





HLL BIOTECH LIMITED				
INTEGRATED VACCINES COMPLEX, CHENGALPATTU				
	User Requirement Specifications		 <small>HLL BIOTECH LIMITED (Subsidiary of HLL Lifecare Limited) (A Government of India Enterprise)</small>	
	Equipment/System	Steam Boiler		
	Tender No.	HBL/IVC/TENDER/MECH/UTL-BLR/2014		
	Identification #	NPI/120310/UTL(URS)/U1/D02		
	Effective Date	15-05-2014	Revision # 03	
<h2>User Requirement Specifications</h2> <h3>Steam Boiler</h3> <h3>Equipment ID: NPI/120310/UTL(URS)/U1/D02</h3> <h3>Tender No. – HBL/IVC/TENDER/MECH/UTL-BLR/2014</h3>				
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Annex No.	Drawing / Document No.	Detail
1	NPI/120310/UTL(URS)/U1/D02.01	Data Sheet for Steam Boiler
2	NPI/120310/UTL(URS)/U1/D02.02	Data Sheet for Boiler Chimney



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1. APPROVAL SIGNATURES

This document is prepared by project team of NNE Pharmaplan for the “Integrate Vaccines Complex” (NPI project number: 120310) of HLL Biotech limited under the authority of their Project Manager. Hence, this document before being effective shall be approved by the QA team/Engineering team of HLL Biotech limited, and authorized by the appropriate Project Authority.

NNE Pharmaplan India Ltd.	Name and Designation	Signature	Date
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Approved By	Department Head		
	Head - QA		
Authorised By	Chief Operating Officer		

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2. OVERVIEW

2.1 Project introduction

HLL Biotech Limited (HBL), a 100% subsidiary of HLL Lifecare Limited, (a CPSU under Ministry of Health & Family Welfare, Government of India, is implementing "an Integrated Vaccines Complex (IVC) - a project of National Importance at Chengalpattu, Kanchipuram. The proposed complex is a state of the art facility with cGMP compliance for manufacturing vaccines required for the immunization programme of Government of India.

For this purpose, NNE Pharmaplan has been appointed as Project Management Consultant for setting up this facility, incorporating the latest standards of GMP and best practices.

2.2 Objective

This document is mainly prepared to define the requirements for installing 2 no's of 4 TPH Boiler. The system is a package unit assembled and tested in the vendor's place.

2.3 Scope of Work

The scope of work/service shall include but not limited to, Design, supply, installation, testing and commissioning of package type two Boiler (IBR), with two chimney dedicated for each boiler, individual online stack monitoring system for SO₂, CO, H₂S, Particulate matter, NO_x (NO, NO₂), Opacity %, TRS, Flow, HCl, Chlorine, etc., individual day oil storage tank of capacity 990 litres each, Common feed water tank of capacity 16000 Litres.



Scope shall also covers chemical dosing system for make-up water with necessary piping & Valves, (Auto and Manual) interconnecting piping between feed water tank to boiler, fuel oil tank to boiler, blow down pipe up to the nearest sump, air vent/Boiler exhaust line etc., including all foundation and support required for packaged unit. Unit capable of giving the required output using HSD as boiler fuel and having a safety valve set pressure of not less than 10.54 kg/cm² for the below mentioned boiler ratings (capacities) from and at 100 °C.



S. No	Equipment	Capacity (F & A 100°C) Kg/ Hr.	Quantity Nos.
1	Boiler	4000	2 Nos.



The vendor should accordingly consider all necessary items required for effective installation and performance of the system, whether mentioned or not in the specifications.



The specification mentioned in the URS is minimum requirement of Client and vendor can come with suggestions which could have value addition. However, implementation of such suggestions will require approval of client/ consultant.



The Client shall be entitled to inspect and audit the supplier's Quality Management System (QMS) and the facilities, if desired, prior to any business agreement.



