

CONTRACT- AGREEMENT

THIS CONTRACT- AGREEMENT is made at **Karachi/Lahore** on **XXX** between:

M/s XXX carrying on business **of textile processing** at **Address**; through its **Designation, Name and Father Name of Signing Authority**; bearing Computerized National Identity **Card No. XXX**. Here in after referred to as COMPANY, through the cooperation help and financial assistance of BFZ is desirous of entering into the Contract- Agreement for Seeking Consultancy on Energy Efficiency from CONSULTANT

Bfz gmbH International Division through its International Project Coordinator Mr. Martin Straehle, having office at Schleizer Str. 5 – 7, D - 95028 Hof, Germany. Here in after referred to as BFZ.

M/s XXX carrying on Business of Consultancy for Energy Efficiency at **Address**; through its **Designation, Name and Father Name of Signing Authority**; bearing Computerized National Identity **Card No. XXX**, here in after referred to as CONSULTANT agrees to offer its services to the COMPANY.

Name of Association providing service to its members as per Annexure 3A through its **Resource Person Mr. XXX S/o XXX**; bearing Computerized National Identity **Card No. XXX**, here in after referred to as ASSOCIATION, has appropriate expertise to provide service to the COMPANY.

All above parties wherever and whenever the context so requires, admits and permits shall mean and include their respective legal heirs, successors, administrators, assigns and/or Nominees.

AND NOW, THEREFORE, THIS CONTRACT- AGREEMENT WITNESSETH AS UNDER

COMPANY:

1. Must ensure full cooperation of top management with CONSULTANT and BFZ throughout the project; including Energy Audit/ Energy Management System and Implementation Monitoring
2. Shall be bound to assure the consultant, participation of relevant staff for trainings and seminars and to provide all related facilities and assistance, space/room/hall for the CONSULTANT to hold theory and/or practical classes, lectures work shop and the seminars and extend his full cooperation to the CONSULTANT.
3. Commits to adhere to the timelines specified in the Schedule and Scope of Work (marked as Annexure-1)
4. Must ensure the CONSULTANTS full access to the production floor and allowance for collecting and measuring data relevant for Energy Audit/ Energy Management System from production processes and utilities and share relevant data for costing of losses (Water, Energy, Steam, Gas and Compressed Air etc.)
5. Shall implement at least 30% of the No/Low Cost Solutions (payback time less than 1 year) in terms of saving potential within 2 months and 70% of no/low cost solutions within 6 months after presentation of results from Energy Audit through CONSULTANT.
6. Shall ensure to form an Energy Team and enable its staff to follow instructions laid out in the report/manual or any other work instructions for the data gathering, measurements and reporting of the data on energy consumption in the time frame and manner in which it is to be reported.
7. Shall monitor their consumption and wastages based on the formats and/or software provided by the CONSULTANT.
8. Agrees that energy and environmental cost savings realized under this agreement may be used for marketing of project by BFZ if they use the data anonymously (without mentioning COMPANY name).

BFZ:

1. Guarantees the COMPANY that they will save the money paid for the services provided by the CONSULTANT under this contract within 6 months if COMPANY complies with all obligations laid down in this contract. If the cost savings do not materialize in this time frame BFZ will reimburse the share paid by the COMPANY under this contract.
2. Shares the costs of CONSULTANT as per mode and schedule of PAYMENTS below.
3. Supervises and monitors work of CONSULTANT and facilitates cooperation between COMPANY and CONSULTANT.
4. Maintains SECRECY of all information and shall not share any information with any third party besides using anonymous data on savings realized for Marketing of Cleaner Production or after prior written approval of the company.

CONSULTANT:

1. Imparts technical education and assistance to COMPANY through lectures, on-the-job training and consultancy, as per Schedule and Scope of Work (marked as Annexure-1) which form a part and parcel of this Contract- Agreement.
2. Shall Collect, Measure and Compile the data relevant to Energy Audit/ Energy Management System from COMPANY
3. Commits to adhere to the timelines specified in the Schedule and Scope of Work. In case of any delays or change in the schedule; the CONSULTANT must inform BFZ and COMPANY in writing within 2 working days with justification. For each week of unjustified delays, the amount of PKR 2,500/- will be deducted from the fee to be paid by bfz.
4. Shall bear all costs for required equipment and travels.
5. Provides, at its own costs and expenses, highly technically qualified personnel for the project. The CONSULTANT must provide the Names and CVs of assigned team before the start of the project. All changes in the team must be approved by bfz.
6. Shall identify, together with Energy team of the COMPANY, Key Performance Indicators (KPIs) and develop reporting formats to monitor energy consumption.
7. Must provide a presentation and report including accomplished work, findings and recommendations to COMPANY and shall prepares and submits to BFZ an attendance sheet for all trainings conducted under this contract agreement
8. Visits COMPANY once a month for three consecutive months after presentation of results of Energy Audit to check status of implementation and present the reports to COMPANY and BFZ according to ANNEXURE 2. During these three Monitoring Visits, CONSULTANT shall also review the monitoring reports (made on developed formats or

