

**ENVIRONMENTAL SAFEGUARDS AND DUE DILIGENCE
PROTOCOLS**

FOR

SUPER EFFICIENT EQUIPMENT PROGRAM (SEEP)

BUREAU OF ENERGY EFFICIENCY
(Government of India, Ministry of Power)



March 2013

Contents

	Page No.
Executive Summary	5
1 Introduction	7
2 Environmental Safeguards Objective and Scope of Work	7
3 Fan Manufacturing Industry Scenario	9
3.1 Definition and Types of Fan	9
3.2 Scale of Fan Manufacturing Industry	9
3.3 Small Scale Manufacturers	9
3.4 Medium Scale Manufacturers	9
3.5 Large Scale Manufacturers	10
3.6 Distribution Channel	10
3.7 Value Chain Analysis of “Ceiling Fan”	10
4 Production Process of Ceiling fan	11
5 Pollution Potential of Ceiling Fan Manufacturing Units	11
5.1 Pre Treatment of Steel and Aluminum Components	11
5.2 Aluminum Die Casting Operations	13
5.3 Paint Shop Operations	14
5.4 Sheet Metal Cutting, Machining and Punching Operations	14
5.5 Sewage and Sanitary waste	14
6 Applicable National Environmental Regulatory Framework	14
7 Environmental Health and Safety Due Diligence (EDD)	15
7.1 Methodology Adopted for EDD	15
7.2 Criteria for Selection of Industries	16
7.3 Schedule for Visiting Selected Industries	16
7.4 Checklist for Onsite Assessment and Collection of Information from Industries	16
8 Summary Findings of EDD Study	17
9 Development of EDD Protocol and Safeguards Compliance Assessment	19
10. Institutional Framework for Application of EDD Protocol	20
Appendix 1: Checklist for Seeking Information from Ceiling Fan Manufacturing Industry	22
Appendix 2: Illustrative List of State & Central Acts, Rules, Applicable for Ceiling Fan Manufacturing Units	29
Appendix 3: Typical Consent for Operation Issued to a Ceiling Fan Manufacturing Industry	31
Appendix 4: Typical Test Report of Effluent and Sewage Treatment Plants of a Ceiling Fan Manufacturing Industry	38
Appendix 5: Typical Test Report of Stack Emission of a Ceiling Fan Manufacturing Industry	47
Appendix 6: Typical Certifications for Quality, Environmental and OSHAS of a Ceiling Fan Manufacturing Industry	51
Appendix 7: Checklist for Screening of Environmental Safeguards Compliance (EDD Protocol)	55
Attachment 1: List of State & Central Acts, Rules, Ceiling Fan Manufacturing Unit is in Compliance	58

Abbreviations

BEE	Bureau of Energy Efficiency
CFE	Consent for Establishment
CFO	Consent for Operation
CTF	Clean Technology Fund
EDD	Environmental Due Diligence
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
ETP	Effluent Treatment Plant
GHG	Green House Gas
GOI	Government of India
MOEF	Ministry of Environment and Forests
MVA	Monitoring and Verification Agency
PPE	Personal Protection Equipments
RFP	Request for Proposal
SEEP	Super Efficient Equipment Program
SPCB	State Pollution Control Board
STP	Sewage Treatment Plant
WB	World Bank

EXECUTIVE SUMMARY

The Government of India, through the Bureau of Energy Efficiency (BEE) is implementing a Super Efficient Equipment Program (SEEP). In line with Government of India's request to support the SEEP, the World Bank is facilitating support from the Clean Technology Fund (CTF) for SEEP aimed at market transformation in electrical appliances with the first phase focusing on ceiling fans. It is intended that SEEP for ceiling fans will provide the impetus for adoption of about 5 million super efficient fans, which represents a sixth of the annual market of 30 million new fans. This transformation could lead to significant energy savings, energy capacity additions, and environmental co-benefits of GHG emission reductions.

While, the SEEP for ceiling fans would lead to energy efficiency benefits, as well as environmental co-benefits, the assessment of the current environmental safeguard compliance of ceiling fan manufacturing industries would be essential from the regulatory and reputational risks. The prudent means to address the Environment, Health and Safety (EHS) issues would be to formulate an EHS Due Diligence (EDD) Protocol, as part of SEEP operations manual so that the environmental safeguard requirements can be addressed as part of determining the criteria for selection of ceiling fan manufacturers for this program.

