

Characteristics of Long length underground links in Japan



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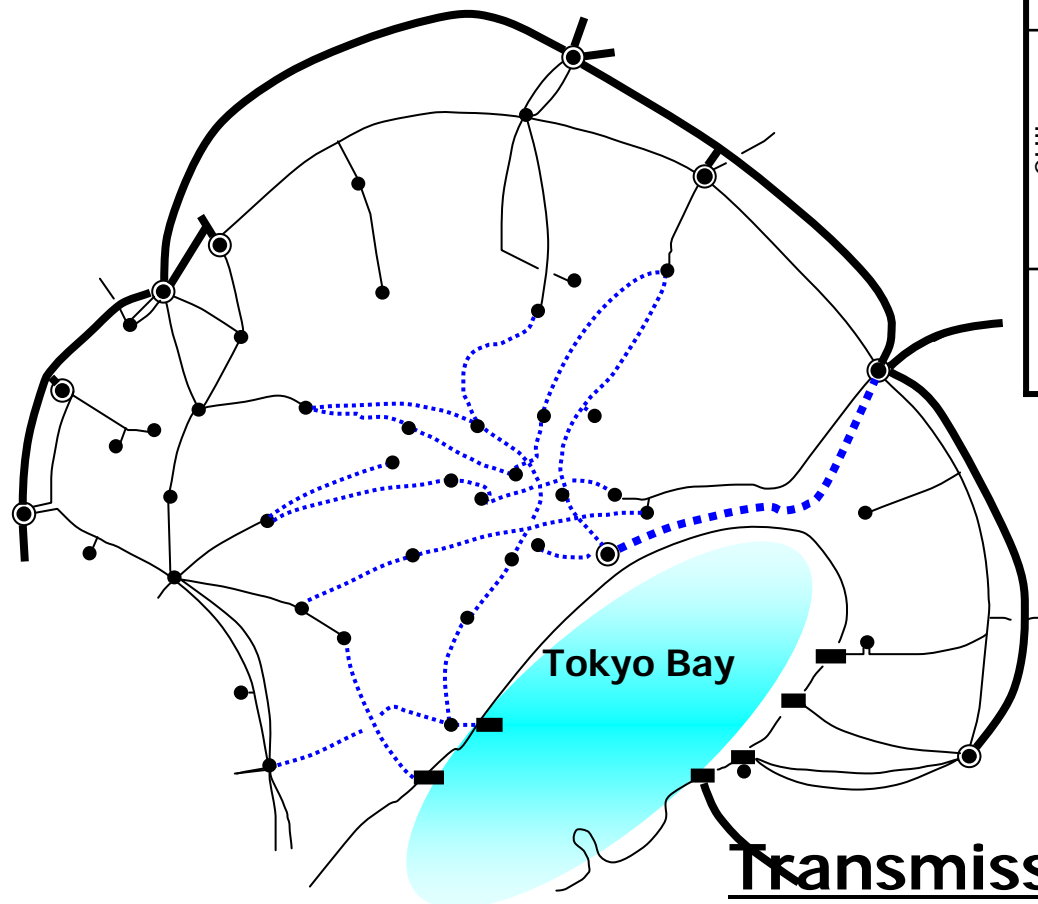


Long length underground link in JAPAN

- Long length underground link have been introduced into Mega city of Japan for long years according to “Power system network strategy” of power utilities.
- Formerly Oil-filled cable was adopted and since late 1980’s XLPE cables have been generally applied also for 500kV transmission line.
- Typical projects
 - Shin-Toyosu : 500kV XLPE 40km
 - Honshu-Shikoku interconnection : 500kV OF 22km
 - Chita-Minami/Daini-Buheicho : 275kV XLPE 27km

