



TERMS OF REFERENCE

For The

Supply, Delivery, Installation and Testing of Hydrogen Generator Parts at PAGASA Davao Station

A. OVERVIEW

Hydrogen gas plays a crucial role in inflating meteorological balloons, which elevate upper-air sounding sensors to gather vertical profiles of pressure, temperature, humidity, and wind speed in the atmosphere. The data collected by these sensors is transmitted to a ground-based receiver linked to a computer workstation, where specialized software processes the information to create weather charts and forecasts for severe weather events such as thunderstorms, typhoons, and tornadoes.

Currently, the hydrogen generator in Davao is operational. However, according to the SAGIM maintenance manual, preventive maintenance is required every three years. This includes replacing components such as the anode plate assembly, compressor gasket valve box, solenoid, and other essential parts. As these components were last replaced approximately four years ago in 2020, they have now reached the end of their operational lifespan. Therefore, it is imperative that the winning bidder replaces the deteriorating parts to prevent potential downtime and ensure the efficient production of high-quality hydrogen gas.

B. APPROVED BUDGET FOR THE CONTRACT (ABC)

The Approved Budget for the Contract is ***Four Million Seven Hundred Eighty-Six Thousand Five Hundred Pesos (P4,786,500.00)*** inclusive of VAT and other applicable government taxes.

C. SCOPE OF WORKS

- 1) All spare parts, fittings, accessories and consumables must be delivered, installed and tested at PAGASA Davao Station which includes but not limited to the following scope of works.
 - a) Dismantling and replacement of anode of the electrolytic cells its rubber gaskets, fittings and accessories.
 - b) Dismantling and replacement of diaphragm of the electrolytic cells, fittings and its accompanying accessories.
 - c) Dismantling and replacement of oxygen analyzer and hydrogen monitoring display.
 - d) Dismantling and replacement of activated alumina load for hydrogen particle filter.

- e) Dismantling and replacement of compressor gasket, valve box and other accompanying accessories.
 - f) Dismantling and replacement of four (4) aluminum busbars.
 - g) Dismantling and replacement of ball valve.
 - h) Dismantling and replacement of two (2) sight glass or level gauge glass of the electrolytic cells.
 - i) Draining and replenishment of machine oil of the compressor.
- 2) Upon completion of the replacement of the needed spare parts, fittings, accessories and consumables of the hydrogen generator, the winning bidder shall conduct testing for 24-hours to check the endurance and operability of the machine.

D. DELIVERY AND INSPECTION

The winning bidder shall supply, deliver, install and test the Hydrogen Generator parts, fittings, accessories and consumables within **One Hundred Eighty (180) calendar days** from receipt of the Notice to Proceed (NTP) at PAGASA Davao Station, Davao City.

Prior to the delivery of the said hydrogen parts, the winning bidder must notify or inform the Chief Meteorological Officer of PAGASA Davao Station at least within seven (7) calendar days. This will ensure that PAGASA Davao Station will have time to prepare and make the necessary availability of inspection personnel on the said delivery date. After which, the delivered items will be checked, inspected, verified and witnessed by PAGASA Davao inspection personnel in accordance with the PAGASA Property rules and procedures. A documentation form will be prepared and executed by PAGASA Davao personnel in accordance with the list of deliverables indicated in the Purchase Order or Contract between PAGASA and the winning bidder prior to installation and testing.

E. TECHNICAL SPECIFICATIONS

Below are the technical specifications for the supply, delivery, installation, and testing of hydrogen generator parts, fittings, accessories, and consumables at the PAGASA Davao Station in Davao City. Where applicable, brochures supporting these technical specifications must include UL, CE, IEC, ANSI, or other recognized industry standard marks from the manufacturer's point of origin. Alternatively, separate standard certifications or ISO certificates may be submitted in lieu of these marks.

List of Spare parts:

Item No.	Description	Qty
01	514008-M000-01 Sagim / complete anode M25 KOH complete anode for KOH Cell	2
02	514007-ACIER complete diaphragm (for classic cell) BP-IM-14006 rep 5	2
03	518020-A002-00 Sagim / Analyzer complete 230V AC + sortie 4-20 Isole	1
04	518020-C000-00 Sagim / Cell for oxygen analyzer	2
05	110659 level gauge glass Ø58 x Ep: 5 (Pirex)	4
06	501811-A000-00 activated alumina load for hydrogen particle filter	1
07	501000-0000-00 valve box and set (including 2 compressor gasket)	1
08	compressor oil synthetic (1 liter)	1
09	500100-0000-00 complete set of pipes type Rislán for BPMP type 500	1
10	500032-0000-00 Sagim / maintenance kit for electrolysis cell type M25	2
11	518006-RACCORDS Sagim / complete set of fittings for 2x electrolysis cell type M25 and H ₂ /O ₂ collectors	1
12	Aluminum busbar	4
13	Ball valve	2
14	Travelling cost	1
15	Installation and Testing cost	1

F. TRAVELLING AND INSTALLATION/TESTING COST

The travelling cost shall cover the roundtrip plane tickets, meals allowance, hotel accommodation and transportation from hotel to PAGASA Davao Station and vice versa of the winning bidder's technical personnel. Payment for the installation and testing cost of spare parts shall cover the payment of two (2) technical personnel of the winning bidder.

G. INSTALLATION AND TESTING OF SPARE PARTS

After the installation of the spare parts and other components of the hydrogen generator supplied by the winning bidder, the system will undergo a 24-hour endurance and operability test. If the system successfully passes this test, it will be deemed operational. If it does not pass, a re-test will be conducted until the system meets the required operational standards.

"Tracking the sky...helping the country"

H. WARRANTY AND AFTER SALES SUPPORT

The warranty for the supplied spare parts is **one (1) year on-site**. If any of the spare parts provided by the winning bidder fail to function during this warranty period, the bidder shall replace them at no additional cost to PAGASA. All transportation, shipping, airfare costs, customs charges, and any applicable taxes related to the re-export or re-import of defective or replaced parts shall be the responsibility of the winning bidder.

Additionally, the winning bidder must provide 24/7 technical support through a help desk. They are required to respond promptly to any critical issues with the supplied system, ensuring that repairs are completed within a reasonable timeframe during the warranty period.

The counting for the warranty period start the following day after the signing of the Certificate of acceptance and completion by both parties.

I. DOCUMENTATION PROCEDURES

The winning bidder is required to provide complete documentation for each deliverable, which must be submitted and acknowledged by PAGASA Davao personnel. This documentation should include an inventory of all materials delivered, along with their corresponding serial or part numbers, if applicable, prior to installation. Additionally, photographs taken during the delivery, installation, and testing phases must be included as supporting documents for the winning bidder's billing statement.

J. TERMS OF PAYMENT

Payment to the winning bidder will be processed upon submission of a billing statement accompanied by all necessary supporting documents. These documents include proof of completion of all deliverables, an inspection certificate, schematic diagrams or drawings (if applicable), a certificate of completion, photographs taken during the installation and testing phases, and any other related documentation required by accounting and auditing rules and regulations.