燃气涡轮发电机组
GAS TURBINE GENERATOR PACKAGE

LM2500+G4

项目：
PROJECT:

项目地点：
PROJECT LOCATION：

项目编号：　　TBD
PROJECT NO:

编制Prepared by:　　**日期Date :**
20255.4.16

主题：
Subject:

本预算报价书没有考虑为遵守设备运行地的任何强制性规范和标准，若需要考虑任何该等法规，报价书的价格和交货条款应予以调整，以确保遵守上述法规。
This budgetary proposal does not take into account any mandatory codes and standards required to comply with where the equipment will be operated, and in the event that any such laws need to be considered then the price and delivery of the proposal shall be adjusted in order to ensure compliance with the same.

希望您对我们的报价书感兴趣，我们可以在您方便的时候进一步商讨该报价书。
Hoping that our proposal will be of your interest, we remain available to discuss further our proposal at your convenience.

如需更多信息，请随时联系我。
Please feel free to contact me for additional information.

基本报价：
BASE OFFER:

1. 供货范围Scope of Supply

带格式的：非突出显示

本报价书以下列供货范围为基础：
The present proposal is based on the following scope of supply:

燃气轮机
Gas Turbine

LM2500+G4型燃气轮机为双轴燃气轮机，由一个燃气发生器和一台六级低速动力涡轮机构成。动力输出轴穿过排气总管内的轴隧，通过挠性联轴器将轴端功率传递给热端的从动设备。燃气发生器由可变几何压缩机、干式低排放燃烧器（DLE）、高压透平、控制装置及附件构成。动力涡轮机是一个轴转速为3000RPM的六级低压透平，以气动耦合的方式联接到燃气发生器上，由燃气发生器的排出气体驱动。
The LM2500+G4 Gasturbine is a two-shaft engine consisting of a gas generator and a six stage low speed power turbine. Shaft power is transmitted to the driven equipment at hot end by means of a flexible coupling extending through a shaft tunnel within the exhaust collector. The gas generator consists of a variable geometry compressor, a Dry Low Emission (DLE) combustor, a high pressure turbine, control device and accessories. The power turbine with shaft speed of 3,000 rpm, is a six stage, low pressure turbine, aerodynamically coupled to the gas generator and driven by the gas generator exhaust gas.

发电机
Generator

发电机为两级三相无刷励磁形式。发电机能够保证在各种环境温度的条件下承载燃气轮机全工作范围内的连续输出功率。中性点柜和出线柜安装在发电机的旁边，以供买方的电力接线。发电机安装在客户准备的混凝土基座上。
The generator is characterized as a three-phase, two-pole brushless exciter type. The generator is capable of handling the full continuous power of the gas turbine at various ambient temperatures throughout the operating ranges. Neutral and line side cubicles are located beside of the generator for the customer's power connections. The generator is mounted on a concrete pad prepared by customer.

燃机罩壳
Turbine Enclosure

成套设备中包括了一个用于防风雨和隔音的燃机罩壳。罩壳采用室外安装设计 。 罩壳有助于在燃机全负荷运行及稳定运行期间，由燃机（及通风系统）产生的噪音平均值，在距离设备1米、高出燃机罩壳的基础1.5米处降低到85dB(A)。
The package is supplied with a weatherproof acoustic enclosure for the turbine. The turbine enclosures are designed for outdoor installation. The enclosure (with associated ventilation system in operation) provides average noise emission pressure level 85 dB(A) at 1m distance, measured at 1.5m above package base in a free field condition, during full load and steady operation.

燃机底座
Turbine Baseplate

燃机底座为钢制，设计提供足够的强度及现场安装要求。燃机底座根据IBC2009规范设计。
A steel baseplate is designed to provide suitable strength and site installation provisions for the gas turbine. The baseplate is also designed in accordance with IBC2009.

空气进气系统
Air Inlet System

燃气轮机机组包括模块化设计的静态空气过滤系统，该系统包括防风雨装置、入口滤网、粗过滤器和尾段过滤器。过滤后的空气被分成两部分，用于燃机轮机的助燃空气和用于燃机罩壳的通风空气。
The gas turbine package is supplied with a modular design static air filtration system consisting of weather hood, inlet screens, a pre-filter and a final barrier filter. The filtrated airflow is divided into two streams, combustion air for the gas turbine and ventilation air for the turbine enclosure.