Geographical situation

[1] Power Systems in TEPCO

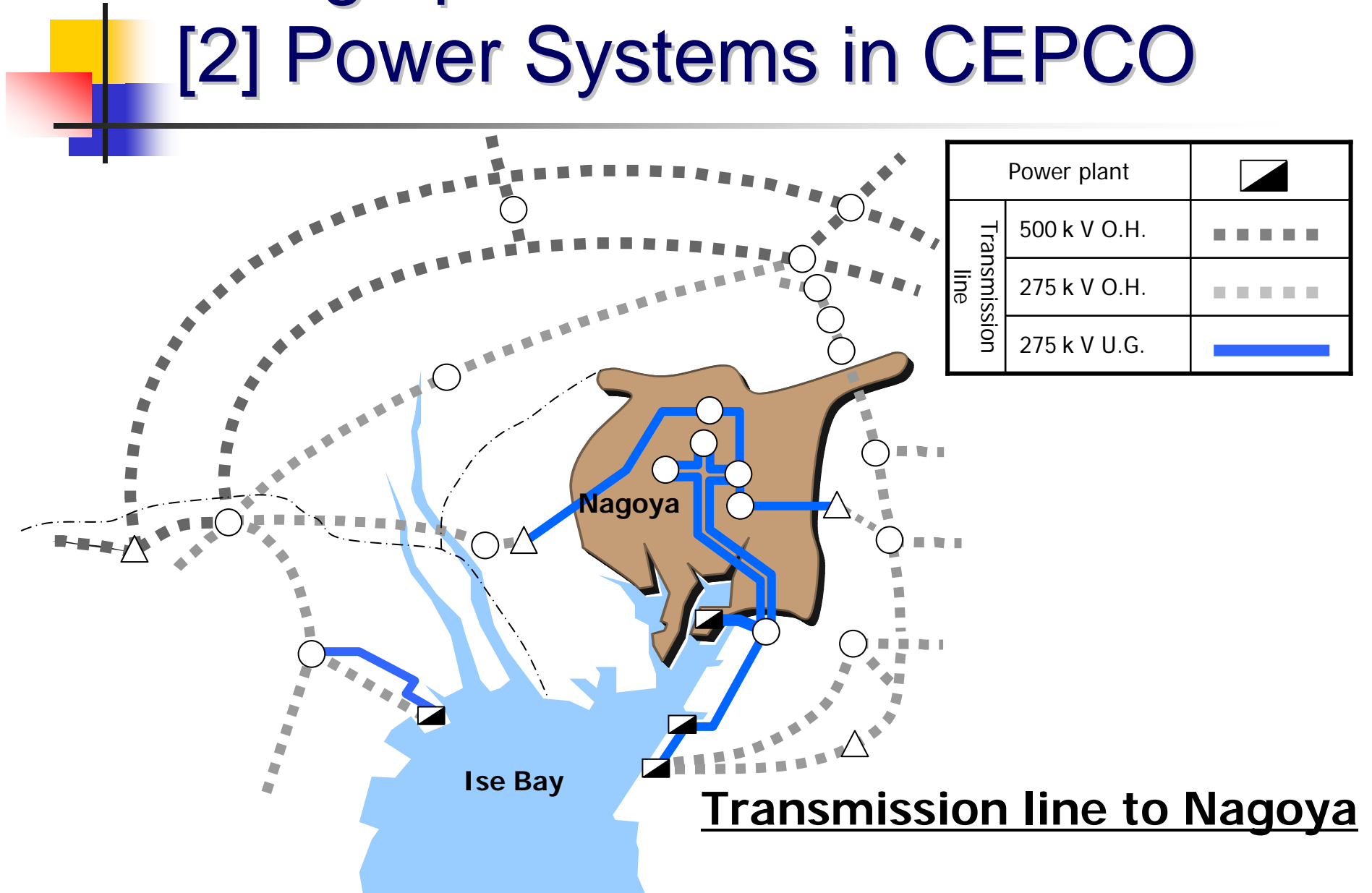


	Power plant	■
Transmission line	500 k V O.H.	—
	500 k V U.G.	⋯
	275 k V O.H.	—
	275 k V U.G.	⋯
S/S	500KV	⊙
	275 k V	•