Accordingly, an EDD study was undertaken between October - November 2012, as per the Terms of Reference agreed between BEE and the World Bank. The objective of the study was to assess the ceiling fan industry's pollution potential, applicable regulatory requirements, current compliance levels and formulate the EDD protocols. The study covered 7 ceiling fan industries spread across India, selected based on their brand presence in market. The study also included site visits to 3 industries for on site assessment/verification.

The salient findings of the study are summarized hereunder.

- i) The manufacturing units covered during the study were established in approved industrial areas, confirming to local designated land use plan. These are functioning for several years and therefore issues relating to displacement and the resettlement are not relevant at present.
- ii) The units covered under the study were under medium and/or large industry category and are regulated by several State and Central Acts & Rules. All units were fully dependent on vendors for supply of components, thus these may more aptly be termed as ceiling fan assembly units.
- iii) The ceiling fan manufacturing process has potential for pollution from few operations. The units either outsource all such operations or may carry out any one or two operations in-house, depending upon each corporate entity's operations strategy. The outsourcing of such operations appear to be mainly for economic considerations.
- iv) The manufacturing units, which have in-house operations with potential for pollution have installed effluent treatment plants within their premises and some units were found to be recycling/reuse of treated water.

- v) As per present regulatory framework, all ceiling fan manufacturing units are out of the purview of EIA notification, 2006 and do not require prior environmental clearances from Ministry of Environment and Forests, Government of India.
- vi) At the state level, these units are listed under 'Green Category' by the State Pollution Control Boards for consent management, an indicator of 'non-pollution intensive' industry status and thus benefit from liberal procedure for issuance of Consents for Establishing (CFE) & Consent for Operation (CFO)
- vii) All manufacturing units, covered under the study had the mandatory CFOs issued by the respective State Pollution Control Boards and are generally fulfilling all consent compliance requirements and thus did not carry any significant environmental safeguards risk.
- viii) Based on the study, a screening checklist for environmental safeguards due diligence (EDD Protocol) along with a framework for application of EDD protocol has been developed.
- ix) The EDD protocol is intended to determine the environmental safeguard compliance of any ceiling fan manufacturing unit, intending to participate under SEEP. The EDD Protocol covers essential parameters like siting criteria, information relating to statutory compliance, in-house production processes with pollution potential, status of consent for operation, effluent treatment and disposal systems, occupational health and safety issues, periodical monitoring of environmental parameters, among others,
- x) The EDD protocols are to be filled in and submitted by the prospective bidders/units along with RFP documents in order to qualify for participation under SEEP. The filled-in EDD protocol along with all supporting information can be used as a basis to ascertain safeguards compliance of any participating ceiling fan manufacturing unit under SEEP.
- xi) The Monitoring and Verification
- xii) Agency (MVA), appointed by BEE for facilitating implementation of SEEP shall be a BEE empanelled Indian agency and shall be responsible for scrutiny of the filled in EDD protocol along all supporting documentation.
- xiii) Based on the scrutiny of the EDD Protocol, the safeguards compliance of any prospective bidder (ceiling fan manufacturing unit) under SEEP can be ascertained to be to be fully compliant, partially compliant and/or non-compliant as the case may be. In case of partial compliance, the units can be provided additional time frame for furnishing the required supporting documentation prior to signing of MOU between BEE and selected fan manufacturing units but not later than award/claim of incentive under SEEP.

Based on the scrutiny of the EDD Protocol in line with the above mentioned criteria, if a unit ascertained to be environmental safeguards compliant, it poses no reputational risk to the SEEP by its participation through development of energy efficient ceiling fans.

1 Introduction

The Government of India, through the Bureau of Energy Efficiency (BEE) is implementing a Super Efficient Equipment Program (SEEP). In line with Government of India's request to support the Super Efficient Equipment Program, the World Bank is facilitating support from the Clean Technology Fund (CTF) for SEEP aimed at market transformation in electrical appliances with the first phase focusing on ceiling fans.

The purpose of this lending project is to enable/encourage a transformation in the market to adopt super efficient ceiling fans. This transformation could lead to significant energy savings, energy capacity additions, and environmental co-benefits of GHG emission reductions. This is crucial and has relevance at a time when India's housing and real estate sector is undergoing rapid expansion and sales of fans, which caters as the primary means of space cooling in low income and middle income households.

