Annex 1

WABIO Technologie GmbH („WABIO“)

R&D Center Neukirchen

D-08459 Neukirchen/Pleiße

Project: City of Mora la Nova/Tarragona Biogas

(CUSTOMER”) 19 146 600 m3 Biogas.

WABIO BioPowerPlant

1. Scope of services

1.1 “CUSTOMER” and “WABIO” intend to cooperate in Mora la nova MSW Bio Power Plant Project. “WABIO” will be in charge for the supply as specified in the “Contract” and otherattachments and will supply design work, equipment and technical services as specified below.

1.2 “WABIO” is to provide the complete engineering basic and detailed design. “CUSTOMER” is to provide especially commissioning assistance and to provide plant items as agreed to in the “Contract”. “WABIO” has the sole right to decide about the detailed design and has the right to supply any selected or all detailed designs by itself as it deems reasonable and necessary.

1.3 “WABIO” is to provide the technical services and procurement/supplies, which the scope is as following:

(1) Responsible to provide mass balance calculation, controlling system, basic design (including PID drawings), which shall be ensured to support the construction design to be done by “CUSTOMER”.

(2) Responsible to provide the technical specification, parameters of the required components and material, as data or reference offer, which shall be as well as to support "CUSTOMER" to work on the procurement.

(3) Selected procurement according to Annex (3), WABIO item list.

(4) Responsible for the supervision and approval of the detail design, that is eventually drawn up by "CUSTOMER" or its instructed EPC parties.

(5) Responsible for the commissioning based on the approved design.

(6) To provide the "CUSTOMER" operating manual and training for the operators of the plant at the site during commissioning.

(7) the procurement of selected equipment for the project by the customer shown in Annex 3 WABIO items, and "WABIO" is responsible for eventually recommending equipment manufacturers, and for eventually helping the "CUSTOMER" to make purchases for Customer items.

1.4 The services include all necessary coordination and working discussions as well as design meetings, of which at least 2 (two) are assumed.

2. Mass balance is to be provided by "WABIO".

3 INSTRUCTIONS FOR THE PREPARATION OF TECHNICAL DOCUMENTS

3.1 Drawings, Descriptions and Calculations, if any, shall be given to the "CUSTOMER" electronically – if not the "CUSTOMER" decides that he needs a printout copy.

3.2 General Instructions

- Project language is English
- All documents shall be delivered in original editable format,
- MS-Office 2010 or later programs (Word, Excel, PowerPoint, and Access database),
- Drawings must be compatible with AutoCAD R2007 or later
- PDF files may not be protected; Purchaser shall be able to copy text and images for internal usage

3.3 Information Content of the TECHNICAL DOCUMENTS

- All documents shall contain a Cover page or Title block with the following information:
- Document Descriptive Name (e.g. Guidelines for Information Management)
- Project Name
- Document Number
- Author and date
- Revision index, date

4 Document list and delivery schedule – as far as necessary for project -subject to change after basic design completion:

Pos.	Name of Document	Type of Document
1.	**1st delivery package – internal project development Documents – only supplied to CSUTOMER as far as needed for third party purposes.**	
1.0.	Site visit	
1.1.	Schedule for the analysis of the location sensitive project requirements	tabular report
1.2.	From client confirmed survey about the identified boundary conditions and parameter for the system design (location and nature of usable roads for input materials and outgoing fertilizer, location and quality of the transmission lines for electric energy, location and nature of transmission of the thermal energy, location and nature of property for the purpose of operating a BioPowerPlant.	Protocol with certification notation
1.3.	Binding summary of the energetic performance parameter for the BioPowerPlant	tabular report
1.4.	Identification and evaluation of available input materials materials by quantity and quality	tabular report
1.5.	Compilation of information and documentation that must be provided by the client as a result of the site assessment for the basic design (determinations of legal planning requirements, development plans, existing piping and wiring plans of the site, site plans for road traffic, pipes and neighboring developments, soil testing reports, requirements with respect to climate, environmental requirements existing requirements on nature protection and landscape conservation, to be considered areas of flora and fauna, construction exclusions due to energy, transport and water lines , etc.)	tabular report with explanations
1.6.	Topographic site map showing the different basic layout options.	Site map
1.7.	Schematic presentation of the analysed process alternatives explaining the reasons for the choice of the preferred process alternative	Report with schematic description
1.8.	Development of the quantity structure (all masses and media and products as well as all energy being handled in the plant) for the	tabular report