- software) from Energy team.
9. Carries out detailed impact verification through measurements to show realized cost savings after 6 months as per Annexure-2 and present a report of results. This report will serve as basis for the final judgment if the COMPANY has fulfilled its responsibilities according to this contract.
 10. Maintains **SECRECY** off all information and shall not share any information with any other party except for BFZ or with prior written consent and approval of the COMPANY.

ASSOCIATION:

1. Administrates and coordinates service provided by CONSULTANT according to Annexure-3.

PAYMENTS

1. Total lump-sum FEE of the CONSULTANT shall be PKR XXX (i.e. PKR XXX for EnMS and PKR 50,000 for the EIS Software) inclusive of all tax which shall be payable as under:-
 - a) COMPANY will cover 40% or PKR XXX of total fee and BFZ will cover 60% or PKR XXX of total fee.
 - b) COMPANY will pay its share of PKR XXX in advance to the CONSULTANT.
 - c) BFZ will pay from its share 50% or PKR XXX after 2nd monitoring visit to the CONSULTANT (or latest after 3 months after start of activities if 2nd monitoring visit is delayed by the COMPANY). BFZ will pay remaining PKR XXX to CONSULTANT after completion of the whole assignment including monitoring and follow-up.
2. CONSULTANT will issue two invoices as under:
 - a) 40% of the total amount will be invoiced to the COMPANY
 - b) 60% of the total amount will be invoiced to BFZ (Two separate invoices must be provided for both payments)
3. The ASSOCIATION will be compensated with PKR XXX as per criteria defined in Annexure-3 by the COMPANY. The payment will be made in advance to the ASSOCIATION.

TERMINATION

The contract shall be terminated if;

1. Company fails to pay its share within 20 calendar days after contract signing. In this case CONSULTANT shall not start work and will not receive any payment.
2. Delays are caused by the COMPANY to start the activities or during field activities for more than 30 calendar days after contract signing. In this case CONSULTANT will not return the advance payment received from COMPANY but will not receive payment from BFZ.
3. COMPANY delays presentation of project results by more than 45 days after contract signing. In this case CONSULTANT will not return advance payment received from COMPANY. Furthermore CONSULTANT will receive remaining 50% of BFZ share on submission of report and presentation. COMPANY is liable to reimburse the cost shared by BFZ for the project under this contract.
4. CONSULTANT delays start of project and/ or project activities for more than 20 days within whole project time period; without giving any justified reason in writing; after receipt of advance payment. In this case CONSULTANT has to return money received from the COMPANY and/ or BFZ.

GENERAL

THAT the COMPANY, BFZ and CONSULTANT:

1. Do hereby agree and bind themselves to comply with the terms and conditions of the Contract-Agreement.
2. Shall be sincere, honest, ethical and faithful to each other in discharging their share of responsibilities in true sense and good faith in accordance with the terms and conditions of the Contract- Agreement.
3. In case of any dispute, deviation of any terms and conditions and interpretation of any clause and / or clauses, the matter shall be settled and resolved amicably and peacefully among themselves with mutual understandings and if the matter is not resolved, the same shall be referred to ARBITRATORS - one to be appointed by each parties here to with mutual consent of each other whose decision shall be final and binding on all the Parties.

IN WITNESSETH WHEREOF, the Parties here to have set and subscribed their respective hands on the day, date and the year first mentioned above.

