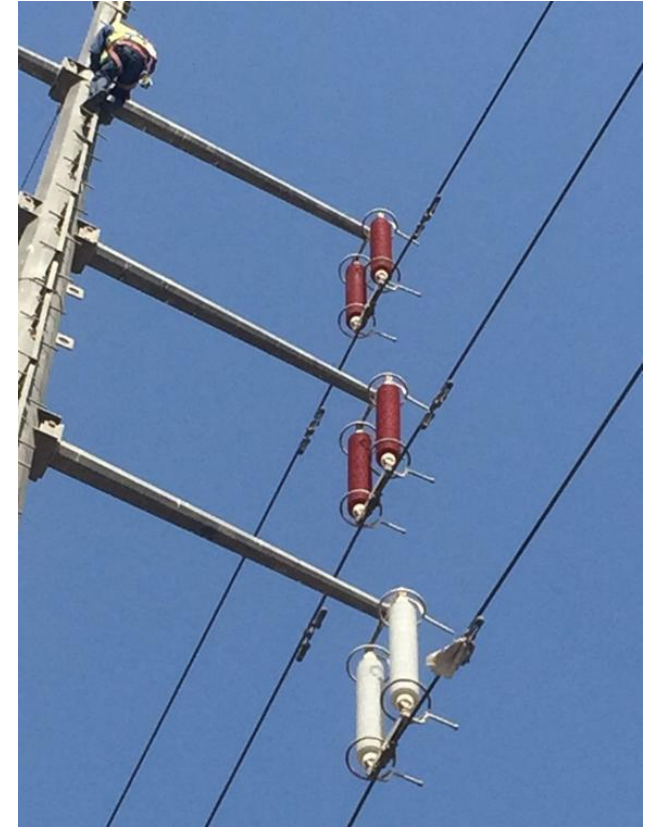
- Local Tank, Connectors & Bellows
- Primary Core & Secondary Cores
- EMCO Manufactured Insulator
- Local Bottom Tank



FUNCTIONALITY OF A CURRENT/POTENTIAL TRANSFORMER

A **current/ potential transformer** (CT/ PT) is a type of **transformer** that is used to reduce or multiply an alternating **current** (AC). It produces a **current** in its secondary which is proportional to the **current** in its primary.

Room
Temperature
Vulcanization
(RTV) –
Forward
Integration
Initiative



RTV Coating Project: Porcelain Strengths meets hydrophobicity



- To avoid leakage currents, discharges and pollution flashovers, a highly customized silicone layer is applied to the porcelain insulator surface using either a patented dip coating process, or in certain cases a special spray coating process.
- This silicone layer provides an organically regenerative based hydrophobic surface that effectively combats the negative effects of contamination and enhances the electrical characteristics of the insulator
- The silicone layer also provides higher reliability of the insulator by overcoming potentially dangerous leakage currents on the surface of the insulator in highly polluted areas.



Typical substation insulators being coated



Typical transmission line disc insulator after coating

RTV Coating Project – EMCO Workshop



Machines

Dip coating workshop has 252 dip coating machines installed

Curing Equipment

Dip coating workshop has 500 curing stations

Dipping Capacity

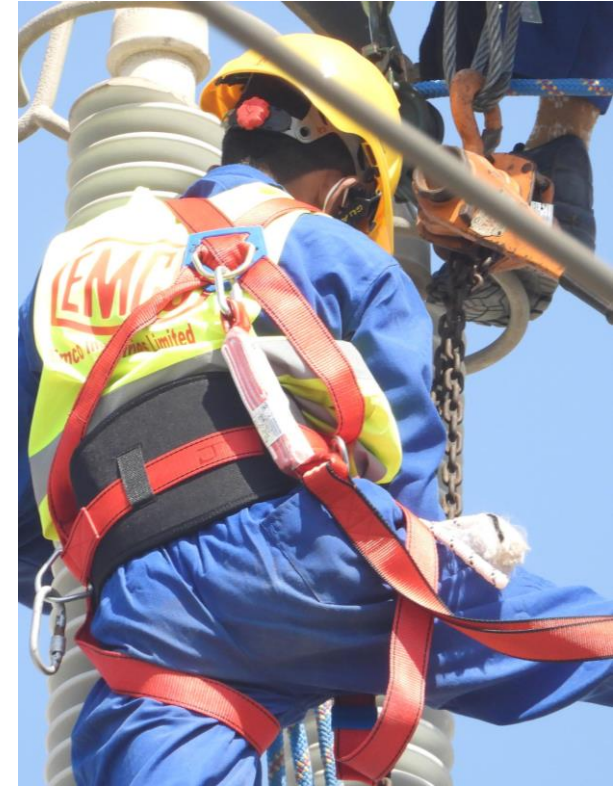
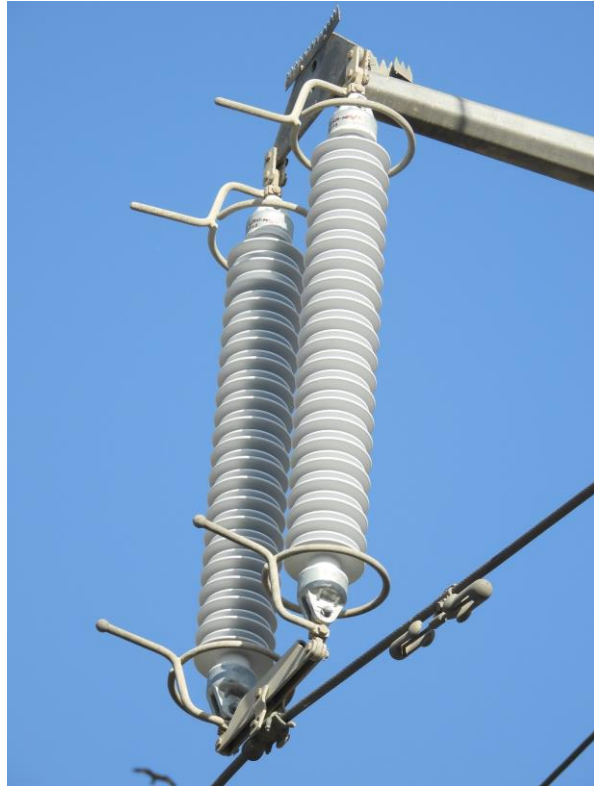
252 machines can dip coat 5000-6000 insulators per day