	preferred process alternative	
1.9.	Development of a first mass flow diagram resulting in the performance requirements for the individual process stages	Block diagram
1.10.	Design of a first basic layout into the site map for the preferred process variant	Overview site map with layout
1.11.	Compilation of the tasks for the preferred procedural solution with respect to the basic design drawings.	tabular report with explanations
1.12.	Compilation of the tasks for the basic design drawings with respect to the logistical (storage, handling and transportation of raw materials and products) planning tasks	tabular report with explanations
1.13.	Compilation of the tasks for the basic design planning with respect to the energetical planning tasks (dissipation of electrical and thermal energy, securing of the energy supply process at any time, energy backup for the commissioning process)	tabular report with explanations
1.14.	Compilation of the tasks for the basic design planning with respect to the significant emission and pollution effects, including the pre-calculation of usable emission-reduction potential in the form of avoided CO2 emission equivalents	tabular report with explanations
1.15.	Budget estimation of an expected investment price	Calculation table
1.16.	Compilation of an overview to the required plant personnel regarding the number and the specific qualification requirements, proposals for the plant-related qualifications	tabular report with explanations
1.17.	Consultation and coordination of the planning tasks for the basic engineering with the relevant local authorities – as far as necessary, required and not happened yet.	Protocol
1.18	**Delivery time for first delivery package 1.0 – 1.17**	**4-8 weeks**
2.	**2nd delivery package – to be supplied fully**	
2.1	Basic design arrangement drawings for soil work, RCC foundations and RCC catchment area,	
2.2	Detailed drawings as far as necessary for execution of the works	

	mentioned under 2.1	
2.3	Basic layout drawings as general arrangement drawings of the plant construction area	
2.4	Delivery time for second delivery package 2.1 – 2.4	**8-10 weeks,** **Target 8 weeks**
3.	**3rd delivery package – internal project development documents – only supplied to CUSTOMER as far as needed for third party purposes, e.g. 3.3.**	
3.1.	Presentation of the selected process solution incorporating and responding to any known objections and suggestions of the customer and the concerned authorities, made as of to date	Report with schematic description
3.2.	Revised quantity structure calculations based on the requirements given by the selected process solution	tabular report
3.3.	Development and design of the mass flow block diagram for the approval planning documents	block diagram
3.4.	Development and design of the energetic flow chart showing the required own consumption as basis for the approval planning	block diagram
3.5.	Assessment of the intended basic design plan with respect to sustainability criteria	tabular report with explanations
3.6.	Survey about significant emission sources of pollutants with respect to water, air, soil and humans.	tabular report with explanations
3.7.	Identification of the reduction potential of climatic pollutants in the form of CO2 equivalents	tabular report with explanations
3.8.	On the conceptual design based basic list of the required structural and mechanical engineering plant components	tabular report with explanations
3.9.	Cost calculation/evaluation for these needed components according to the conceptual design	tabular report with explanations
3.10.	Concept of a profitability calculation for the operation of the "WABIO" BioPowerPlant based on the selected process solution and its conceptual design	tabular report with explanations
3.11.	Preliminary technical design drafts (not yet calculated basic design drawings) and explanations to it	Technical drawings and report with schematic

		characterizations
3.12.	Identification of each of the drawn up plant components by nature and quality	tabular report with explanations
3.13.	First draft of a construction time schedule starting at Zero	block diagram with explanations
3.14.	Survey about all components belonging to the preliminary technical design drafts	Tabular report
3.15	**Delivery time for the third package of 3.1. – 3.15**	**10-14 weeks**

