With the support of CIGRE
Committee B1 : Insulated Cables

WETS’15 *QUESTIONNAIRE*

WETS’15
World Energy Transmission System

Form N° …

Achievement and experience in service of long length (> 10 km), HV, EHV and UHV electrical links by AC and DC insulated power cables

The results of the surveys for WETS'05 / WETS'07 / WETS’11 are available on the site jicable.org page Workshops. See also CD Roms WETS'07 and WETS’11

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1 – HV, EHV and UHV Insulated power cables AC links

1.1 – Geographical situation of the link

Country : JAPAN

Area : Waterfront areas along Tokyo Bay

1.2 – Characteristics of the link

Network : Tokyo Electric Power Company

Link name : Kawasaki-toyosu Line

Nominal power (MW): 492MW

Nominal voltage (kV): 275kV

Link length (km) : 22.2km

Number of circuits : 1 cct

1.3 – Characteristics of the cables

Cable type : XLPE Cable
Manufacturer(s)
Installation: underground (in tunnels, in ducts, in concrete, directly buried…), submarine (embedding depth, cable protections…)
Manufacturers : J-power systems ・Viscas
Installation : underground(in tunnels), underbridge (in duct)

Forced cooling:

Yes : ✔ , type : Cooled Water circulation (Tunnel,Trough)

No : ☐

Insulating material : XLPE
polymer, paper, …

Metallic screens bonding : Aluminum
Solidly earthed system (Cross-Bonding)

Lineic inductance : 367μH/km

Lineic capacitance :	242nF/km
Testing of the link (before commissioning, and during operation):	Before commissioning

1.4 – **Is a compensation of the reactive power achieved?**

Yes : ✔ No : ☐

Why? :

Position of the compensation :
At the end, intermediary, Why? At the end

1.5 – **Characteristics of the compensation**

Nominal power (Mvar) :	150 Mvar
Technology :	Shunt reactor
Occupied space (m^2):	_____
Cost (€ or US$) :	_____

1.6 – How are considered the problems of cable integration into the system?

- Stability of voltage and frequency:

- Propagation of slow transients, resonances:

- Distribution of currents related to the different impedances

_____

_____

_____

_____

_____

1.7 – **Operating results of the compensated link:**

Technical and economical performances :

_____

_____

1.8 – **Publications or available documents concerning this link:**

_____

_____

_____

_____

_____

2 – HV, EHV and UHV insulated power cables DC links

There are no application. Unfortunately, no information can be provided.

2.1 – **Geographical situation of the link:**

Country : _____

Area : _____

2.2 – **Characteristics of the link:**

Network : _____

Link name : _____

Nominal power (MW): _____

Nominal voltage (kV): _____

Link length (km) : _____

Number of circuits : _____

2.3 – **Characteristics of the cables and accessories:**

Cable type : _____
Manufacterer(s)
Installation: underground (in tunnels, in ducts, in concrete, directly buried…), submarine (embedding depth, cable protections…)

_____

_____

Forced cooling:

Yes : ☐ , type : _____

No : ☐

Insulating material : _____
polymer, paper, …

Characteristics of the accessories: _____

Testing of the link (before commissioning, and during operation): _____

2.4 – **What are the reasons for choosing this technology?**

_____

_____

_____

_____

2.5 – What are the difficulties of integration of the conversion station in the network and the solutions (problem of protection of the link and of the network…)?

_____

_____

_____

_____

_____

2.6 – **Operating results of the link:**

DC link and Converters:DC

_____

_____

_____

2.7 – **Publications or available documents concerning this link:**

_____

_____

_____

3 – General issues concerning terrestrial or submarine insulated power cables AC or DC links

3.1 – What is the logistics of major projects and planning issues in particular in the case of tunnel (e.g., the problem of routing of large drums ...)?

_____

_____

_____

3.2 – What are the results of studies on the failure rate of these links taking into account the number of joints (elementary sections related to the capacity of drums). What is the estimated reliability of these links? What repairing solutions to reduce the duration of unavailability in case of failure?

_____

_____

_____

3.3 – How did react suppliers in terms of availability and responsiveness to the different phases: design, supply, repair?

_____

_____

_____

3.4 – Are there any diagnostic methods for assessing the health status of a submarine link of 100 km?

_____
N/A
_____

_____

3.5 – What are the acceptance tests for significant long length links?

_____

_____

_____

3.6 – What are the technical solutions to realize links with three ends?

_____
N/A
_____

_____

3.7 – What is estimated cost of the investment and operation of these links (the distribution of these costs to the supply, installation work and assembly / test)?

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