PARTIES

COMPANY

BFZ

CONSULTANT

Mr. (Name)
(Designation)
M/s (Name of Company)

Mr. Straehle Martin
International Project Coordinator
bfz gGmbH, International Division

Mr. (Name)
(Designation)
M/s (Name of Company)

Association

Mr. (Name)
(Designation)
M/s (Name of Association)

ANNEXURE-1: SCHEDULE AND SCOPE OF WORK

Attaching to and forming part of the Contract- Agreement dated XXth MONTH, 2011

1.0 SCOPE OF WORK

Scope of Work for the Energy Audit is as follows:

1.1 Conduct Energy Audit and Implement Energy Management System (EnMS):

- a) Identifying scope of audits and overview of the Company's overall position with regard to energy efficiency and energy management.
- b) Data Collection and measurements from all sections of Industry and its continuous monitoring.
- c) Develop Energy Policy and Documentation
- d) Identify Energy Team at COMPANY and define their roles and responsibilities in coordination with COMPANY's top management
- e) Evaluation of the existing data collection and processing system used for energy records keeping and monitoring with lasted data measuring equipment.
- f) Identify useful data recording and monitoring purpose and provide and adapt developed formats for reporting information of material and energy flow to the higher management of the industry
- g) Incorporating the useful data in company's Energy Data Base System.
- h) Identification and recommendation of tools and equipment to Industry for energy monitoring.
- i) Preparation of Energy Flow Charts and Energy Balance using Input-Output Analysis with Energy Team (Depending on availability of data).
- j) Define Energy Objectives with Energy Team and develop Key Performance Indicators (KPIs)
- k) Analysis of the existing energy management system using key performance Indicators with regards to overall operational management (If the EnMS already exists).
- l) Develop the Energy Management System Manual and monitor its implementation
- m) Installation and Training on Energy Information System Software (if included in contract)
- n) Recommendation for energy efficient improvement measures including cost, benefit and payback calculations
- o) Preparation and submission of detailed final Energy Audit Report and EnMS Manual including:
 - Executive Summary of audit findings and EnMS for the management
 - Cost benefits analysis of proposed energy efficient improvement measures.

1.2 CAPACITY DEVELOPMENT OF IN-HOUSE ENERGY TEAM FOR THE INDUSTRY:

- a) Propose and formulate Energy Management Team in the Industry
- b) Prepare Draft Roles and responsibilities of the existing Energy Managers and Team.
- c) Identify and propose roles and responsibilities for the designated energy manager for Sustainable energy efficiency management at the company.
- d) Capacity building of the energy Manager on energy auditing data collection, data analysis and improvement measures regarding thermal and Electrical system.
- e) Guide Energy Team on monitoring of energy streams using prepared formats and/or software.

2.0 DELIVERABLES:

- a) Consultant shall submit project document and work plan for conducting scope of work of project (baseline audit activities and capacity building of Energy Team) within 1 week from signing of Contract.
- b) Consultant shall present the findings of Energy Audit to COMPANY and BFZ within 6 weeks after submission of work plan.
- c) Consultant shall submit detailed final reports of Energy Audit and EnMS Manual to COMPANY and BFZ within 2 weeks, upon presentation of findings in the COMPANY as per prescribed format along with collected data.
- d) Consultant must submit the Screen-Shots of EIS Software installed at COMPANY to BFZ (If included in contract)
- e) Consultant shall submit training plan and records and attendance sheets to BFZ along with the final reports
- f) Consultant shall conduct Four (04) Monitoring Visits of Company; One (01) each month after presentation of findings for Three (03) consecutive months to check status of implementation and review of energy monitoring reports. 4th monitoring visit must be conducted after 6 months of report presentation with detailed impact verification through measurements to show realized cost savings by data collection, review of energy monitoring reports, measurements, company records and utility bills etc.
- g) Consultant shall submit the completely filled reports of monitoring visits duly signed by the COMPANY representative on prescribed format within 3 days of monitoring visits

3.0 METHODOLOGY FOR THE EXECUTION OF PROJECT

Assessments will be conducted by a team of professional engineers, utilizing all necessary equipment for monitoring and assessments. Assessment checklists for all areas will be followed as reference for doing the measurements and making notes.

Secondary data will be acquired from the management for starting the survey and the analysis. This will be checked for its suitability of usage in the analysis. The CONSULTANT might seek certain clarifications from the partner unit representative after going through the data.