4.	**4th delivery package** **Basic design work to be supplied fully**	
4.1	Identification of plant requirements with reference to the input materials and the to be produced energy and fertilizer	Tabular report, diagrams, explanations
4.2	Determination of process requirements for each process step	Model calculations
4.3	dimensioning of the plant components by the calculated capacity requirements	Tabular report
4.4	Comparison of different types of construction (RCC or carbon steel)	Dimensioning of vessels and tanks with identification of construction tasks
4.5	Specifications for detailed engineering of input material storage, if necessary	Technical drawing with functional description
4.6	Specifications for detailed engineering of shredding stations	Technical drawing with functional description
4.7	Specifications for detailed engineering of suspension station and tank	Technical drawing with functional description
4.8	Specifications for detailed engineering of the pump station	Technical drawing with functional description
4.9	Specifications for detailed engineering of the hydrolysis station	Technical drawing with functional description
4.10	Specifications for detailed engineering of the main fermenter station	Technical drawing with functional description
4.11	Specifications for detailed engineering of the post fermenter station	Technical drawing with functional description
4.12	Specifications for detailed engineering of the fermentation residue storage	Technical drawing with functional description
4.13	Specifications for detailed engineering of the gas storage/buffer	Technical drawing with functional description
4.14	Specifications for detailed engineering of the Desulfurization station	Technical drawing with

		functional description
4.15	Specifications for detailed engineering of the gas drying and gas compressing station	Technical drawing with functional description
4.16	Specifications for detailed engineering of the gas engine station as far as needed	Technical drawing with functional description
4.17	Specifications for detailed engineering of the flare station	Technical drawing with functional description
4.18	Specifications for detailed engineering of the phase separation station	Technical drawing with functional description
4.19	Specifications for detailed engineering of the fertilizer storage, if necessary	Technical drawing with functional description
4.20	Specifications for detailed engineering of the vehicle scales, if necessary	Technical drawing with functional description
4.21	Specifications for detailed engineering of the biofiltrate tank storage	Technical drawing with functional description
4.22	Specifications for detailed engineering of the Inhibitor extraction station	Technical drawing with functional description
4.23	Specifications for detailed engineering of the surface water storage, if necessary	Technical drawing with functional description
4.24	P&I Diagrams	drawing
4.25	Identification of the explosion protection areas	drawing
4.26	Directory of drawings	Table
4.27	Calculation of the heating requirement of every process station	Table
4.28	Table of piping and valves and accessories and controls and instruments	Table
4.29	Table for necessary sensors	Table
4.30	Table of pumps	Table
4.31	Table for motors and drives	Table
4.32	Requirements for the piping alignments	Positioning and basic design proposal
4.33	Description of MCS tasks	Description
4.34	Commissioning Concept	Explanatory report
4.35	Quality specification requirements for equipment and machinery	Table with explanations
4.36	**Delivery time for the fourth package of 4.1. – 4.35**	**14-20 weeks**
5.	Supply of all detailed design on basis of basic design,	8-10 weeks for all supply
6.	Bacteria and bacterial culture delivery and growth	at necessary point in time
6.1	WABIO is responsible for the bacteria starter culture, transportation and the cultivation of the bacteria on site.	
	Culture growth	According to schedule to be sent
7.	Supervision work for WABIO technology implementation	

7.1	Senior engineers being onsite for checking critical WABIO technology implementation points at civil work/RCC work.	
7.2	Senior engineers being onsite after start of assembly and plant erection for supervising of the proper implementation according to WABIO specifications until completion.	
8.	Procurement and erection/installation/constuction work	
8.1	The procurement of the equipment for the project purchased by WABIO as per plant need and Annex 3 of the "Agreement"	
8.2	Installation and erection work of total plant as "agreed in project" including supervision and directing construction works as per contract and its Annex 3	
9.	Commissioning	
9.1	Senior engineers being onsite for commissioning process and training of operators until successful completion. Calculated are 3 months.	
10.	Performance testing according to Annex 2 and 2a	