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<p>The vendor should take full responsibility for the function of the steam boiler.</p> <p>The each boiler shall be complete with all accessories, mountings, pressure gauges, safety valves, Piston type stop valves, other instruments, control panel, including accessories for day oil tank, level switch, Auto valve at inlet of tank and its control system, common feed water tank (including accessories: De-aerator head, drain valve, over flow pipe, Auto valve at inlet of Make-up water, level controller and insulation) with all interconnecting piping, insulations & sheeting's, electrical wiring, control panel, structural platforms / ladders (for installation / approach to fuel oil day tank and feed water tanks). The scope also includes supply of one complete set of special tools required for maintenance for each boiler.</p> <p>Boiler and feed water tank shall be dully insulated and cladded properly to avoid any heat losses.</p> <p>The entire unit shall be skid mounted including all accessories like feed pump etc. All structural supports required shall be considered in vendor scope.</p> <p>The boilers are meant for continuous operation and their design shall exhibit optimum performance throughout its life. The boiler shall be of multi-pass smoke tube type. The system shall be a fully automatic type, pre-insulated, pre-wired and ready to use steam boiler.</p> <p>Boiler shall be such that it has ample furnace volume to facilitate complete combustion. Fire tubes shall be easily accessible both from inside as well as outside for inspection and maintenance. All working parts of the boiler shall have easy accessibility for inspection / maintenance.</p> <p>The control panel of the boiler shall be a pre-wired one, with all switch gears, safety / alarms / interlocks and burner management system. The water level & fuel level shall be controlled automatically by an appropriate level measuring system. <u>Vendor to specify the level control mechanism in the offer.</u></p> <p>The Boiler burner shall be monoblock with step less modulating control type. FD fan & fuel feed pump shall be provided for better efficient operation at different loading conditions.</p> <p>The price should also include online monitoring with computational unit for the following parameters shall be provided with indicators cum recorders with controls necessary in control panel.</p> <ol style="list-style-type: none"> 1. Alarm for Low Steam Pressure 2. Steam Flow, Vortex Flow type (including cumulative qty.) 3. Steam Temperature 4. Flue gas Temperature 5. Percentage of Oxygen online 6. Flow meter for fuel 7. Feed water Temperature 8. Total dissolved solids (TDS) (automatic blow down system) and as well manual blow down for emergency 9. Alarm / Trip for Low & High water level 10. Alarm / Trip for high TDS of water on line monitoring 				
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<p>11. Alarm / Trip on steam high pressure 12. Fuel low pressure alarm and trip 13. Flame failure alarm 14. Fuel low level alarm 15. Alarm / Trip for Low water level in FWT</p> <p>Boiler chimney shall also be provided with a suitable ladder arrangement together with platform of adequate size at appropriate height to facilitate testing of flue gases. It shall also be provided with lightening arrester along with copper earth conductor of suitable size & aviation lamp at the top. The height of the chimney shall be not less than 32 meters or as may be required by the State Pollution Control Board, Central pollution control board and IS 6533 whichever is higher.</p> <p>The successful bidder shall be responsible for getting the necessary approval / clearance from IBR Inspector of Boilers and State Pollution Control Board and any other statutory bodies as may be applicable and consequently the successful bidder shall arrange all applicable tests such as hydraulic test, boiler efficiency test, flue gas analysis, all control systems and any other as may be applicable during / after commissioning.</p> <p>The job shall be treated as a total turnkey job. The Successful Bidder shall be fully responsible for detailing and shall guarantee the performance of the system installed.</p> <p>All the items / components that are necessary and essential to give the rated performance of the systems with validation of complete installations are deemed to have been included in the scope of the contract irrespective of whether explicitly specified or not specified in the detailed description of works.</p> <p>Details / descriptions shown / provided are for indicative purposes only. It shall be binding on the part of the Successful Bidder to complete any other works that are not specified but are found essential for successful completion of the assignment.</p> <p>This requirement and respective document attached shall define the minimum requirement to be met by the vendor.</p> <p>The boiler for specified duty shall be supplied complete with all accessories in all respects, but not limited, to the following, within vendor's battery limit.</p> <ul style="list-style-type: none"> ➤ HSD oil fired Packaged boiler complete with all accessories as specified such as fuel injection system, FD fan, boiler mountings, motors, starters, etc. Foundation bolts for all items to be supplied for all equipment's. ➤ Feed water tanks and day oil tanks and their pumps of adequate capacity and rating complete with motor, starters etc. ➤ Chimney ➤ All necessary instrumentation complete with pre-wired control panel ➤ Inter connecting piping, fittings etc. ➤ Inter connected power & control wiring and instrument tubing etc. ➤ Items required for installation, commissioning & start-up of boiler. 				
