



# APPLICATION ORIENTED DESIGN OF CABLES

POWERING THE REGION

**Mrs. Rohini Bhattacharyya, Dubai cables Ltd.**

**Mr. Nawaf Al Mohaideb, Dubai cables Ltd.**

دو کاب  
Ducab



## Product Range

High Voltage

Medium Voltage

Low Voltage

Fire Resistant

Building Wire

Control and Auxiliary

Cable Accessories

Cu Wire & Conductor

Instrumentation and Pilot Cables

# Abstract

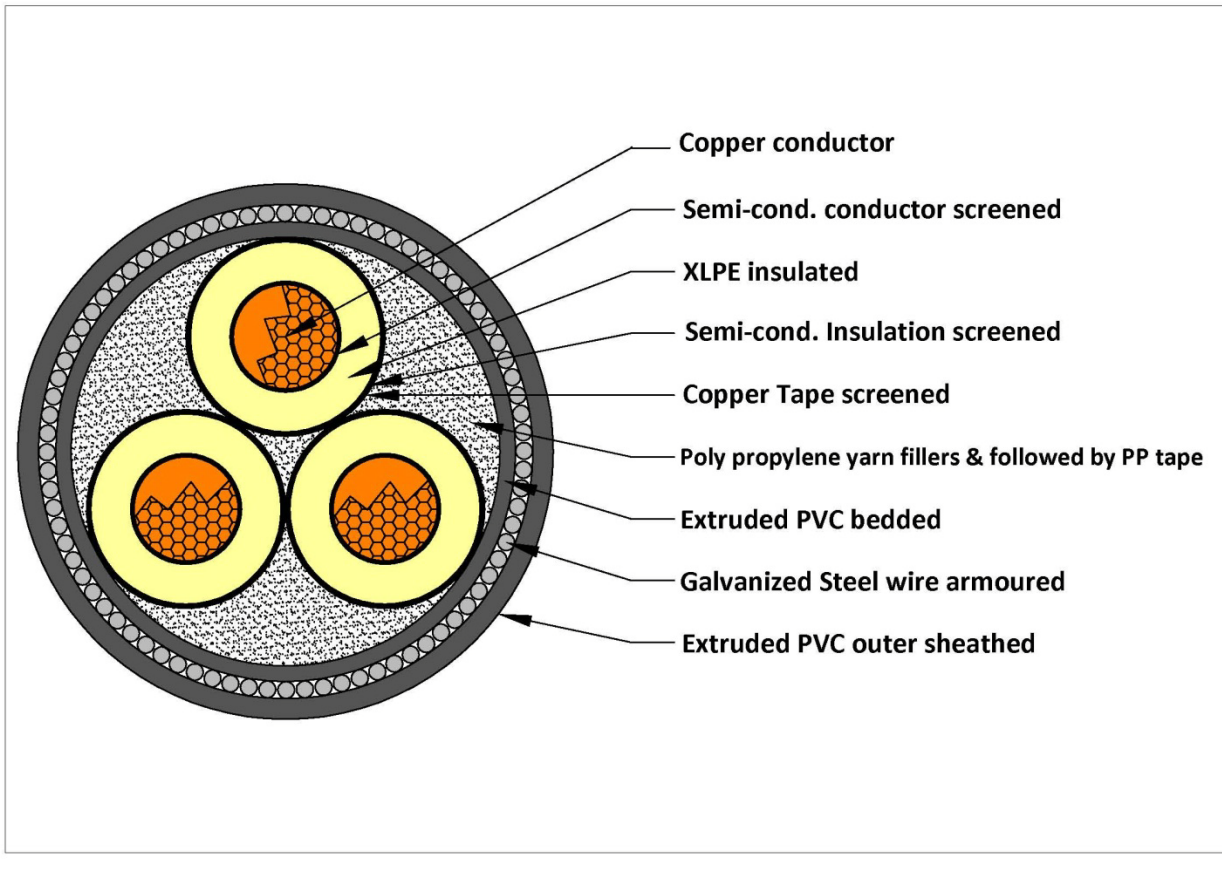
- ❖ Design based on GCC region utility requirements



