



National Research Council
Canada

Conseil national de recherches
Canada

230 kW GRID-COUPLED FIELD TRIAL SYSTEM

WORLD'S LARGEST VAWT

JOINT PROJECT WITH HYDRO QUEBEC (IREQ)

MANUFACTURED BY DAF INDAL

LOCATION: MAGDALEN ISLANDS

SPECIFICATIONS: ROTOR: 122 FT TALL, 81 FT DIAMETER, SWEEPED AREA 6400 FT²
TOWER: 30 FT
POWER: 230 kW IN 30 MPH WIND AT 30 FT ALTITUDE
EXPECTED ENERGY OUTPUT: 400 MWH PER YEAR

EXPERIENCE: FIRST OPERATION 1977

- TEST PROGRAM HIGHLIGHTS - OPERATION AT UP TO 86% OF FULL DESIGN SPEED
- PERFORMANCE BETTER THAN PREDICTED
- DATA ON GUY VIBRATION
- PRELIMINARY STRESS DATA

- RUNAWAY FAILURE 6 JULY 1978 - FAILURE OCCURRED AFTER OPERATION AT NEARLY TWICE DESIGN SPEED FOR OVER ONE HOUR
- PRIMARY CAUSE PROCEDURAL
- MECHANICAL INTEGRITY AND BASIC DESIGN CONFIRMED

- REBUILD - ROTOR AND GUYS ONLY, TO ORIGINAL DESIGN
- ADDITION OF LOW SPEED SHAFT BRAKING SYSTEM
- UPGRADED INSTRUMENTATION

- TEST STATUS - RECOMMENCED JAN. 1980
- CONFIRMED PREVIOUS PERFORMANCE DATA
- EXTENSIVE DYNAMIC STRESS DATA
- OPERATION AT 100% DESIGN SPEED IMMINENT

RESEARCH TESTING TO CONTINUE TO LATE 1980, FOLLOWED BY CONTINUED AUTOMATIC SERVICE IN MAGDALEN ISLANDS UTILITY NETWORK