Quality Control Lab

RTV coating: Viscosity, Tack free time
Insulator coating: Appearance, Hydrophobicity, Adhesion, Thickness



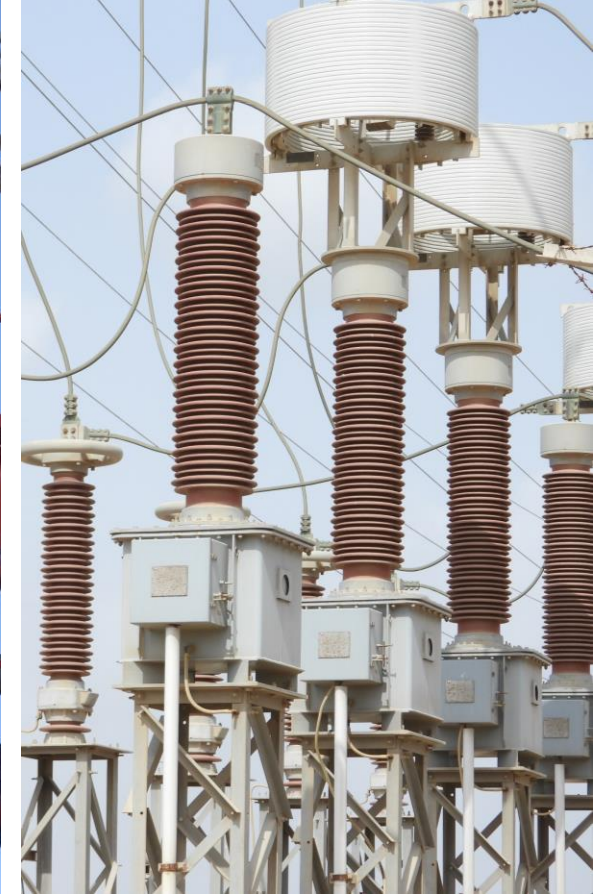
GLIMPSE OF KE RTV COATING T/L PROJECT

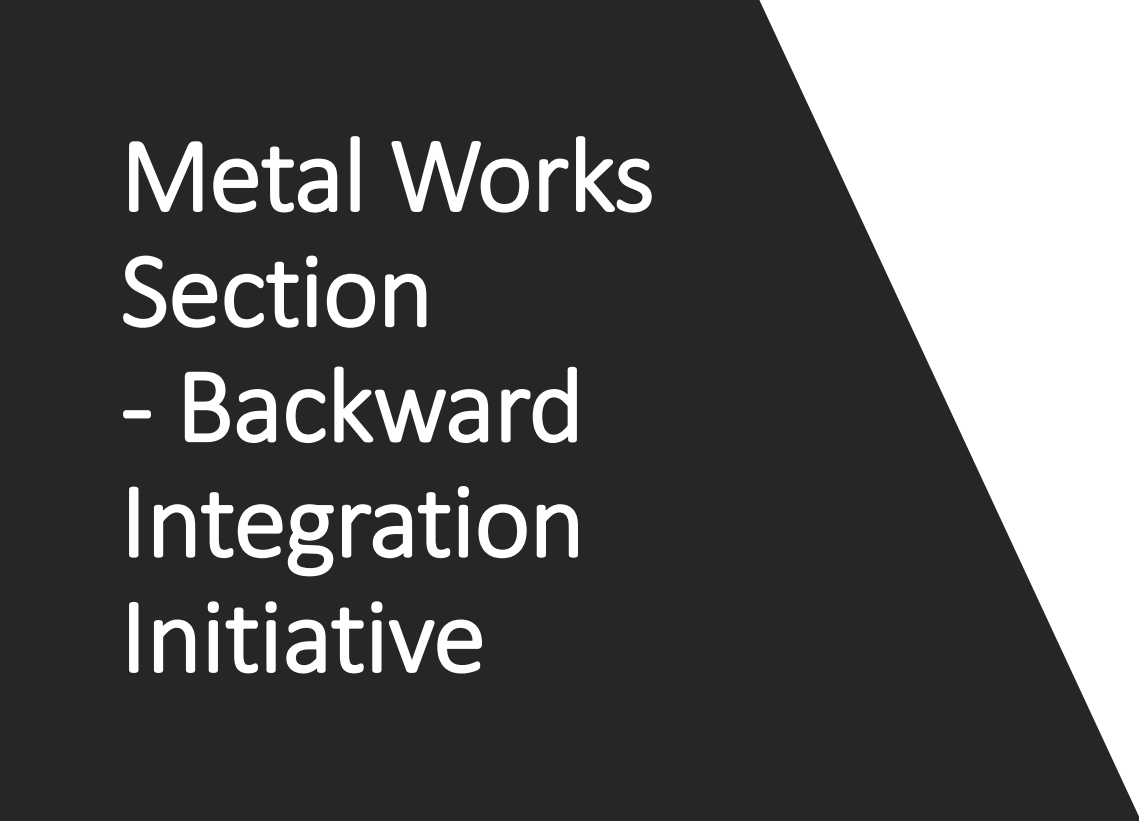


GLIMPSE OF PRE-COATED 245kV SURGE ARRESTOR FOR 220kV FOUNDATION POWER CO. GRID DAHARKI



GLIMPSE OF ON-SITE RTV COATING PROJECT OF OURSUN (50MW SOLAR PLANT) 132KV GRID GHARO





Metal Works
Section
- Backward
Integration
Initiative



Metal Works Division: Forging & Fabrication Facility

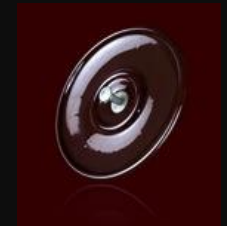


Metal Works Division – Galvanizing Facility



EMCO Industries Ltd

Recent Developments



State of the Art High Voltage Laboratory





EMCO's Second High Voltage Lab: Highest Voltage class lab in Pakistan in private sector