The formal Assessment exercise will comprise of the following steps:

- a) Interview with all levels of management and supervisions.
- b) On the floor discussion with workforce.
- c) Walk through first hand observations.
- d) Estimations and measurements with equipment

3.1 CONDUCTING ENERGY AUDIT

The CONSULTANT will formulate team comprising of Textile, Electrical, Mechanical, and certified energy engineers to conduct Project's scope of work. Team Leader will supervise all the activities of the project and team will conduct energy audit focusing on the following:

- a) Energy consumption profile and existing energy management
- b) Analysis of energy data and evaluation of energy wastage areas
- c) Suggest energy efficient practices and technologies with benefits, cost and Payback information.
- d) Detailed description of all focused energy areas;
 - I. Electrical Utilities and Power Generation
 - II. Thermal Utilities
 - III. Pneumatic and Mechanical Utilities

I) Electrical Utilities and Power Generation

S.No	Auditing Areas
1	Analysis of Generation system (including pattern of fuel consumption)
2	Analyze combustion efficiency of generators
3	Check for air and flue gas leakages to reduce load on FD and PA fans
4	Check feasibility of heat recovery from jacket water of generators
5	Electrical load Management
6	Load Curve of Plant
7	Maximum Demand Indicator (MDI)
8	Rescheduling and Staggering of Load
9	Power Factor Improvement
10	Capacitors Bank Performance
11	Balance of Kilowatt and Ampere load on 3phase supply
12	Identify voltage drops in power distribution and suggest remedies
13	Analysis of Distribution loss
14	Analysis of Harmonic generation and suggestions for suppression
15	Analysis of lighting system of factory and propose energy efficient lights and lighting layout
16	Calculate Specific Fuel Consumption in Generators (mmBtu per kWh generated)
17	Calculate Specific Energy Consumption in Company (kWh per unit of production)

II) Thermal Utilities

S.No	Auditing Areas
1	Analysis of Steam Boiler Efficiency on Low and High Fire stages and Flue Gas Analysis
2	Analyze quantity and pressure gaps between generation and consumption
3	Analysis of Thermo Oil Boiler Efficiency
4	Analysis of Steam distribution system & piping
5	Analyze steam pressure drops in distribution system
6	Analysis of condensate returns system.
7	Working on prefeasibility and potential for economizers and/or preheaters to preheat feed water/make-up water
8	Identification and quantification of steam leakages
9	Analysis of Feed water quality
10	Steam layout shall be assessed to check the proper sizing.
11	Steam traps checking, proper sizing and selection of steam traps.
12	Analysis of insulation losses of steam system.
13	Analysis of Boiler blow downs & Automatic blow down System
14	Check performance of PRVs and recommend remedies
15	Check performance of burners in processes, ovens, furnaces etc.
16	Calculate Specific Fuel Consumption in Boiler (mmBtu per Tons of steam generated)
17	Calculate Specific Steam Consumption in Company (Tons per unit of production)

III) Pneumatic and Mechanical Utilities

S.No	Auditing Areas
1	Analysis of load on electric motors and drives in comparison to rated capacity and suggestions for reducing the gap e.g. VFD, Right Sizing etc.
2	Analysis of electric motors' efficiency.
3	Investigation of motors' burning
4	Identify the mal-practices in maintenance of motors and drives
5	Analyze feasibility of purchasing energy efficient motors
6	Check appropriateness of drive type (used e.g. direct drive, v-belt, notched/flat belt etc.)
7	Check appropriateness of compressor type and size according to consumption
8	Check where system's air pressures are the lowest practical for the application and suggest pressure regulators where appropriate
9	Check potential sequencing of compressors to operate most efficient compressors for total system air requirement
10	Check and optimize pressure limits and stages of compressors as per consumption
11	Analyze feasibility of heat recovery from compressors
12	Check compressor inlet air temperature and suggest improvements

13	Identify the mal-practices in maintenance of compressors, filters, dryers etc
14	Analyze technical feasibility of using electric or hydraulic systems to replace compressed air consumption where applicable
15	Analyze compressed air distribution system and identify pressure drops
16	Identify and quantify the leakages
17	Analysis of water pumping and utilization
19	Calculate Specific Energy Consumption of Compressors (kWh per cubic meters of compressed air)
20	Calculate Specific Air Consumption of Company (Cubic meters of air per unit of production)

3.2 **IMPLEMENTATION of ENERGY MANAGEMENT SYSTEM (EnMS)**

The CONSULTANT shall implement EnMS and develop EnMS Manual focusing on the following;