- ❖ Present 3 core, 5 types of MV XLPE (11kV) cable designs operating at 90°C
- ❖ Demonstrate gains and drawbacks of each one . 😊

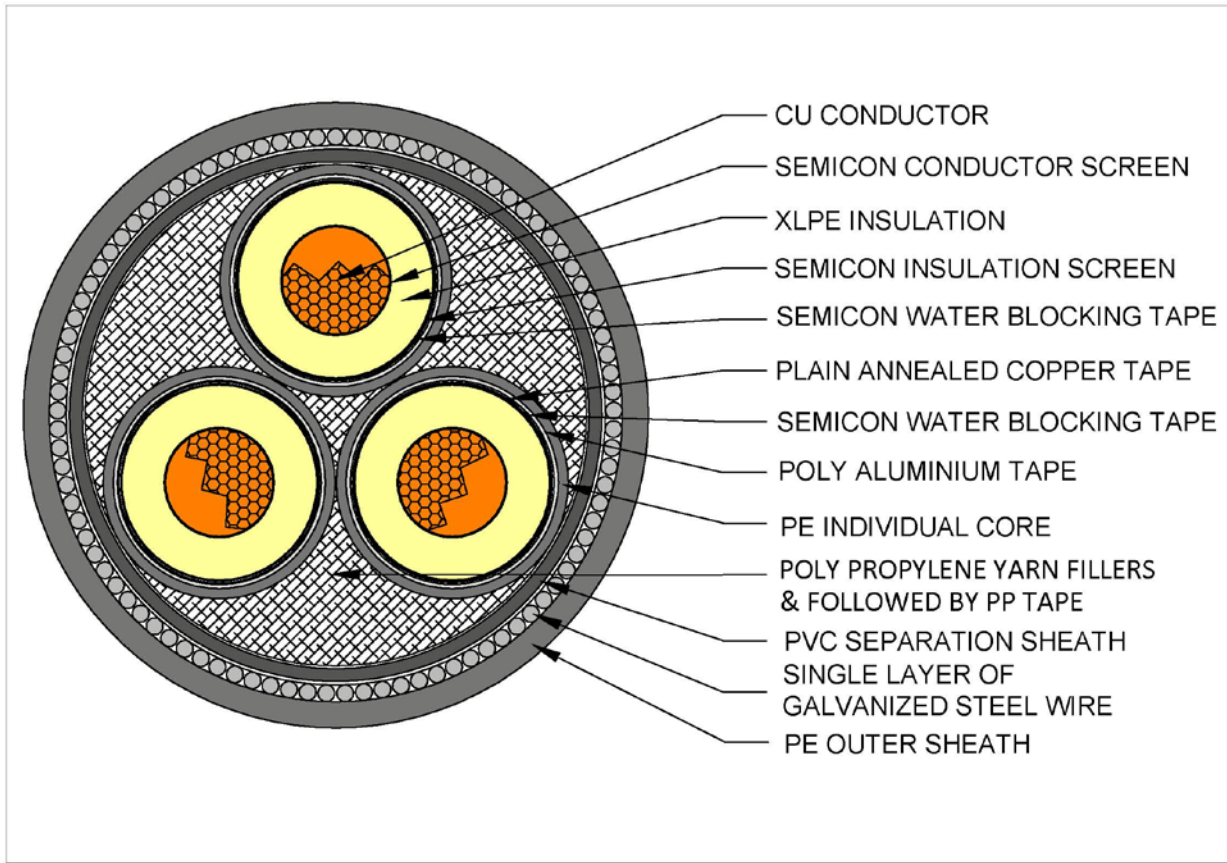






## Type 1-Standard Cable

- 😊 Copper tape screen and armour together withstands short circuit of 23.21 kA/1sec.
- 😞 Non water tight construction
- 😊 Tolerates mechanical stresses
- 😊 PVC outer sheath provides fire retardant property



## Type 2-Radially and longitudinally water tight cable



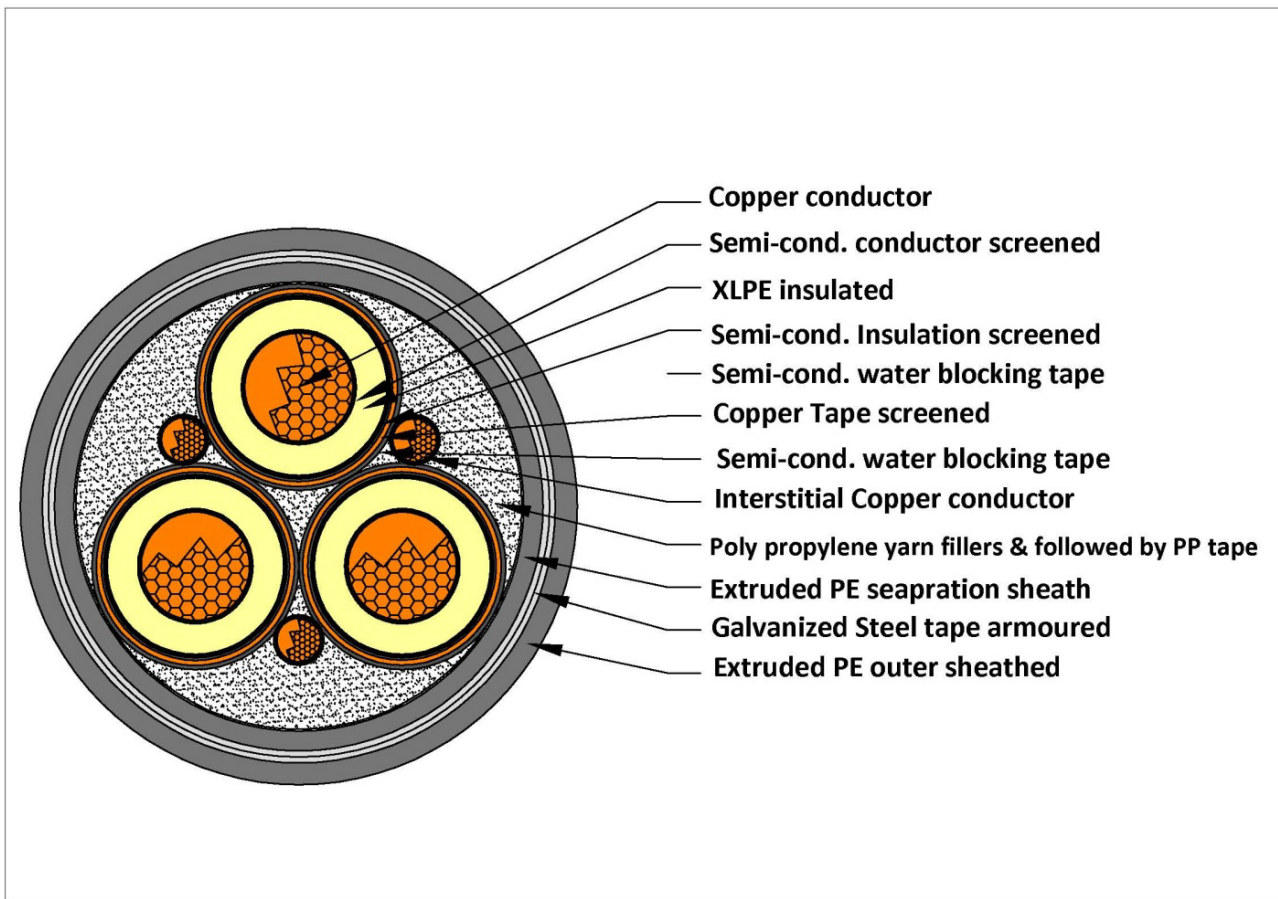
Copper tape and armour together withstands short circuit of 25.14 kA/1sec.