Instrument Transformer Section



BMR Project New High Temperature Kiln





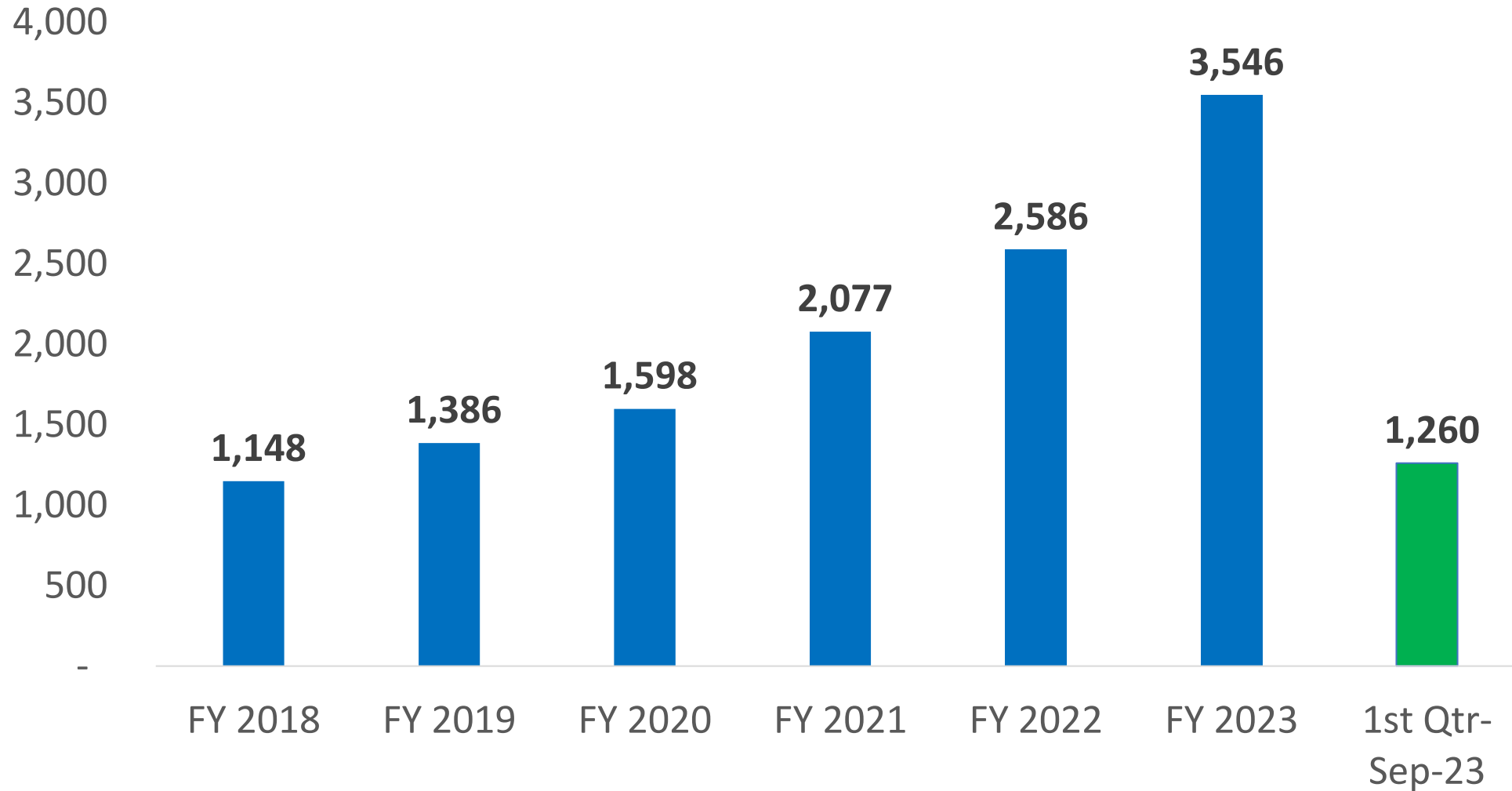
Financial Review



HISTORICAL FINANCIALS

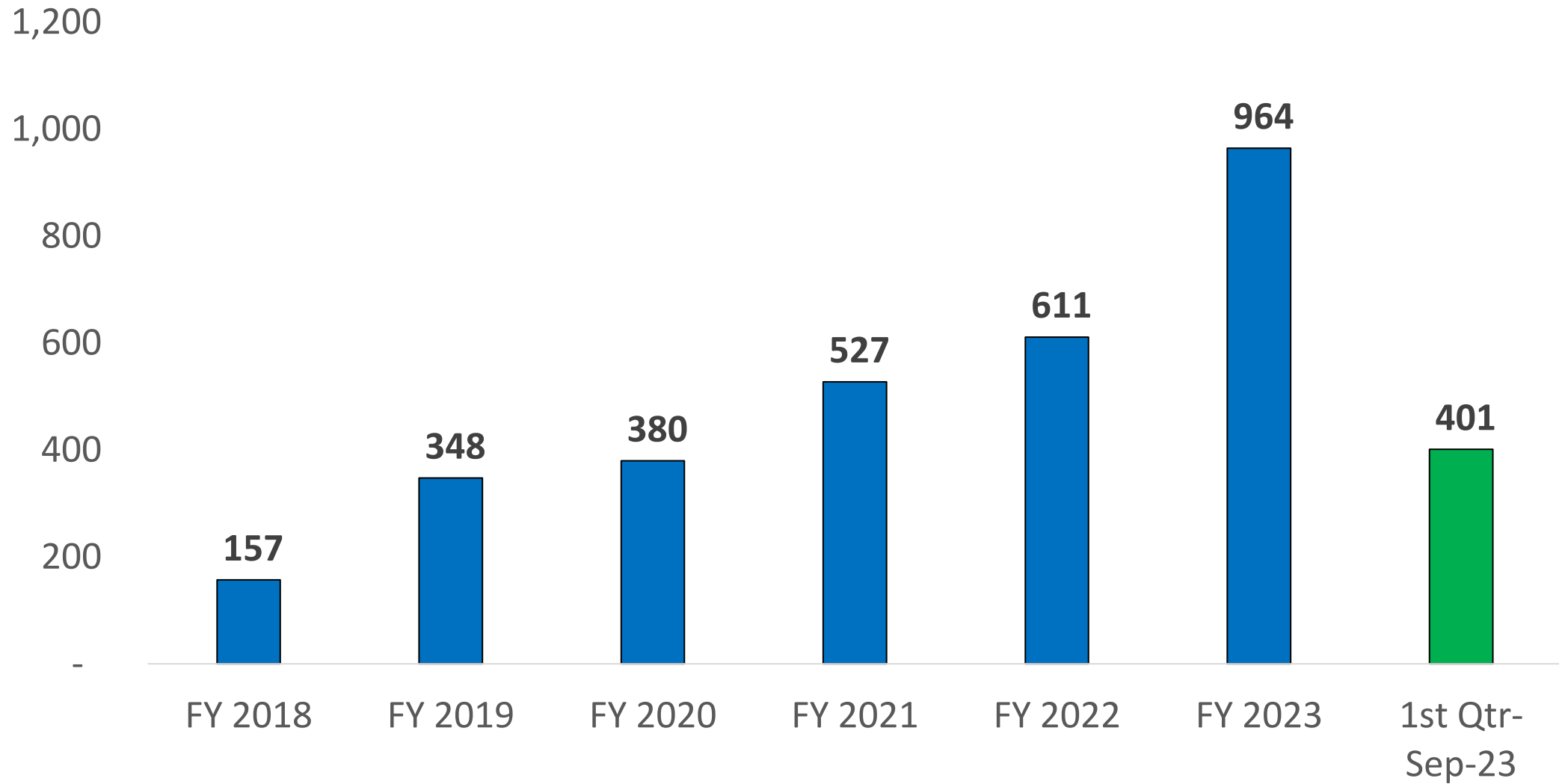
PKR "mn"	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	1st Qtr- Sep-23
<i>Income Statement</i>						
Revenue	1,386	1,598	2,077	2,586	3,546	1,260
Gross Profit	348	380	527	611	964	401
EBITDA	293	336	468	483	815	338
Finance Charges	82	97	88	103	248	95
PAT	145	118	202	217	293	129
<i>Balance Sheet</i>						
Non-current Assets	1,233	1,416	2,009	2,521	2,931	3,003
Current Assets	1,198	1,276	1,467	1,724	2,407	2,456
Total Assets	2,457	2,691	3,476	4,244	5,339	5,458
Current Liabilities	980	911	1,080	1,130	1,528	1,498
Interest Bearing Debt	540	590	699	920	1,492	1,487
Non Current Liabilities	295	306	325	608	1,026	1,046
Total Liabilities	1,292	1,218	1,405	1,738	2,553	2,544
Equity	1,166	1,474	2,071	2,506	2,785	2,914
Key Ratios						
Current Ratio (x)	1.2	1.4	1.4	1.5	1.6	1.6
GP Margin %	25.1	23.8	25.4	23.6	27.2	31.8
Net Margin %	10.4	7.4	9.7	8.4	8.3	10.3
Return on Total Equity %	13.2	8.9	11.4	9.5	11.1	18.1
Interest bearing Debt to Equity (%)	46	40	34	37	54	51

Revenue - (PKR Mln.)

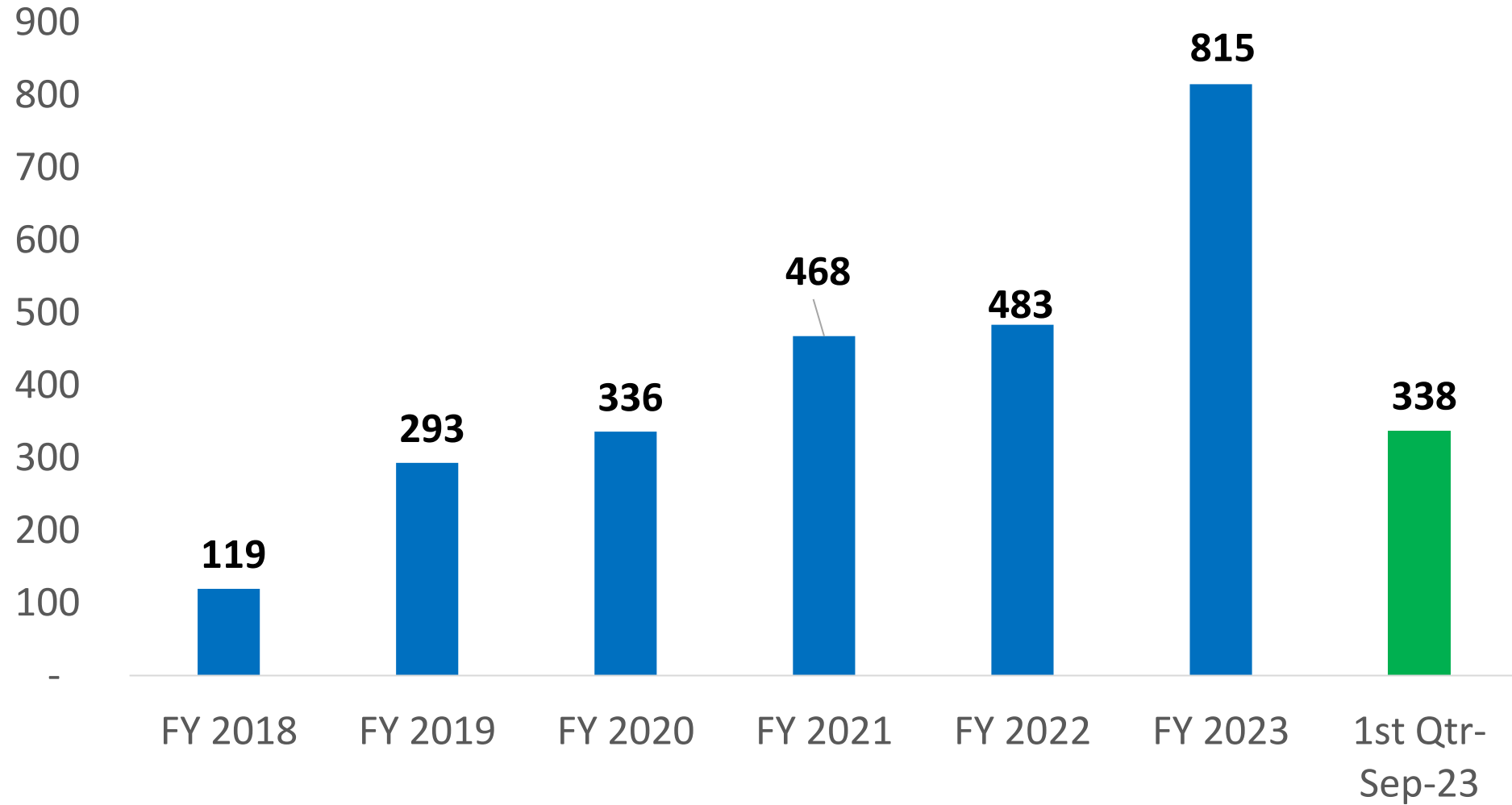




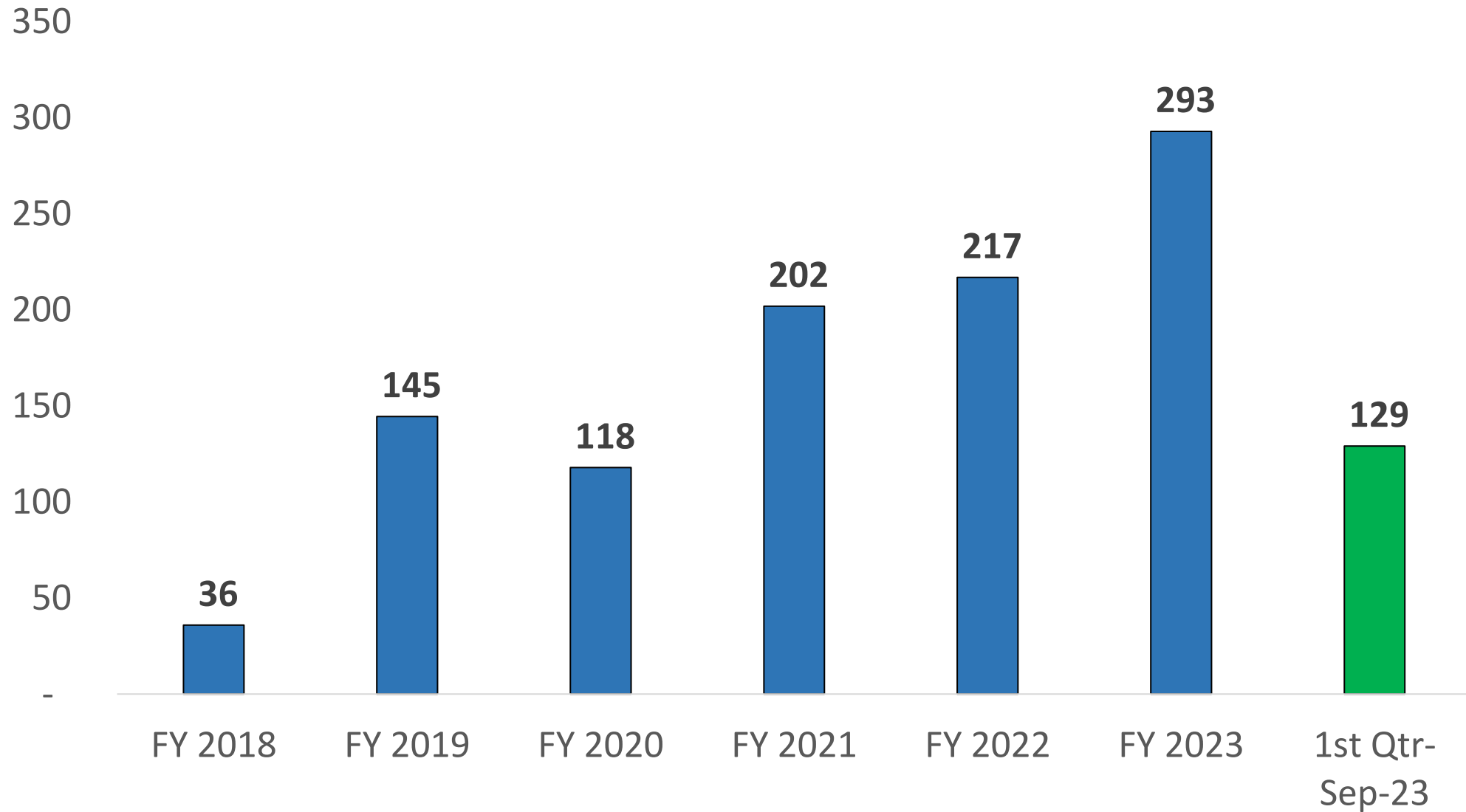
Gross Profit - (PKR Mln.)