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3. DESCRIPTION OF PACKAGE SYSTEM:																						
3.1 Boiler:																						
<p>The system shall be a boiler package and will be designed based on below parameters and configured for two different phases:</p>																						
Phase-I																						
<table style="width: 100%; border: none;"> <tr> <td style="width: 35%;">Boiler Capacity Proposed</td> <td>: 4000 kg/hr. @ F & A 100 °C</td> </tr> <tr> <td>Design Compliance</td> <td>: Indian boiler regulation Act (IBR) 1950</td> </tr> <tr> <td>Quantity</td> <td>: 2 No's</td> </tr> <tr> <td>Generation (operating)</td> <td>: 10.54 kg/cm2g</td> </tr> <tr> <td>Safety valve set Pressure</td> <td>: 10.54 kg/cm2g</td> </tr> <tr> <td>Dryness Fraction</td> <td>: >0.98</td> </tr> <tr> <td>Burner type</td> <td>: Pressure Jet</td> </tr> <tr> <td>Fuel</td> <td>: High Speed Diesel (HSD)</td> </tr> <tr> <td>Turn down ratio</td> <td>: 1:4 (Vendor to confirm)</td> </tr> </table>					Boiler Capacity Proposed	: 4000 kg/hr. @ F & A 100 °C	Design Compliance	: Indian boiler regulation Act (IBR) 1950	Quantity	: 2 No's	Generation (operating)	: 10.54 kg/cm2g	Safety valve set Pressure	: 10.54 kg/cm2g	Dryness Fraction	: >0.98	Burner type	: Pressure Jet	Fuel	: High Speed Diesel (HSD)	Turn down ratio	: 1:4 (Vendor to confirm)
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Turn down ratio	: 1:4 (Vendor to confirm)																					
<p>Boiler should be Horizontal, three pass 100% wet back design, automatically controlled, tested and proven under rigorous conditions.</p>																						
<ul style="list-style-type: none"> (i) The boiler shall be complete with all mountings, controls, accessories like Main Stop Valve (Piston Valve), NRV, Stop valve, Pressure Switch, Safety valve, Blow down Valve, Water Level controller, Inspector Test connection, Pressure Gauges etc. (ii) Boiler construction shall be in accordance with the latest revision of local/Indian Boiler Regulations Act applicable. All materials used shall be approved and tested as per relevant existing codes. All the welded joints shall be as per code requirement. (iii) The boiler should be of modern compact design and be genuinely packaged design. The boiler and the burner design must be from the same source to ensure perfect matching of burner and boiler. (iv) The boiler mountings shall be as per the Scope of work. (v) The boiler shall be designed and constructed to generate steam at an efficiency of not less than 89% on net calorific value (NCV) basis. (vi) The insulated cylindrical shell of the boiler shall be clad with suitable material, with a platform all around with a proper staircase for operation & maintenance all around the Boiler. Temp of outer surface of Boiler should not exceed 50 °C (vii) Boiler and accessories shall be mounted on a single base frame. Individual systems such as feed water pumps, etc. may be on separate base plates. 																						
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<p>(viii) The boiler shall not require any special foundation and its mountings/fittings. It should be able to be mounted on simple PCC foundation.</p> <p>(ix) Vendor to note that the building in which boiler to be housed is a pre-engineered structure. Hence all civil details as required for Mounting / Installing of the boiler and all its auxiliary equipment should be given correctly in the first drawing itself.</p> <p>3.2 Fuel oil system:</p> <p>(High Speed Diesel –HSD)</p> <p>A suitable system for firing High Speed Diesel (HSD) should be considered by the vendor.</p> <ul style="list-style-type: none"> Combustion system: <p>Combustion system shall be provided with fully automatic pressure jet monoblock burner fitted with F. D. Fan, ducting, air / fuel ratio adjusting damper, fuel oil pump, pressure and temperature gauges, thermostat, and Spark Ignition and flame surveillance sensor. The burner shall be suitable to fire HSD. The ratio control in the burner should be electronic compound regulation and shall be equipped with oxygen trim control system.</p> <p>Oxygen sensor shall be online Sensor. Blower motor should be equipped with VFD.</p> <p>This system consists of a forced draft combustion air blower with motor, burner assembly, photocell operated safety device, ignition electrodes, etc. Burner assembly shall be bolted on combustion chamber and that the burner is lit only when the entire burner assembly is fitted and is in a closed position, ready for operation. Pressure jet atomisation shall be provided. The entire assembly should be engineered in such a way that burner moves along with the door when the door is opened for furnace cleaning. Burner must be with turn down ratio of 1:4 (Vendor to confirm).</p> <p>3.3 Feed water System:</p> <p>Two nos. for each Boiler electrically driven vertical multistage centrifugal pumps mounted on a separate frame with motor capable of using feed water at temperature of 70 °C to 100 °C with interconnected pipe work between pumps and feed check valves etc.</p> <p>Feed water day tank (By Vendor) shall be placed at an elevation preferably above the boiler on the same skid or as required from finished floor level.</p> <p>3.4 Automatic Blow down system:</p> <p>A suitable automatic blow down system should be provided by the vendor to avoid manual intervention during blow down. However a manual blow down arrangement should also be provided. <u>Vendor should consider blow down tank in their scope with appropriate capacity.</u></p>				
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<p>3.5 Controls:</p> <p>The electro-mechanical control system shall be provided with individual control panels. The control panel shall be mounted / located in the boiler room. Separate compartment for power cable and signal cable shall be provided.</p> <ul style="list-style-type: none"> (i) Interlocking with audio-visual alarm of the feed water pumps and water flow at inlet & steam flow at outlet of boiler and fuel flow (HSD) metering at fuel inlet. (ii) Programmer controller to ensure the sequence of boiler start-up & closing after ensuring required temperature and pressure of oil, water, steam, air, etc. (through interlocks). (iii) MCB's and contactors shall be provided for all electrical drives for the boiler. (iv) HMI with colour touch screen (10" Size) to indicate operating status of various equipments by graphics, flow diagram. (v) Complete internal wiring to ensure power supply at a single point on the panel. (vi) Indicating lamps/ Audio alarm shall be provided for the following parameters - <ul style="list-style-type: none"> - Feed water Low and no water flow / pressure - Burner flame failure - Feed water pumps failure - Low or no flow of HSD - High steam pressure (vii) Pressure switch should be provided for burner interlock. <p>3.6 Feed Water Tank:</p> <p>The feed water tank shall be of 18000 litres capacity. The feed water tank shall be manufactured as a rectangular tank. The feed water tank shall be complete with the following minimum accessories.</p> <ul style="list-style-type: none"> (a) Level Gauge (b) Atmospheric or pressurised De-aerator Head with inlets for make-up water, flash steam and condensate (As required). (c) Level Control System consisting of 3 level switches for high, low and extra low level & Auto Valve for Make-up water inlet to feed tank. (d) Insulation & Cladding with interconnecting piping. (e) Steam injector along with temperature control for feed water tank with auto on/off valve with bypass valves. 				
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<div style="margin-left: 40px;"> (f) Drain Valve and over flow line etc. (g) Vent head </div>				
<p>3.7 High Speed Diesel (HSD) Tank</p> <p>Vendor to provide the HSD day oil tank dully installed on skid along with Boiler/on separate platform and the tank capacity shall be 990 Lit each, with all necessary required instrumentation and piping.</p> <p>High Speed Diesel is available in the facility. Following are the components vendor to consider in their scope of supply:</p> <div style="margin-left: 40px;"> (a) Oil Flow meter for individual boiler (b) Isolation valves, Auto valve on inlet controlled by level switch, drain valve, Vent (c) With level indicator along with control system for Low & High level giving alarm both visual & sound alarm. </div>				
<p>3.8 Structural Supports</p> <p>Required supports shall be provided for the following:</p> <div style="margin-left: 40px;"> (a) Feed Water Tank and Day oil tanks with operating platform, ladders, etc. (b) Boiler House Piping. (c) Ducting with supports </div>				
<p>3.9 Boiler Efficiency Monitoring Package</p> <p>Shall be provided as detailed under -</p> <div style="margin-left: 40px;"> (a) Steam Flow Meter, Vortex Type with density compensation. (b) Temperature transmitters and Pressure transmitters for Feed Water & Steam. (c) Exhaust gases parameters etc. (d) Automatic blow down system (e) Fuel flow meter (f) Online Oxygen analysis (g) System should provide direct and indirect efficiency along with graphical representation and reports. </div>				
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3.10 Boiler House Electricals <p>Vendor shall provide all electrical cable and details as given below:</p> <ul style="list-style-type: none"> (a) Power cables from the control panel to the various consumers. (b) Control cables from the panel to the various instruments. (c) Utility Panel from mounting the Efficiency Monitoring Panel. (d) Cable trays & Accessories as required 				