Problematic installation due to high diameter

Radial & longitudinal water tight at each core

Tolerates mechanical stresses

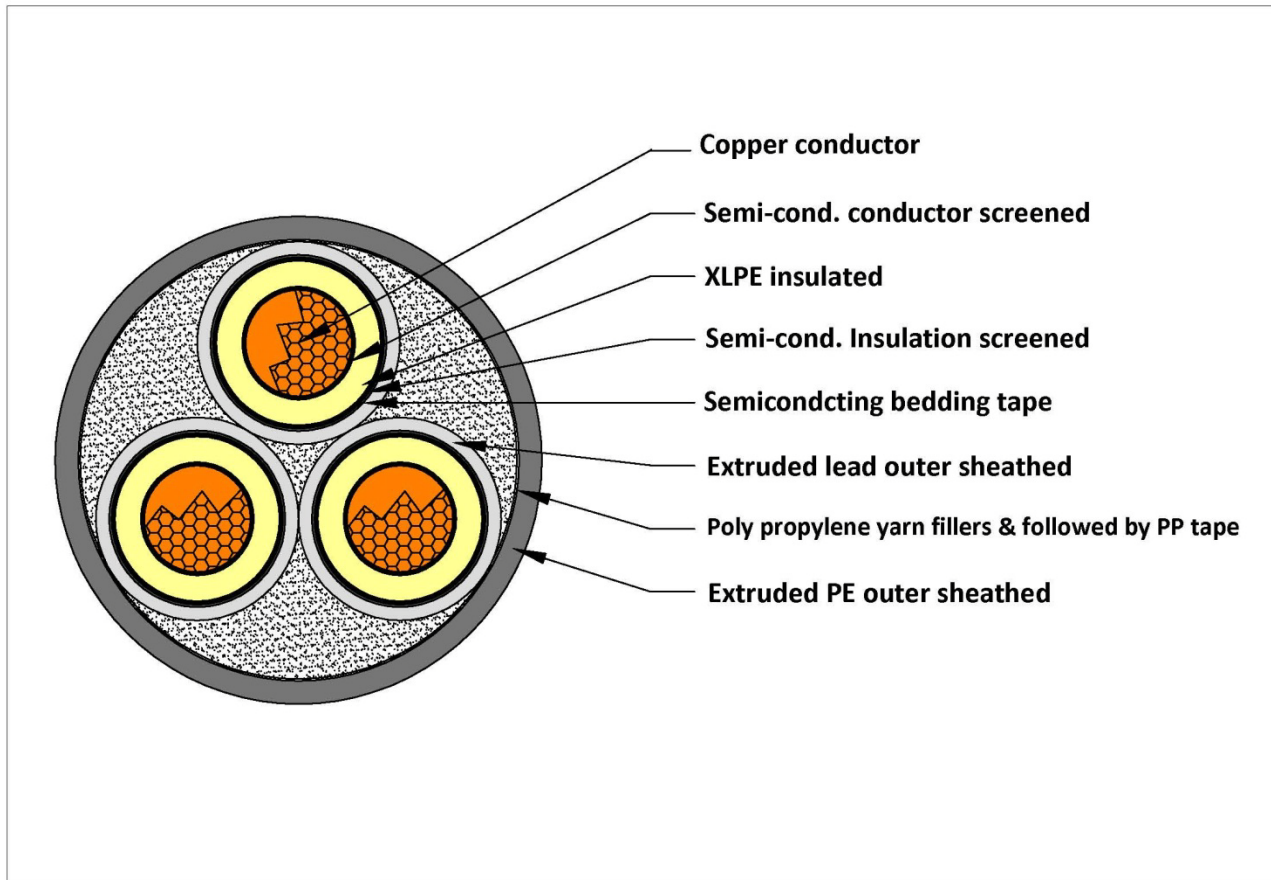
PVC bedding and PE sheathing not recommended