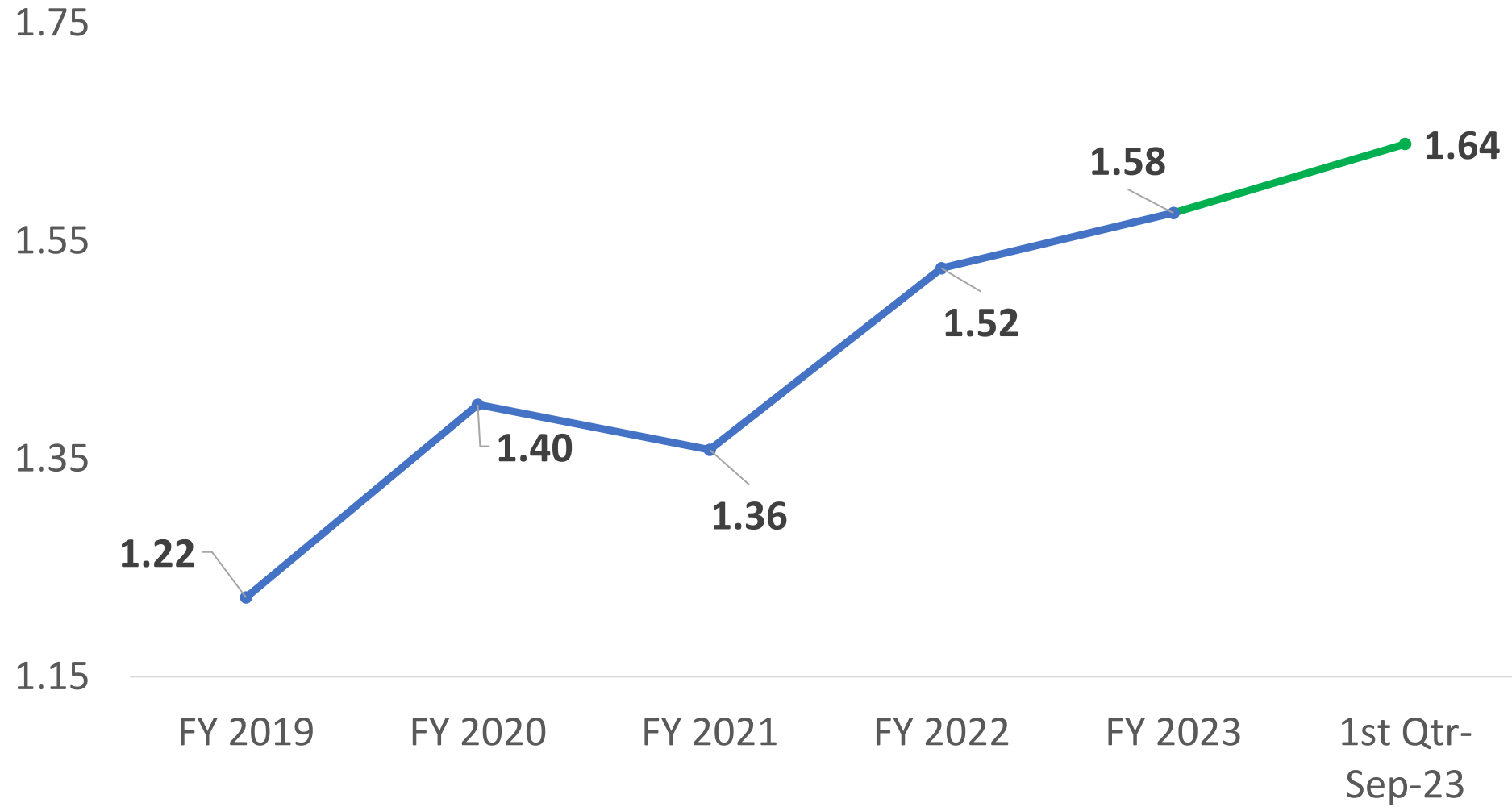
EBTIDA - (PKR Mln.)



Profit After Tax - (PKR Mln.)