3.11 MS Self Supported Chimney (2 No's): <p>Boiler Chimney shall be designed as per IS 6533:1989 (Part I & Part 2) standards with a required height mentioned by latest state/Central pollution control board and Indian boiler regulations. The minimum corrosion allowance to be considered shall be 1.5 mm (Vendor to confirm) and shall be complete with Chimney shall be provided with all the details mentioned below but should not be limited to:</p> <p>Chimney Size: Each Chimney Suitable for 4 THP Boilers Quantity: 2 Nos.</p> <ul style="list-style-type: none"> (a) Aviation Lamps. (b) Lightning Arrestor. (c) Earthing Strips. (d) Inlet for ducting coming from each boiler. (e) Ladder & Platforms at suitable heights. (f) Insulation & cladding of the Bottom two meters so that maximum temp of outer surface does not exceed 50 °C (g) Bottom Base. (h) Painter Trolley (i) Foundation bolts etc. (j) It should be properly painted to prevent any rusting, externally. (k) Bottom Drain 				
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3.12 Flue Gas Ducting: <p>Vendor to consider flue gas ducting from boiler to Chimney complete with expansion bellows for each boiler, insulation & cladding in his scope of supply and the painting of ducting for protection against rusting.</p> <p>Note: (Flue gas released from the boiler must comply with State and central pollution control board norms and local statutory requirements norms)</p>					
3.13 Chemical Dosing <p>Vendor should consider chemical dosing system with all necessary items.</p>					
3.14 Weight & Dimensions: <p>Vendor shall provide with his quotation an outline arrangement drawing of the equipment specifying major dimensions, operation / maintenance allowances, estimated weights of equipment and advice extent of site assembly and method of unloading / loading.</p> <p>Vibration isolation mounts shall be provided with the package, if required.</p>					
4. GENERAL REQUIREMENTS					
4.1 Safety Requirements: <p>Vendor shall consider all safety requirements in accordance with good engineering practices and local regulation & IBR.</p> <p>All technical equipment shall have a CE sign confirming that the product meets the demands of all relevant guidelines and regulations of the European Union (EU). The VENDOR is fully responsible for the accordance with all appropriate regulations.</p> <p>A CE certificate referring to the relevant CE directives shall be supplied (Wherever applicable)</p> <p>The noise level of the system shall be as low as possible, and must not exceed 70 dB (A) measured at operator working place.</p> <p>In the event of equipment malfunction or loss of utilities, the unit must contain all necessary protection devices to ensure that the equipment and the article remain in a safe condition.</p>					
4.2 Name Plates: <p>Each item shall carry a nameplate in accordance with client's standard which shall be fitted in a conspicuous position on brackets projecting 25 mm from the vessel or insulation as applicable. Equipment tag number shall also be included.</p>					
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4.3 Painting: <p>Outside carbon steel surfaces (other than machined) shall be thoroughly cleaned, scale free and shall be painted according to vendor's specification duly approved by client. Outside stainless steel surfaces shall not be painted.</p>				
5. MATERIAL SPECIFICATIONS				
5.1 Appropriate Materials <p>Appropriate materials of manufacture must be selected and specified on the specific application and process requirements and certificates must be supplied as requested by the customer/purchaser or as usually necessary.</p> <p>Material of labelling on equipment and instruments shall be of durable type. They shall be resistant against cleaning detergents (e.g. 70% ethanol). Installation of tags has to withstand temperature influence and mechanical demands typical for normal transport, installation and operation, so that they are captive to the equipment.</p>				
5.2 Piping <p>The pipe class specified for steam piping is seamless carbon steel pipes and fittings for high pressure and high temperature service:</p> <p>Pipe according to ASTM A106 B, Seamless, Schedule -40 for sizes above 40 NB and ASTM A106 B, Seamless, Schedule -80 for sizes below 40 NB and all pipes & fittings must be IBR certified.</p> <p>Apart from the pipes, the piping system consists of:</p> <p>Glandless Piston/ Bellow seal valves (manual and auto operated)</p> <p>Safety relief valves</p> <p>Pipes, elbows, T-pieces, reducers Detachable connections Pipe supports, hexagon bolts and nuts.</p>				
5.3 Non-metallic materials <p>Cables shall be resistant against heat, pressure and steam.</p>				
5.4 Insulation materials <p>Any material used for insulation must be free of asbestos. Insulation material shall be of low chloride content and shall comply with current standards for thermal insulation in contact with Austenitic Stainless Steel. <u>Thickness of insulation is to be specified by the vendor.</u></p>				
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(Subsidiary of H.L. Lifecare Limited)