In a very price sensitive market of mostly low income consumers, more expensive appliances with lower energy consumption are not chosen, even if the payback period is short and within the lifetime of appliance. The appliance standards and labeling program of the Bureau of Energy Efficiency, being implemented under the Energy Conservation Act of 2001, had very limited impact in promoting energy efficient fans. These labels for fans have not been made mandatory for fans, with analytical work showing that price is the main determinant of purchasing decision, rather than regulatory instrument of labeling. Therefore, economic incentives are required to encourage consumer in adoption of higher efficiency appliances (ceiling fans) and to overcome regulatory and market failures.

It is intended that CTF funded SEEP for ceiling fans will provide the impetus for adoption of about 5 million super efficient fans, which represents a sixth of the annual market of 30 million new fans.

2 Environmental Safeguards Objective and Scope of Work

While, the SEEP for ceiling fans would lead to energy efficiency benefits, as well as environmental co-benefits, the current environmental safeguard compliance of ceiling fan manufacturing industries would be of importance from the regulatory and reputational risks. In addition, the environmental impacts of proposed technology and product changes for producing SEEP ceiling fans also cannot be ruled out eventually. Thus, the project preparation activities need to ascertain the potential environmental impacts of the proposed interventions and integrate safeguards mechanism as part of delivering the incentives proposed under the SEEP.

The prudent means to address the Environment, Health and Safety (EHS) issues would be to formulate an EHS Due Diligence (EDD) Protocols, including environmental appraisal and risk management mechanisms, following the principles and policies laid out under Environmental Assessment OP 4.01, one of the World Bank Safeguard policies. The EDD mechanism shall form part of SEEP operations manual such that the environmental safeguards issues will be addressed as part of determining the criteria for selection of ceiling fan manufacturers for this program.

The scope work for preparing the EHS Due Diligence (EDD) Protocols for ***Ceiling Fan manufacturing facilities*** shall cover:

- i) **Understand and Document the Context of EHS Management:** The consultant shall review the project documentation to clearly and understand the project design, implementation structure, and the expected project outcomes with the view to appreciate roles of different stakeholders and provide a detail context of the EDD Protocols for the project. As part of this, the consultant shall interact with the project stakeholders including BEE and WB
- ii) **Assess the Environmental Regulatory** requirements to be complied for establishing and operating the industry. This will cover the pollution control categorization of the industry and the CFE and CFO requirements and any other Environmental Assessment requirements and compliance requirements on Health and Safety. This compliance shall be analyzed based on a review of environmental regulations in India including standards/conditions stipulated there-in and the environmental monitoring and reporting requirements Based on the above assessment, a regulatory compliance requirement statement shall be prepared.
- iii) **Review and Assess the Typical Production Process** in three industry units, representing at least two clusters, with an objective to: (a) understand the general production processes; (b) ascertain the environment, health, and safety issues; (c) current environmental management practices to address such issues; and (d) extent of industry compliance with the CFO conditions. As part of this assessment, the consultant will also document the supply chain of the industry and ascertain the associated environmental issues (for example, many of the industries outsource the jobs like painting, electroplating, coil winding, etc.), and their management by the industry (for eg. through measures like supply chain management, quality certification and process management systems, etc.)
- iv) **EDD Protocols:** Based on the above, the consultant shall develop a user friendly Environmental Due Diligence Protocols which can be used by the implementing agency. The Protocols shall be handy, providing: (a) basis and criteria for assessing the environmental risks; (b) generic management measures; and (c) reporting requirements, if any. The EDD shall be integrated as part of the project operations manual as well as appraisal mechanism for disbursing the incentive to the manufacturers. For achieving this objective, the consultant shall coordinate with the other consultants working on project design and preparation.
- v) **Institutional Mechanism:** As part of this task, the consultant shall prepare an institutional mechanism for applying the EDD Protocols by the project implementing agency.

3 Fan Manufacturing Industry Scenario

3.1 Definition and Types of Fan

An electric fan is a mechanical device used for creating a current of air or a breeze, using an electric motor. Based on its functionality, the fans are categorized into four distinct types namely: Centrifugal, Propeller, Axial flow and Mixed flow. Based on the utility, the fans are classified as follows.

Sl. No.	Fan Types
1	Ceiling Fans
2	Pedestal Fans
3	Table Fans
4	Wall Fans
5	Exhaust Fans
6	Air Circulation Fans
7	Industrial Fans (Blowers)

Based on the power consumption, fans are classified as domestic & industrial fans. Globally, fans consuming less than 125 watts of energy are referred to as 'Domestic Fans, whilst those consuming over 125 watts are termed as 'Industrial Fans.