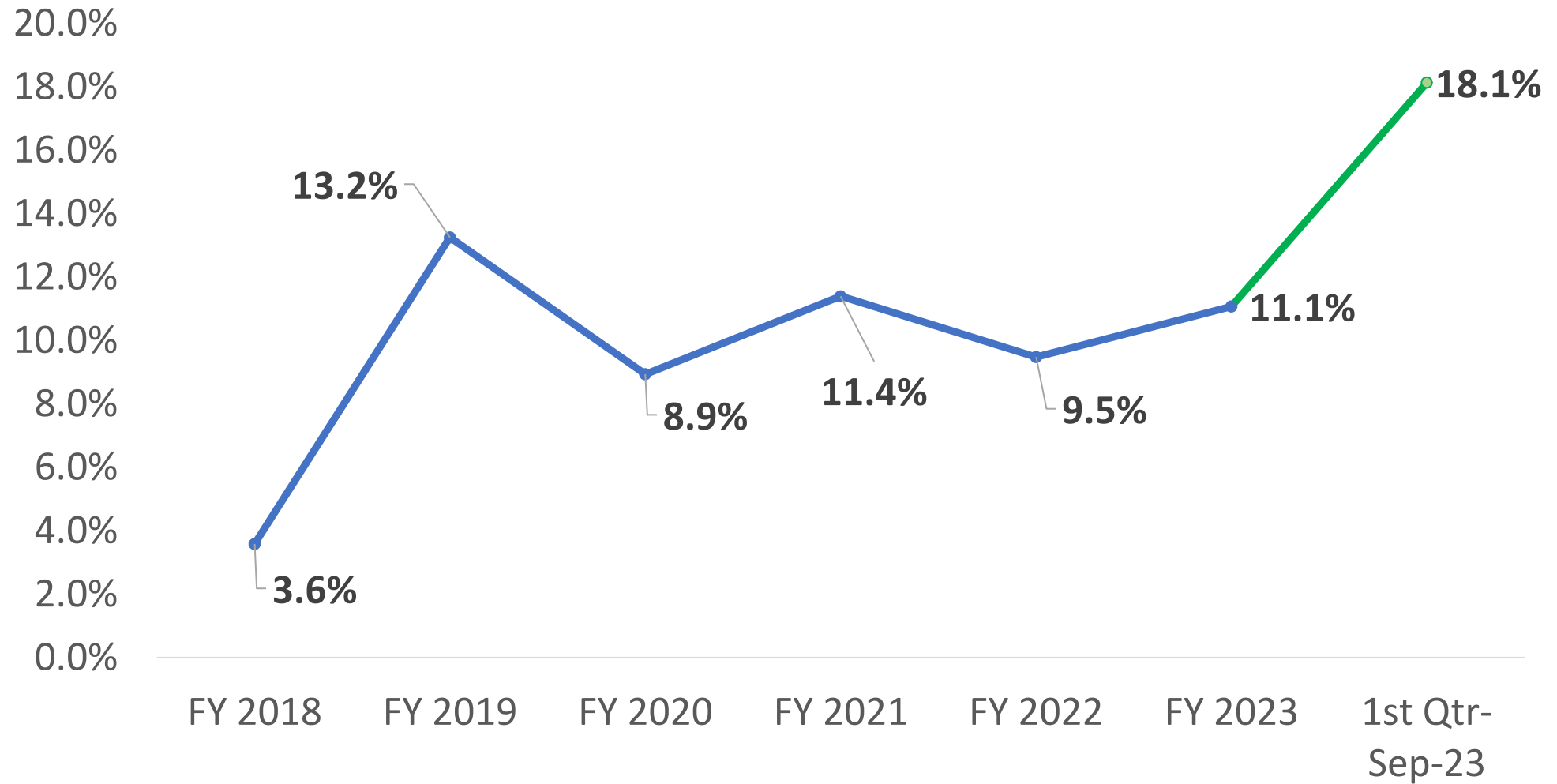


Current ratio (x)



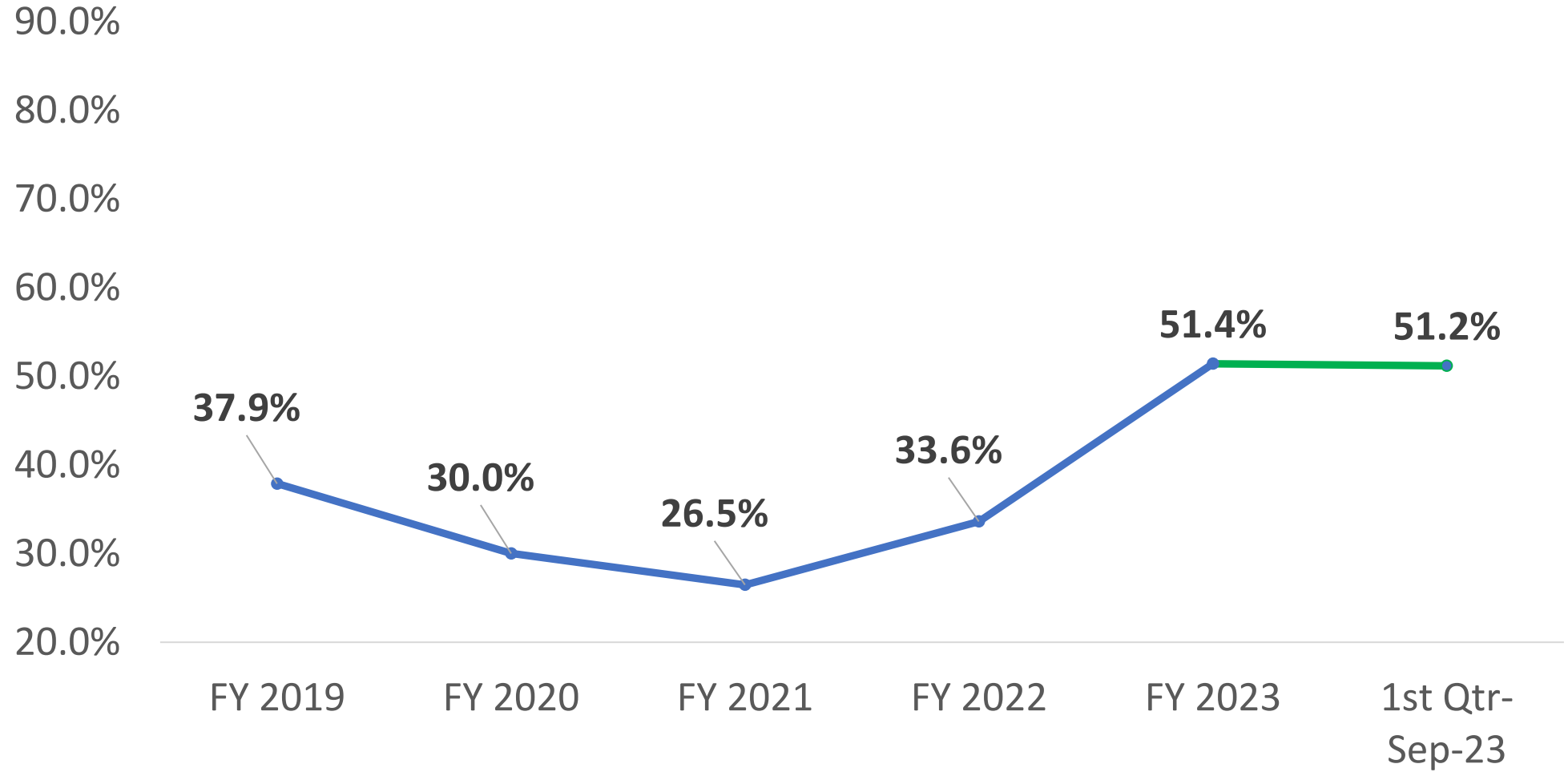


ROE (%)

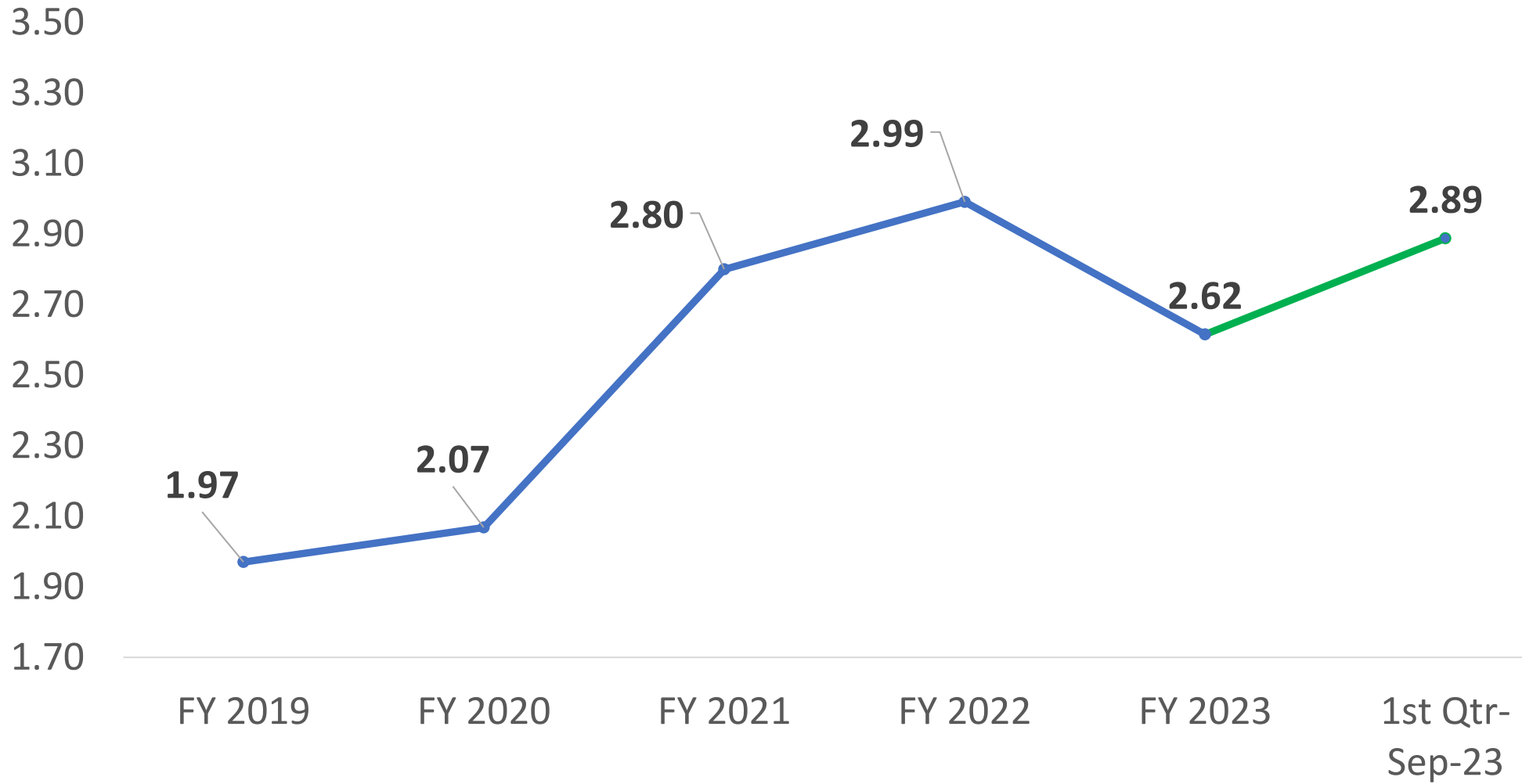




Interest bearing D/E (%)



DSCR (x)





Q&A

Thank You