(A Government of India Enterprise)

6. AVAILABLE UTILITIES

The following media interfaces are provided:

- Electrical power 415V/ 3 Phase/4 Wire/ 50 Hz
- Compressed air 6 to 8 bar
- High Speed Diesel (HSD)
- Soft water

Connecting points of all utilities, consumption and capacities of the required utilities shall be advised with the quotation.

7. INSTALLATION, TESTING, COMMISSIONING & INSPECTION:

Inspection and tests shall be made by Vendor in accordance with requirement requisition document and/or any correlative standards and codes.

Testing and commissioning will be carried out by the **VENDOR**. The Client's representatives have the right to participate in testing and commissioning.

During testing and commissioning future operators/technicians shall be trained in all equipment / system functions (e.g. preparation, start-up, operation, shut down, maintenance, etc. - as far as applicable).

All testing and commissioning documents, recordings and reports shall be in English language.

No payment will be applicable for any temporary structure erected during any phase of execution.

7.1 QAP

Vendor to submit a detailed quality assurance policy along with offer for hold, review, witness points at factory and at site.

7.2 Testing



If in case Vendor proposes a testing procedure the same shall be approved by Client.



7.3 Inspection



Client reserves the right to carry out inspection & further performance at any time during fabrication before shipment. Inspection shall be done by the Client or their representative and / or their nominated inspection authority.

7.4 System Acceptance Test (SAT)

The final acceptance tests at site will be carried out after equipment delivery on site and mechanical completion of the system. The purpose of the SAT is to verify that the system is supplied, installed and that it operates according to the relevant specifications. The SAT testing includes:


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<ul style="list-style-type: none"> ➤ Check of completion of open items supplied on site ➤ Check of transport damages ➤ Check scope of supply ➤ Proper operation of the systems ➤ Site performance test ➤ Verification of final documentation. <p>As far as site performance test is concerned, it includes: detailed test procedure, check lists and Vendor's specialist assistance during the test according to a schedule to be agreed upon.</p> <p>Vendor has to depute a person for site supervision and assistance during commissioning and start-up of the package unit. The procedure and schedule of the performance test and relevant acceptance criteria shall be defined by the client.</p> <p>Vendor shall record all the results of the tests carried out and submit the report to the client for approval.</p> <p>7.5 Installation</p> <p>The Manufacturer shall be responsible for unloading & installation of Boiler package and other accessories including chimney.</p> <p>The Manufacturer shall also be responsible for the re-assembly of sections or components of the packaged equipment, if any, including piping, wiring, instrumentation and any other equipment and components shipped separately or in sections.</p> <p>Client shall provide the following:</p> <ul style="list-style-type: none"> ➤ Foundations if any required (Successful Bidder shall submit detailed fit for construction foundation drawings within two weeks from the date of placement of order by Client) ➤ Connecting utilities ➤ Electrical, utility services and drain hook-ups <p>The manufacturer shall also be responsible for the reassembly of sections or components of packaged equipment if any including piping, wiring, instrumentation, other equipment & components shipped separately or in section</p> <p>The system must be transported to the erection place and placed in position under the supervision of the Vendor representative.</p> <p>7.6 Commissioning</p> <p>The commissioning plan shall be submitted to the Client 4 weeks prior to the commissioning dates and the approved document shall be used during the commissioning.</p>				
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<p>All the commissioning spares / consumables shall be supplied by the Manufacturer. Any component / instrument failure or damage noted during commissioning shall be replaced by the Manufacturer at no additional cost.</p> <p>Commissioning may include, but is not limited to the following tests:</p> <ul style="list-style-type: none"> ➤ Equipment, components and instruments installation check (with verifications of drawings, BOM etc.) ➤ Instrument calibration check ➤ Document check (especially components literature) ➤ Components operation check (including control loops) ➤ Automation check (sequences, alarms etc.) ➤ Performance test including hydraulic test, open inspection test etc. <p>The commissioning activities include arrangement of boiler inspection, submission of necessary drawings / documents to Boiler Inspectorate / Pollution Control Board / any other, obtaining of Boiler Inspector's Certificate etc. before firing and the necessary approvals if any after firing by the Boiler Inspector / Pollution Control Board etc. The activities during this stage shall also include performances of flue gas analysis and submission of the report. It shall be binding on the part of the Manufacturer / Successful Bidder to ensure that the flue gas emissions are well within the acceptable limits.</p> <p>7.7 Training</p> <p>The Vendor shall provide operator training at site for not less than 10 working days at no extra cost. The training imparted shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> ➤ Start-up and shut-down procedures ➤ Typical operations ➤ Emergency shutdown ➤ Safety training ➤ Troubleshooting procedures ➤ Control system & instrumentation operation and diagnostics ➤ Control system hardware maintenance ➤ Servicing and preventative maintenance schedules and procedures <p>The Vendor shall ensure that the operation and maintenance manual is available at site for reference.</p> <p>The Vendor shall issue certificates to the persons trained by them after successful completion of training at no extra cost.</p> <p>8. PRIORITY OF DOCUMENTS:</p> <p>In case of conflicts between the engineering specification, data sheets and other reference code and standards, priority shall be given in the following order:</p>				
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<ul style="list-style-type: none"> Local authorities' codes Client's Data Sheets Client's Purchase Contract Refer to codes and standards Vendor's Documents (agreed by Client). IBR codes 				
9. DOCUMENTATION:				
9.1 General				
<p>Steam boiler package is not a qualified package. However, vendor shall follow Good Engineering Practices.</p>				
<p>All documentation for the steam generation boiler shall be distinctly marked with Unique Name, Identity No. and Version No.</p>				
<p>All documentation must be in English.</p>				
<p>Specified list of all delivered documents, such as test protocols, drawings and specifications should be given by vendor.</p>				
<p>The documentation shall be delivered as four paper copies and one electronic version (CD-ROM). The documentation shall have final "as built" status.</p>				
<p>The documentation provided by the vendor must allow</p>				
<ul style="list-style-type: none"> Training of operators Operation, maintenance and calibration (Complete technical documentation) Testing or Qualification of equipment incl. generation of related documents (Testing plan, Installations and commissioning). 				
9.2 Documentation				
<ul style="list-style-type: none"> Dimensions for space needed for installation. Unit size dimensions. Utility consumptions Weights 				
<p>Vendor should provide a document list of his standard documentation together with examples for review and final approval by client. The review & approval of design documents will be as per good engineering practices. Client will check installation of boiler against design documents issued for construction according to good engineering practices.</p>				
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Vendor shall submit before order placement the detailed supplier document index (to be approved by client), listing all drawings and documents that will be supplied and their delivery dates.



It is included in the vendor scope of work the preparation and supply of all documents (i.e. drawings, calculations, etc.) and all obligations requested by local Authorities, in order to fulfil the applicable laws & regulations.

9.3 List of Documentation:

VENDOR shall provide the following documents for the complete package unit:

Document Name		Remark
General		
	Functional design specification	
	List of the spare and consumable: List of spares & consumables for trouble free should be provided by supplier	
	Process description, functional description	
	Guarantee/ Warrantee: 12 Months from the date of Handover.	
Schemes for approval		
	Quality Assurance Policy	
	P&ID drawings	
	Layouts, overview plan	
	GA Drawings	
	Electrical & Control circuit diagram and panel layout with dimensions.	
	Foundation details	
Instrumentation		
	Input/output signal list	
	Parameter list of intelligent instruments, valves	
	Specification of hardware components and specification of battery limits	

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Document Name				Remark
	List of components			
	List of instruments			
Operation / Service / Electronic Data Service				
	Operation and maintenance manuals (including parts from sub-vendors)			
	Lists of spare parts with ordering information			
	Detailed manuals for single equipment			
	Technical datasheets for components (including capacities)			
	List of alarms including Trouble shooting			
	Source Code on disk. Software Installation CD.			
	Certificate of warranty			
	Maintenance contact			
Safety				
	Safety Procedures			
Training				
	Documented trainings for operators			
Statutory Approval				
	IBR Certificate for all the applicable needs			
	Clearance from State / Central pollution board for running of boiler.			
10. DELIVERY AND INSTALLATION: <p>Vendor shall be responsible for the delivery of the complete packaged boiler Unit to HLL Biotech Limited, (IVC), Chengalpattu, Kanchipuram.</p> <p>Vendor shall be responsible for the positioning and installation of the complete Package Unit.</p> <p>The responsibility for packing, transport and insurance is with the Vendor. The costs must be included in the offer.</p> <p>Before packing and dispatch, the system must be well cleaned inside as well as outside and dried. For the transport, the system shall be completely empty and dry. The packing shall be rigid to protect the PU against damage.</p> <p>All nozzle flange faces should be protected from rust and shall be further protected with a wood or metal cover to prevent damage during shipment. Threaded connections are to be protected with thread</p>				
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<p>protectors. Machined surfaces are to be covered with temporary metal protective. Both partly fabricated and completed items liable to suffer distortion during transit and erection shall be braced. Open ends shall be covered to keep out dirt and other foreign matter. Spare gaskets, bolts, nuts, etc., and any other loose items shall be boxed separately from the main equipment. Such boxes shall be suitable for site storage and clearly and permanently marked to show:</p> <ul style="list-style-type: none"> • Order number • Item number (for which the parts are intended) <p>The item number shall be prominently painted on the side of the equipment.</p> <p>All loose items have to be carefully fixed or packed in a separate box. The Package Unit shall be equipped with appropriate lifting lugs and provisions for transport allowing easy loading, offloading and transportation inside the building.</p> <p>10.1 Spare part</p> <p>The spare parts for commissioning and start-up are included in vendor scope of supply. List of commissioning and start-up spare parts has to be included in the bid based on the selected Manufacturer's models.</p> <p>Spare parts required for two of trouble free operation shall be listed and quoted separately item by item.</p> <p>11. GUARANTEE:</p> <p>➤ Mechanical Guarantees:</p> <p>Vendor shall guarantee all equipment and components against defective materials; faulty design and poor workmanship and any failure resulting from normal usage for the guarantee period specified in the Purchase Order.</p> <p>Vendor shall guarantee that units will operate in safe, efficient and reliable manner under the stipulated conditions of service and environmental.</p> <p>If any defects, failure or operational problems occur during the guarantee period, vendor shall make all necessary improvements, repairs and replacements at no cost to the Client, in accordance with the Purchase Order.</p> <p>➤ Performance Guarantees:</p> <p>All equipment shall be guaranteed for satisfactory performance at all operating condition specified at the pertinent paragraphs of this specification with no negative tolerance.</p> <p>If any performance deficiency or defects occur during the guarantee and warranty period, Vendor shall provide any modification / improvement, repair and replacements free of charge.</p>				
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Vendor shall also guarantee the power and utilities consumptions.

The performance of the Boiler for efficiency and capacity should be demonstrated and documented as per BS 845 standards in presence of end users representative.

12. QUALITY ASSURANCE:

The VENDOR must have a well-implemented QM-system, e.g. ISO 9001 certification. Auditing of QM-system with focus on software development methods / strategy has to be possible.


A quality assurance plan has to be delivered latest with placement of order.

13. ABBREVIATIONS

QMS	Quality Management System
PU	Package Unit
EU	European Union
CE	the abbreviation of French phrase " Conformité Européen " which literally means "European Conformity"
GMP	Good Manufacturing Practice
ASTM	American Society of Testing Materials
HSD	High Speed Diesel
PRS	Pressure Reducing Station
PID	Process and Instrumentation Diagram
PLC	Programmable Logic Controller
MCC	Motor Control Centre
MCB	Main Circuit Breaker
SAT	Site Acceptance Test
IBR	Indian Boiler Regulation
HMI	Human and Machine Interface

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14. Revision index

Revision	Date	Reason for revision
00	2013-06-03	First Draft
01	2014-02-10	Revised as per comments dated on 2013-09-25 also capacity updated as per revised utility estimation
02	2014-03-20	Revised as per comments dated on 2014-03-02 and mail dated 2014-03-19
03	2014-05-14	Revised as per mail dated 2014-05-13 and capacity of Boiler feed water tank as 1600 Lit