

"Mid-Size Wind Energy System combined with Mobile Battery Packs for EV motorcycles for Romblon Island, Philippines"



Corporate History

Former Komai Tekko Inc. 1883 Founded in Osaka by Komai 1922 Founded in Osaka by Harumoto Risaku 1943 Establishment of Komai Tekko Sho Co. Ltd. 1950 Opened Tokyo Office 1951 Changed name to Harumoto Tekko Sho 1961 Listed on the Osaka Stock Exchange Market (Komai Tekko Sho and Harumoto Gumi) 1962 Opened Tokyo-Matsudo Factory in Chiba 1968 Opened Hirakata factory

1969 Opened Osaka Sotojima Factory (now Osaka Factory)

1980 Opened Tokyo Main Office

1984 Listed on the Tokyo Stock Exchange Market 1989 Renamed as KOMAI TEKKO Inc. 1991 Moved Headquarter to Tokyo 1993 Opened Chiba Factory

1995 Opened Futtsu Factory in Chiba

2000 Listed on the Tokyo Stock Exchange 2001 Changed name to Haltec Co.Ltd

2006 Developed 300kW Wind Turbine and Installed Prototype

2010 Komai Tekko Inc. and Haltec Co. Ltd. merged and started operation as Komaihaltec Inc.

Futtsu Plant





Major Bridge Projects





Major Building Projects



Prepared by Komai haltec Inc.

Wind Turbine Manufacturing since 2006



300kW Wind Energy Generating System



- Blade Length: 16m
- Nacelle
 weighs under 18t
- Tower Height: 41.5m (4 blocks: each weighs under 10t)
- Transportable with 10ton trucks and 15 ton low bed trailer
- Erection with 160t crane or 60t cranes

300kW Wind Turbine: KWT300



Induction generator · Active Pitch · Active Yaw
 SCADA monitoring system · AC-DC-AC Full Convertor

High durability against turbulence and hurricane

IEC WTGS Class		Ι	Π	III	S (KWT300)
Vref(m/s)		50	42.5	37.5	50
Vave(m/s)		10	8.5	7.5	8.5
Iref	A	0.16	0.16	0.16	0.18
Turbulance Intensity	В	0.14	0.14	0.14	
	С	0.12	0.12	0.12	

- World highest Turbulence Intensity: Iref = 0.18
- Survival Wind Speed : 70m/s (standard model),
 91.26m/s (typhoon model)
- Lightening protection, High earthquake resistance

Project Video



 <u>https://global.honda/about/sustainability/en</u> vironment/face/case86.html

Romblon Project Implementing Scheme

• Ministry of Environment of Japan Program "Financing Programme to Demonstrate Advanced Low-Carbon Technology Innovation for Further Deployment in Developing Countries"



Project Background and Objectives

- **300+ isolated power grids** with diesel generators in the Philippines.
 - High Cost & High CO2 emission
 - Fuel supply vulnerable to bad weather
- **Good wind resource** especially mid to north of the country.
- Issue of surplus energy with Renewable Energy system
 - > Charging surplus energy to Battery packs for EV motorcycles
- Issues of "charging" batteries: time, availability etc.
 - > Battery packs are Mobile and Stored at charging station

Project Location

3 WTs on the mountain ridges.**5 Battery exchanging stations** in downtown and in a southern village



System Outline





	Project Outline					
	Project participants	Komaihaltec Inc / Honda Motor Co., Ltd. Romblon Electric Cooperatives				
	System components	3 units of 300kW wind turbines (Komaihaltec) Mobile Power Packs, 17 Battery Charging station units and 100 electric vehicles (Honda Motor) Control system for charging surplus energy to battery packs				
	Period	Design and Build: September 2017 to February 2019 Demonstration: February 2019 to 2023 Jan				
Õ	Komaihalter	Inc. Honda Motor Co. Ltd. Rombion Electric				

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Excess power Charged to Drive



- Battery packs are basically charged during the night to store excess energy from wind turbines. >>>> Enabling the maximum use of wind energy.
- Energy charged to batteries will replace the gasoline for motorbikes
 >>>> Additional CO2 emission reduction is expected. (68t-CO2/year/100units.

Typhoon resistant system



- Equip emergency generator to keep the down wind position during power outage
- Survival wind speed increases from 70m/s to approx. 80m/s



Wind Energy Production



KOMAIHALTEC Inc.

Estimated project benefit from Wind Turbine Introduction

Estimated Wind Speed at site (year average)	6.22 m/s at 33meter height 6.51 m/s at 41.5meter height
Estimated Wind power generation per year Capacity Factor	3 units: 2,003MWh 25.42 %
Current power generation cost by Diesel power stations (estimate)	PHP16/kWh = USD0.34/kWh
Estimated Generation cost by Wind Energy	PHP 6.19 /kWh (after subsidy from Japanese government)
Estimated economic benefit by substituting diesel powered electricity with wind generated electricity	(PHP16-6.19) x 2,003MWh = PHP 19,669,050 / year = PHP 393,381,000 for 20 years
Estimated CO2 reduction merit per year (when calculated at 0.8ton-CO2/kWh)	3 units: 1,602.4 ton-CO2

Timeline

2016

2019



- July: first visit to Romblon by Komaihaltec team
- Start F/S and Wind Monitoring
- May: applied to MOEJ program
- Sep: Official start under MOEJ program
- Manufacturing of Wind Turbines, Design of control program, civil work
- Oct: Delivery of wind turbine from Japan to Romblon, Start of delivery of E-bikes and battery changing station
- Nov-Dec: Erection of WTs, Arrival of E-bikes at Romblon
 - Jan: Start demonstration operation
 - Feb: Submission of report to MOEJ













WT parts at the port









For more information Please contact

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