- a) Development of Energy Team and Energy Manager
 - b) Development of Energy Policy & Documentation
 - c) Energy Information System
 - d) Capacity Development of Energy Manager and Energy Team
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- a) Development of Energy Team & Energy Manager
 - Appointment/Nomination of an Energy Manager who reports directly to top management
 - Formation of Energy Team in the subject unit
 - Preparation of Organogram of Energy Team
 - Defining & proposing draft roles and responsibilities of energy manager and energy team members
 - b) Development of Energy Policy & Documentation
 - Preparation of policy for energy savings and efficiency improvement for the unit defining clear Goals, Objectives and Targets
 - Communication of the Energy policy to industry employees
 - Preparation of procedures for identifying and monitoring Energy performance Indicators, training requirements, procurement, design, internal audit, document control, operational control and management reviews.
 - Guideline document for energy managers on setting objective and scope of internal evaluation system for future
 - c) Energy Information System (EIS)
 - Analyze and evaluate the existing energy data management system
 - Identify suitable energy data for recording and evaluation and the frequency of data collection
 - Establish KPIs, PIs and RIs for different management levels
 - Installation of energy information system software (If included in the contract)
 - Test the software with real time data gathered from company (If included in the contract)
 - Training of the Energy Manager on Utilizing Energy Information System (If included in the contract) and carrying out future EnMS Activities based on reports of EIS
 - d) Capacity Development of Energy Manager and Energy Team
 - Capacity building of the Energy Manager and Energy Team on energy auditing data collection, data analysis and improvement measures regarding thermal and Electrical system.
 - Training on Energy Management System in line with the ISO 50001 procedures.
 - Guide Energy Team on monitoring of energy streams using prepared formats and/or software.

ANNEXURE-2: IMPLEMENTATION AND IMPACT MONITORING REPORT

Attaching to and forming part of the Contract- Agreement dated XXth MONTH, 2011

Annexure-2: Impact Monitoring & Follow-up Sheet

Factory:	ESCO:	Region: North / South
Visit Date:	Time In:	Time Out:
Visit #: 01 / 02 / 03 / 04		

Energy Audit

Thermal & Mechanical Utilities

Sr. #	Identified / Suggested Energy Saving Measures (Mention any additional measures implemented by factory as well)	Energy Savings (kWh, mmBTU or m ³ per annum)		Energy Savings (PKR per annum)		Responsible Person	Implementation Timelines (Mention Dates)		Actual Investment (PKR)	Linked Key Performance Indicators (Mention KPIs Titles)	Verification Method (e.g. Mill Record, Energy Bills, On-site Testing, Calculations etc.)
		Identified	Actual	Identified	Actual		Target	Actual			
Sub-total											

Electrical Utilities

Sr. #	Identified / Suggested Energy Saving Measures (Mention any additional measures implemented by factory as well)	Energy Savings (kWh, mmBTU or m ³ per annum)		Energy Savings (PKR per annum)		Responsible Person	Implementation Timelines		Actual Investment (PKR)	Linked Key Performance Indicators (Mention KPIs Titles)	Verification Method (e.g. Mill Record, Energy Bills, On-site Testing, Calculations etc.)
		Identified	Actual	Identified	Actual		Target	Actual			
Sub-total											
Total											

Specific Energy Consumptions (If data is available)

Electricity (kWh/kg) {Base}:	Gas (mmBtu/kg) {Base}:	Water (m3/kg) {Base}:	Steam (Tons/kg) {Base}:
Electricity (kWh/kg) {Target}:	Gas (mmBtu/kg) {Target}:	Water (m3/kg) {Target}:	Steam (Tons/kg) {Target}:
Electricity (kWh/kg) {Act.}:	Gas (mmBtu/kg) {Act.}:	Water (m3/kg) {Act.}:	Steam (Tons/kg) {Act.}:

Energy Management System

Confirm the submission of all below documents by Marking the Checkboxes.

A	Energy Team	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	i Minutes of meetings of Energy team, Reports (other document to verify that Energy Team is Functional)	
B	Key Performance Indicators	
	i Actual measured values of KPIs of each Month	
C	Energy Information System	<input type="checkbox"/>
	i Data Reports Generated for each Month (If EIS was installed, please provide EIS Output reports)	

Final Remarks (Use separate sheet if required):

Director/General Manager:	Energy Manager:	ESCO Team Leader:
SMEDA Representative:		bfz Representative: