

HYDRO POWER GENERATION IN DOMINICA

History

Roseau Valley



- **DOMLEC first came into being in 1949 when the Government of the commonwealth of Dominica and the Colonial Development Corporation (CDC), as it was then known started the development of a hydro-electric scheme in an area of Dominica called the Roseau valley.**

- **By 1952 the first two hydro turbines were commissioned at Trafalgar Power Station, each driving a 320 kilowatt A.C. generator.**

- **In 1967 the second hydro power station, Padu, was commissioned on the Roseau River, downstream of Trafalgar. Padu contained two generators of 940 kW each and along with Trafalgar produced nearly all the energy requirements for a number of years.**

Padu Power Station Switch House



- **The rural electrification project was conceived in 1984 shortly after Government assumed full ownership of the company the year before.**

Hydro Expansion

- **Due to serious concerns expressed at the increasing cost of electricity DOMLEC proposed to undertake a hydro-electric expansion scheme.**

Main Objectives of Project

- a) Making more water available in the valley to turn an extra turbine.**

- b) The increase in the storage capacity of the Fresh Water Lake with the construction of a concrete dam at its outflow**

- c) The hydropower potential between the Fresh Water Lake outlet and the existing header tank at Laudat is to be utilized by the new Laudat Power Station with a single turbo generator rated at 1320kW.**
- d) The increased water availability is to be conducted along an upgraded conveyance system to Trafalgar Power Station where two new turbines each of 1760 kW are to be installed in an annex to the existing building, referred to as new Trafalgar**

Hydraulic Circuit

BALANCING TANK

TOTAL VOLUME: 4000 CUBIC METERS OF WATER
ELEVATION: 543 METERS ABOVE SEA LEVEL

The Balancing Tank is part of DOMLEC's Hydro Electricity System, the largest in the Eastern Caribbean. 40% of Dominica's electricity is produced through Hydro.

DOMLEC The Power To Serve You Better

HYDRO SYSTEM

YOU ARE HERE

DOMLEC (Dominica Electricity Services Ltd.) logo

FRESH WATER LAKE

ROSEAU RIVER

LAUDAT SURGE TANK

TRAFALGAR BALANCING TANK

TRAFALGAR

TRAFALGAR

PADU SURGE TANK

PADU INLET TANK

PADU

TURBINES TO GENERATE ELECTRICITY

The diagram illustrates a hydraulic circuit starting from a 'FRESH WATER LAKE' at the top right, which feeds into the 'ROSEAU RIVER'. The river flows through a 'LAUDAT SURGE TANK' and then through a series of turbines (represented by red circles) to generate electricity. The circuit continues through a 'TRAFALGAR BALANCING TANK' and another 'TRAFALGAR' turbine. It then passes through a 'PADU SURGE TANK' and a 'PADU INLET TANK' before reaching a final 'PADU' turbine. The sign also includes the DOMLEC logo and the slogan 'The Power To Serve You Better'.

Difficulties Experienced Over The Years

Natural

- **Damage done to building during the hurricane of 1979, Hurricane David in which the entrance door and wall were affected**
- **Damage incurred to the Padu Turbine House in 2007 as a result of another hurricane**
- **Broken rotor shaft on one of the turbines at Trafalgar**

Man-Made

- **Arbitration of DOMLEC / NORD France dispute**
- **Serious vibration issues has arisen since the commissioning of the generators at Padu to the extent that the output prior to hurricane in 2007 cannot be sustained on a regular basis**

Renewable Energy Future Plans

- Replacement of the Padu pipeline with one of a greater diameter with the aim of obtaining an increased output of about 400-500 kW**
- Construction of a 300 kW station at Newtown**
- A feasibility study is being conducted for approximately 2 MW of solar power for 2014**

Progress

To date DOMLEC has applied to the UNDP (United Nations Development Program) for a US\$ 2,000,000 grant to fund the pipeline replacement project and the 300 kW station in Newton.

END

Man-Made

- Serious vibration issues has arisen during and after the commissioning of the generators at Padu to the extent that the output prior to hurricane in 2007 cannot be sustained on a regular basis