管道连接布置
Piping Connections Arrangement

燃气轮机发电机组采用室外布置，侧向排气。排气法兰可以根据用户的需求布置在燃机的左侧或者右侧。燃气轮机的辅机模块以及买方的管道连接位于燃机的左侧，另一侧要留出足够的空间作检修用。
The gas turbine generator package is outdoor arrangement with side exhaust. The gas exhaust flange can be left or right side of turbine, according to the requirements of customer. The auxiliary skid and customer piping connections also can be left or right side of gas turbine. Adequate spaces should be reserved on the other hand for turbine maintenance.

气体燃料系统
Gas Fuel System

燃气轮机采用了由电控燃料流量控制阀控制的干式低排放天然气燃烧系统。在不使用注水或注蒸汽的条件下，能够将氮氧化物的排放量降低至50mg/NM3。气体燃料必须符合
的相关技术规范
The gas turbine is supplied with a Dry Low Emission (DLE) natural gas fuel system using electronically controlled fuel-metering valves. This system reduces NOx emissions to 50 mg/NM3 without water or steam injection. Gas fuel must meet Fuel Specification.

润滑油系统
Lube Oil Systems

成套设备配备了两套独立的润滑油系统，一套用于燃气轮机（合成油），另一套用于发电机（矿物油）。采用管壳式换热器对润滑油进行冷却，EPC负责提供冷却水。

The package is supplied with two separate lube oil systems, one for the gas turbine (synthetic oil) and one for the generator (mineral oil). Shell Tube Exchangers are used for cooling the lube oil with cooling water to be supplied by EPC.

电动液压启动系统
Electro-Hydraulic Start System

燃气轮机配有液压启动系统，包括电动马达驱动的液压泵机组、过滤器、冷却器和控制器，安装在辅助设备模块上。液压马达安装在燃气轮机的辅助齿轮箱上，以转动燃气发生器的主轴。
The gas turbine is supplied with a hydraulic starting system, which includes an electric, motor-driven, hydraulic pump assembly, filters, cooler and controls, mounted on the auxiliary equipment module. A hydraulic motor is mounted on the gas turbine accessory gearbox to turn gas generator shaft.

防火系统
Fire Protection System

成套设备提供一个工厂组装好的防火系统，包括安装在燃气轮机罩壳内的光学火焰检测器、碳氢化合物检测器、热检测器、管道和喷嘴。防火系统包括安装于一个单独模块上的二氧化碳气瓶。还包含一个24V直流电池组和独立的充电器，对防火系统提供电源。所有警报和停机，在燃机控制柜（TCP）上显示通知。
The package is supplied with a factory installed fire protection system complete with optical flame detection, hydrocarbon sensing and thermal detectors, piping and nozzles in the turbine compartments. The fire protection system includes cylinders containing CO2 mounted on a separate skid. A 24 V DC battery and charger to power the fire protection system are also included. All alarms and shutdowns are annunciated at the turbine control panel (TCP). An alarm sounds at the turbine if the gas detectors detect high gas levels, or if the system is preparing to release the CO2.

数字控制系统
Digital Control System

成套设备配备有独立的控制柜，适于安装在由客户提供的室内非危险区域。控制系统配有Woodward Micronet＋燃料控制器、Rx3i GE IP顺序控制器、振动监视器、防火系统、数字仪表和发电机数字保护继电器模块及显示重要数据的人机界面（HMI）。报警和停机事件自动显示在HMI显示器上。提供两个以太网TCP/IP或Modbus端口从而将机组情况（状态、压力、温度等）传输到客户的DCS系统。配备双联 100% 容量充电器的专用24 V DC电池系统为控制柜供电。
The package is supplied with a free-standing TCP suitable for mounting in an indoor, non-hazardous area provided by customer. The control system features a Woodward Micronet+ fuel controller and Rx3i GE IP sequencer, a vibration monitor, a fire protection system, a digital meter, a digital generator protective relay module and HMI (human machine interface) display of key discrete and analog data. Alarm and shutdown events are displayed on the HMI automatically. Two Ethernet TCP/IP or Modbus Ports are provided to transmit unit conditions (status, pressures, temperature, etc.) to the

customer's distributed control system. Power for the control panel is provided by a dedicated 24 V DC battery system with dual 100% capacity chargers.

在线及离线水洗系统
On-line and Off-line Water Wash System

成套设备配备了在线/离线清洗系统，允许客户在满功率运行过程或者在离线停机时清洗燃气轮机的压气机段。客户需要提供满足要求的清洗用纯净水和清洗剂，并提供压力为689－827kPag，过滤精度为5微米（绝对值）的压缩空气。
The package is supplied with an on-line and off-line cleaning system, which allows customer to clean the compressor section of the engine during full power operation or off line without load. Customer is required to provide purified water and detergent per s specification and air at 689-827 kPag filtered to 5 microns absolute.

Extended Scope Options（The price of Options are excluded in the Below Bugetary Price）
扩展范围可选项(选项的价格不包含在本次预算报价中)
Installation and Commissioning Service
安装和调试服务
will provide technical advisory services for the installation and commissioning of the equip ment provided under this proposal. Installation technical advisory services will include advisi ng the installation of the gas turbine package by the Owner's construction contractor. Com missioning technical advisory services will include flushing advisory, checkout, and com missioning advisory of gas turbine mechanical systems, checkout and commissioning advi sory of gas turbine electrical systems, and checkout and commissioning of the Gas Turbine Gen erator control system.
公司将为本建议书下所供设备的安装和调试提供技术指导服务。安装技术指导服务包括指导业主的工程承包商进行燃气涡轮机组安装。调试技术指导服务包括对燃气轮机机械系统的冲洗指导、校验和调试指导，对燃气轮机电气系统的检验和调试指导，以及对燃气涡轮发电机控制系统的检验和调试。

2. Validity 有效期
This budgetary proposal is valid till May 16th, 2025.
本预算建议书在2025年5月16日前一直有效。

3. Base Price and payments 基本价格及付款方式

One gas turbine generator packages delivered to factory（EXW）, and based on the scheduled delivery dates in Section 6 of this budgetary proposal:
一套燃气涡轮发电机组、辅助设备，按 EXW 交货，以本预算建议书第 6 部分的计划交货日期为准：

Equipment Description设备型号:
- **Unit Price单价:**
- **数量**
-

Equipment Payment Terms 设备的付款方式：

1. Down Payment 3 0%, within 15 (fifteen) days after signature of the Contract Agreement by both Parties, to be paid after receipt of the Seller's invoice.
   首付款30%应在双方签署合同协议后十五（15）天内，在收到卖方发票后支付。

2. Equipment Payment 7 0%, in equal monthly installments, commencing thirty (30) days following signature of the Contract Agreement by both Parties until thirty (30) days before the first scheduled Shipment Date, to be paid after receipt of the Seller's invoice.
   70%的货款按月等额分期付款应从双方签署合同协议后三十（30）天开始计算，直到首个计划装运日前三十（30）天内、在收到卖方发票后支付。

Above payment based on below conditions:
以上付款基于：

- All Payments shall be made by wire transfer directly to bank.所有付款买方通过电汇方式直接公司的银行支付。
- Any and all banking charges will be to the Buyer's account.
  任何及所有银行费用均由买方负担。

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5. Delivery Terms 交货条款

This Proposal is based on EXW of Shangahi (Incoterms 2020) .本建议书以EXW上海交货条款为基础。

6. Scheduled delivery date(s) 计划交货日期

Based on our current production program, the proposed ready to ship dates offered are 9 months from the Date of Contract Effective
根据我们目前的生产计划，计划备妥待运日期为合同生效后9个月：
It is agreed and understood that ship date offered is subject to prior sales.
双方同意且理解，所提议的装运日期以有权先售为条件。

7. Warranty 质保期

The warranty offered for this proposal is for a period of twelve (12) months following the date of first combustion fuel burn for each Unit, or eighteen (18) months from the Delivery date of the engine of each Unit of the Contract Equipment shipped by the Seller, whichever occurs first.
本报价中的质保期自每台设备第一次燃料燃烧起12个月或自卖方发运每套合同设备引擎的交付之日起18个月，二者以先到日期为准。

8. Contract Agreement and General Terms and Conditions of Sale 承包协议及一般销售条款与条件

The information in this document is provided for budgetary estimating purposes only. It does not create any obligation of any kind, whether express or implied, on the part of the Seller, to enter into any agreement of any kind or to provide any particular goods at any particular price. The pricing is estimated only and is not based upon complete information about the details of the facility and equipment, the proposed operations and other factors that may affect the ultimate final price. The pricing is based on standard terms and conditions and supply scope No warranty or representation is given, either