### Type 3-Water tight at conductor level with interstitial copper conductor

- 😊 Copper tape screen withstands short circuit of 21.84 kA/1sec.
- 😊 longitudinal water tight only at each core
- 😞 high cost
- 😞 Steel tape armour is weak
- 😞 PE sheath provides addition mechanical protection





## Type 4-Lead sheathed Radial and longitudinal water tight cable



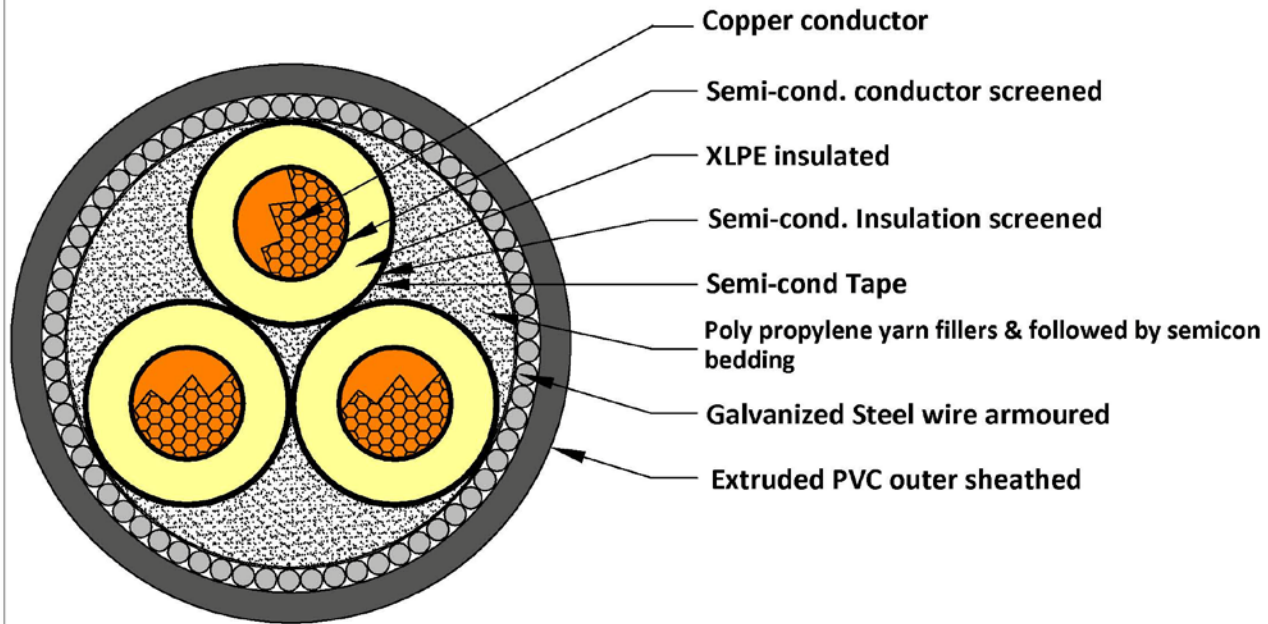
Short circuit of lead is 18.74 kA/1sec., and increases by more thickness.

longitudinal & radial water tight

Relatively low in cost

Mechanically weak

Special installation due to heavy weight

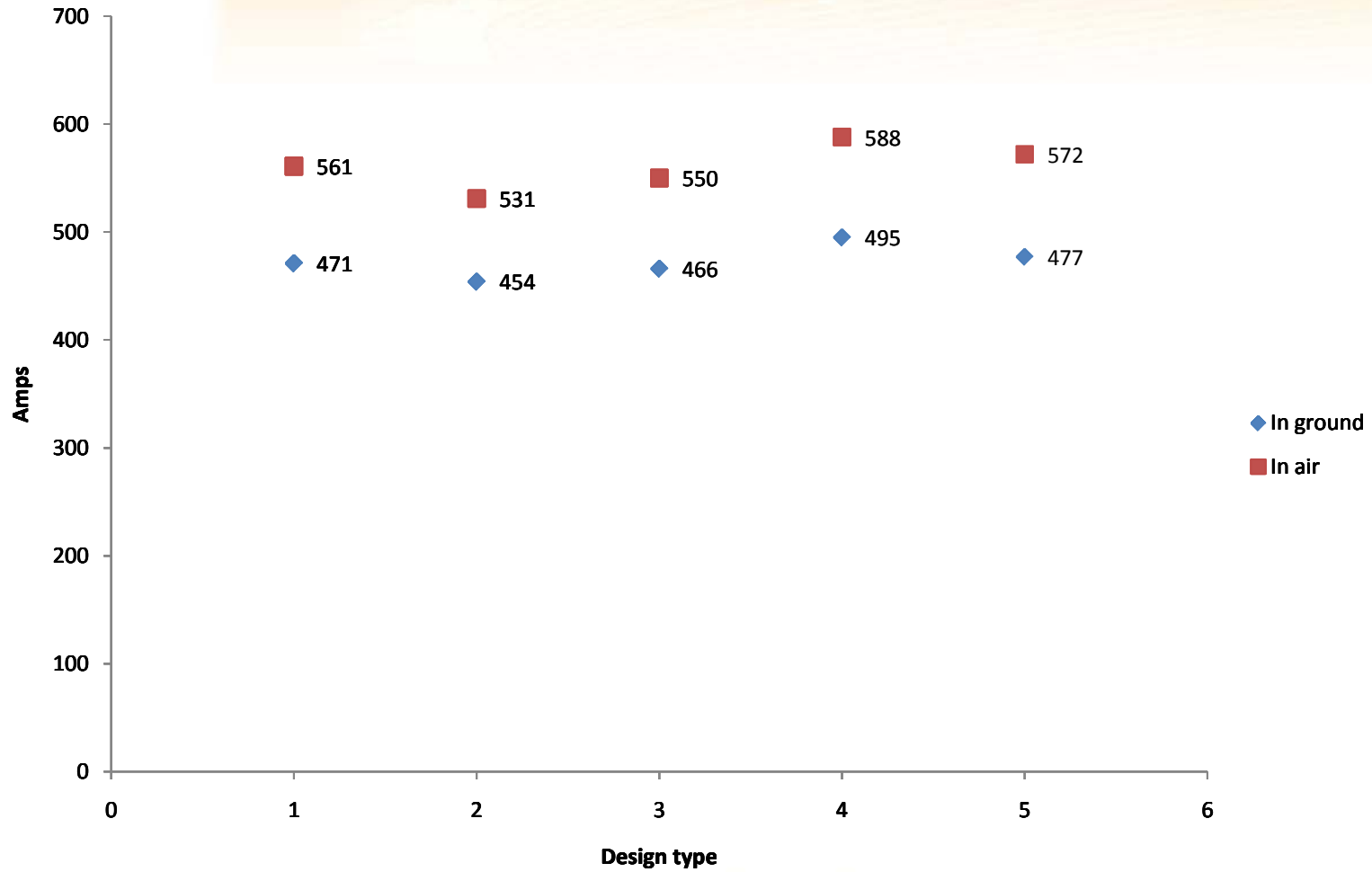


## Type 5-Without Individual Screen, Non water tight cable

- 😊 Armour short circuit of 18.64 kA/1sec.
- 🤖 No water tight
- 😊 Lowest in copper content
- 😊 Mechanically tough
- 😊 Least in dimension and weight

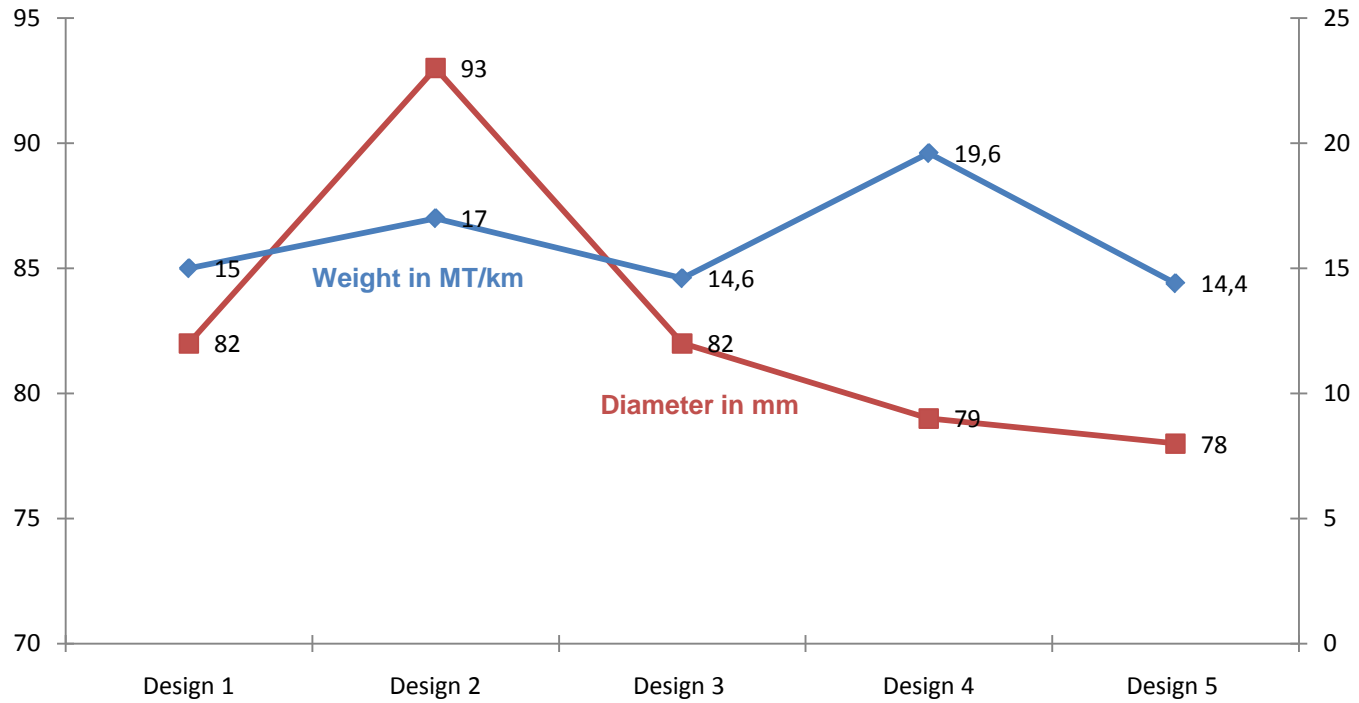


# Comparing – Current Rating



# Comparing – Physical Dimensions

## Physical dimension of cables



# Conclusion

<u>Characteristics</u>	<u>Design 1</u>	<u>Design 2</u>	<u>Design 3</u>	<u>Design 4</u>	<u>Design 5</u>
	Standard Armoured, PVC sheathed	Individual core WT PVC/SWA/PE	Separate Earth conductors PE/STA/PE	Individual core Lead sheath/PE	Armour as Earth return /PVC
Continuous electrical load	G	G	G	E	G
Short Circuit load	E	E	F	G	E
Bending properties (flexing property)	G	F	G	P	E
Anti Termite and Rodent, Reduced water diffusion, higher abrasion resistance and increased toughness.	G	E	E	E	G
Water Resistant	F	E	G	E	F
Joint and Accessories	Standard	Special	Special	Standard	Standard

E – Excellent ;G – Good; F-Fair ; P- Poor



**End of presentation**

Thank you for listening

OBRIGADO