

**B7.4****Experience in service of submarine power cables 150 kV in Bali strait**

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Résumé

Le Détroit de Bali est un détroit entre l'île de Java et l'île de Bali qui relie l'Océan Indien à la mer de Java. La largeur du détroit de Bali est de 5000 m et le maximum de profondeur est de 100 m. L'alimentation de Bali est assurée par des câbles sous-marins de 150kV.

PT PLN (Persero) est la compagnie d'électricité Indonésienne qui a installé en 12 ans 9 câbles (5 avec 3 armures et 4 avec une armure) entre Java et Bali. A ce jour 3 câbles seulement sont disponibles. Les autres ont été détériorés et des claquages sont intervenus suite à des fuites d'huile.

Cette communication examine les problèmes liés aux conditions d'installation des câbles dans le détroit de Bali.

Abstract

Bali strait is a strait between Java Island and Bali Island, which connecting Indian Ocean with Java Sea. Bali strait has a width less than 5.000 m and a depth in a maximum of 100 m. The needs of electricity in Bali Island is transmitted from Java Island by Submarine Power Cable 150 kV.

PT PLN (Persero) an Indonesian Electricity Company within 12 years has installed 9 cables (5 cables 3 core and 4 cables single core) but which up to now only 3 cables left. The caused of damaged cables is due to an insulation breakdown initiated by oil leakage.

This paper will explain a true story of unsuccessful submarine power cable installation in Bali Strait, which could be a good experience. And remind us that unique activity or tailor made project in past experience will not give us a full guarantee to have success project, because in depth of the sea still remain a nature secret.

I. Introduction

Indonesia comprises more than 13.000 islands straddling the equator in South East Asia. Most of the population of 210 million are concentrated in Java Island.

PT PLN (Persero) an Indonesian Electricity Company is the statutory authority appointed to generate, transmit, and distribute power throughout the whole archipelago.

Java, the most densely populated island, the totally of the integrated circuit of 500 kV, 150 kV and 70 kV transmission network is stretch over 1000 km from the western of Java to Bali Island.

Large, modern oil and coal fire, hydro power station and even a geothermal power stations supply this network which enables power to be produced and transmitted cheaply throughout the island. On the other islands with densely populated areas, modern generation and transmission system are also developing although the distances separating the load centers have meant that full interconnection has not yet been possible.

By comparison, the less densely populated islands have to relay on isolated small diesel generating plants at each load center. These power station are expensive to run and maintain and do not all provide twenty-four hour service to consumers.

II. Background

Bali Island is located approximately 5 km to the East of the Java Island and brings in a lot of tourists to come there. So, the supply of energy in Bali Island to be needed and has been increasing year by year.

The supply of energy in Bali Island up to the middle of 1988 produced by gas and oil. Therefore, the energy cost per kilo watt hours especially in Bali system become higher than Java system and is not economical.

To fulfill the increasing of energy supply caused by demand with the high reliability, the alternative power supplies are needed.

In accordance with the energy sales in Bali island become increase every year, so the management of PLN examine the problems. On 1982, they have decided to build by interconnecting the Bali Island power systems to the integrated system on Java through submarine cable.

III. Experience in Service

The first construction of 150 kV Java-Bali Submarine Cables has been signed on November 17, 1984.

The ability to transfer of energy is 120 MVA per circuit. The detailed survey of the seabed conditions in the Bali