Transmission line to Tokyo

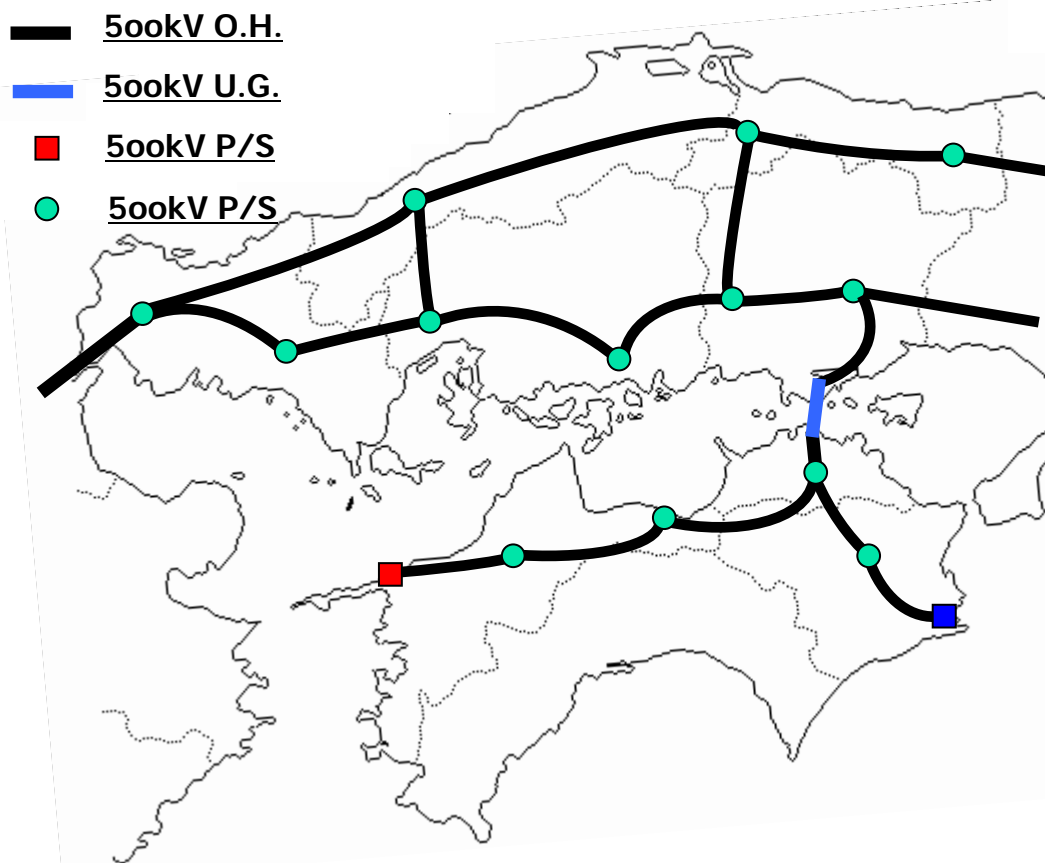
Geographical situation

[2] Power Systems in CEPCO



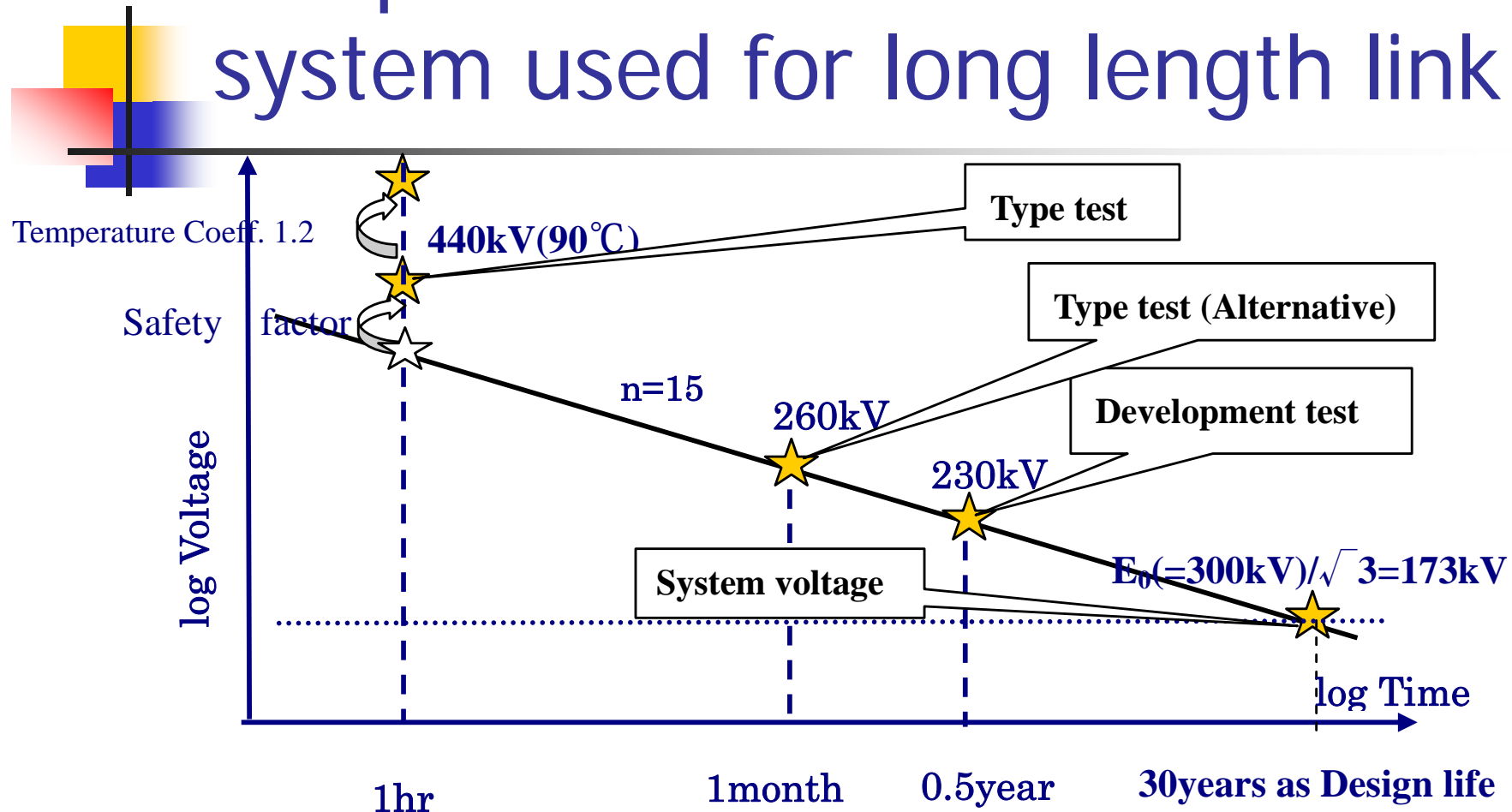
Geographical situation

[3] Interconnecting Link by EPDC



500kV Cable on Honshu-Shikoku Bridge

Prequalification test of UG Cable system used for long length link



The test conditions for these test is based on JEC3408 testing standard which reflect the insulation design concepts and are determined by equivalency conversion of the 30 years, representing the design life, by using V-t laws.

Prequalification Program of 500kV XLPE Cable system in JAPAN

	1	2
Cable	2500mm ² Aluminum and Stainless Corrugated Installed in Tunnel	3000mm ² Stainless Corrugated Installed in Air
Accessories	EMJ SF ₆ Gas Sealing ends Outdoor Sealing Ends	Prefabricated Joint SF ₆ Gas Sealing ends (Dry type)
Test Condition 8hrs-On / 16hrs-Off	450kV 5920hrs RT-90 degC 202cycles RT-105degC 41cycles	420kV 4620hrs RT-90degC 150cycles RT-105degC 30cycles
Higher reliable system could be achieved by these testing program		



Characteristics of C a b l e

	Tokyo 500kV	Tokyo 275kV	Chubu 275kV	Kansai 275kV
Insulation	XLPE (t=min27)	XLPE (t=23)	XLPE (t=27)	XLPE (t=23)
Metallic Sheath	Aluminum Corrugated	Aluminum Corrugated	SUS Corrugated & Copper Wires	SUS Corrugated or Al Laminated
Jacket	Flame retardant PVC for Tunnel installation PVC for Duct installation			
Joint	EMJ	EMJ to Prefabricated	EMJ	Prefabricated