IFA 2000
The refurbishment of the Cross Chanel Link

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SOMMAIRE

01. Presentation
02. Which elements to refurbish and why?
03. From the old installation to the new IFA 2000
04. New functionnalities
05. Conclusion
IFA 2000 : Presentation of the interconnexion
IFA 2000 – THE CROSS CHANEL LINK

Diagram showing the cross channel link with labels for CER, BP, Pole, Sellindge, La Manche, and Les Mandarins.
The Site of Les Mandarins

The connection IFA 2000 is divided into two called independent bipôles parts (parties), of a power of 1000 MW each.

A bipôle is constituted of two poles of + and - 270 kV, so that every pair of cables is capable of transporting 500 MW.

Close to the coast, the site of the Mandarins was built in a valley to limit the visual nuisance.
Its total surface is 15 hectares.
Which elements to refurbish and why?
WHAT?

VALVES, ITS COOLING AND THE VENTILATION AND AIR CONDITIONING OF THE VALVES HALLS

CONTROL SYSTEM AND COMMUNICATION SYSTEM BETWEEN THE CONVERTER STATION AND REMOTE CONTROL.

WHY REPLACING THE VALVES?

- THYRISTOR FAILURES
- AVAILABILITY
- IMPACT ON THE MAINTENANCE
- FAILURES OF OTHER COMPONENTS IN THE VALVES

WHY REPLACING THE CONTROL SYSTEM?

- NEW TELECOMMUNICATION TO CONTROL THE CONVERTER STATION
- OTHER CONTROL SYSTEM FAILURES
The cross channel link project: From the old installation to the new IFA 2000
IFA 2000 PROJECT

- International project with NG, NGC, RTE
- Common contract with common specifications
- One supplier for both sites with the same equipment
- Commercial constraints for the outages
- One bipole after the other
Valve Hall and Module

Commissioned in 1986

Commissioned in 2011 and 2012
# Valves Comparison

<table>
<thead>
<tr>
<th></th>
<th>OLD</th>
<th>NEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pole</td>
<td>3 quadrivalves</td>
<td>3 quadrivalves</td>
</tr>
<tr>
<td>1 valve</td>
<td>12 tiroirs</td>
<td>8 sections of valves</td>
</tr>
<tr>
<td>1 tiroir/ 1 Section</td>
<td>8 niveaux</td>
<td>5 and 6 levels</td>
</tr>
<tr>
<td></td>
<td>3 doubles ; 2 simples</td>
<td></td>
</tr>
<tr>
<td>1 level</td>
<td>2 thyristors</td>
<td>1 thyristor</td>
</tr>
<tr>
<td>4 poles</td>
<td>9216 thyristors</td>
<td>1968 thyristors</td>
</tr>
</tbody>
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• Redondance : 3%
CONTROL SYSTEM : COMPARISON
04

New functionalities
FUNCTIONNALITIES THAT DID NOT EXIST IN 1986

- FREQUENCY CONTROL NEW FUNCTIONALITIES

- TO DEBLOCK THE VALVES AT 50MW INSTEAD OF 100MW IN ORDER TO HAVE A BETTER ACCURACY FOR THE COMMERCIAL EXCHANGES

- THE ACCURACY OF THE POWER ORDER SET TO 1MW IN ORDER TO HAVE A BETTER ACCURACY FOR THE COMMERCIAL EXCHANGES
THE KEY DATES

2008
Signature of the contract with Alstom

2009 - 2010
Studies and Design phases

2010 AND 2011
FAT of the control system of BP1 and BP2

2011
Outage, civil works and Commissioning of BP1

2012
Outage, civil works and Commissioning of BP2
05

CONCLUSION
HAVE A NICE VISIT