3.2 Scale of Fan Manufacturing Industry

The fan manufacturing is undertaken by small, medium and large scale/size industries. The large scale industries are mostly owned by big Industrial houses/corporate groups whereas the medium scale industries are owned by small industrial houses or group of individuals through partnership firms. The small scale industries are generally owned by individuals or in partnership of a few individuals.

3.3 Small Scale Manufacturers

The core competence of small scale manufacturing industries is their ability to produce fans at minimal or low costs. The low costs are achieved through hiring only seasonal employees, using simple, traditional production techniques and mostly old/refurbished machines. The raw material used generally will be of relatively inferior quality and the products not necessarily have to be energy efficient. The small industries do not invest in branding or promoting their products but thrive on production of low cost fans and cater to low income group consumers and far-flung rural markets through wholesalers, purely on the strength of their low cost products.

3.4 Medium Scale Manufacturers

The medium scale industries manufacture relatively limited range of mid range priced economy fans through employing less capital intensive production processes, utilizing medium quality material, and selectively outsourcing components to low cost vendors.

Generally, like the large manufacturers, the medium-sized manufacturers also perform coil

winding process in-house (a critical process with huge impact on the quality of the end-product). While, some other medium sized firms may use rotary die casting machines to die cast the main body plate of the fan and automatic press for developing rotor stator in-house.

3.5 Large Scale Manufacturers

Large scale manufacturers are distinguished by their ability to acquire new or latest machinery, and to invest in equipment, employees, brand equity, and development of distribution channels and marketing. Their products are relatively more expensive, made of quality raw material, use modern machinery for efficient production and the product range is also quite diversified. Generally, the large manufacturers introduce at least one new design every year and their product range include plastic bodied fans, decorative fans and fans with fancy lights other than the most common metal-made fans with different sweeps for varying utility areas and applications.

The large manufacturers have a market share of about 65-75% for most type of fans with ceiling fans being at top bracket. The attributable reason for this could be a) sustained efforts for brand establishment b) financial resources c) marketing strategies/techniques d) skilled and trained management staff e) better communication/negotiation ability f) access to modern technology and g) preparedness to introduce newer models with technological advancements h) sourcing of newer technologies and R & D initiatives

3.6 Distribution Channel

The large manufacturers sell their products through distributors and the distributors' in-turn engage dealers, sub dealers, retailers and resellers amongst others. The medium & small manufacturers sell their products only through several intermediary agents and small retailers. In far flung rural towns and villages, the sales are usually conducted by small retailers through wholesalers.

3.7 Value Chain Analysis of "Ceiling Fan"

The value chain analysis of ceiling fan along with a typical cost buildup for a ceiling fan is given here under:

Table: Value Analysis of a Typical Brand Fan with 1200mm Sweep		
Sl. No.	Cost Component	Price(INR)
1	Raw Material Cost	635
2	Labour Cost	244
	Base Manufacturing Cost	879
3	Overheads Cost including Profit @ 20% of Base Cost	175
4	Branding Cost @ 20 % of Base Cost	175
	Total Cost	1229
5	Marketing Cost @15%	245
6	Sales Tax / VAT @ 6%	74
	Maximum Retail Sale Price	1548

4 Production Process of Ceiling fan

The production process of a ceiling fan comprises broadly two stages, namely manufacturing of components followed by assembling of components into a finished product i.e. ceiling fan.

All manufacturing set ups, particularly the large manufacturing industries are fully dependent on vendors for supply of ceiling fan components and restrict themselves to the manufacture of few critical components of the product and assembling the components sourced from vendors into a complete product including product quality tests, and quality assurance procedures. Thus, most of the ceiling manufacturing industries may more aptly be termed as ceiling fan assembly units. In addition, these large manufacturing units also source 'ceiling fans' made under their brand through captive or open market ancillary units to meet in house capacity constraints as per seasonal demand variations and more importantly to maintain their respective brand's market share.

A typical ceiling fan production flow diagram of a large manufacturing industry, showing the synergy between in-house facilities and vendors supply chain for components in the manufacture and assembly of ceiling fans is given in the **Exhibit 1**.

5 Pollution Potential of Ceiling Fan Manufacturing Units

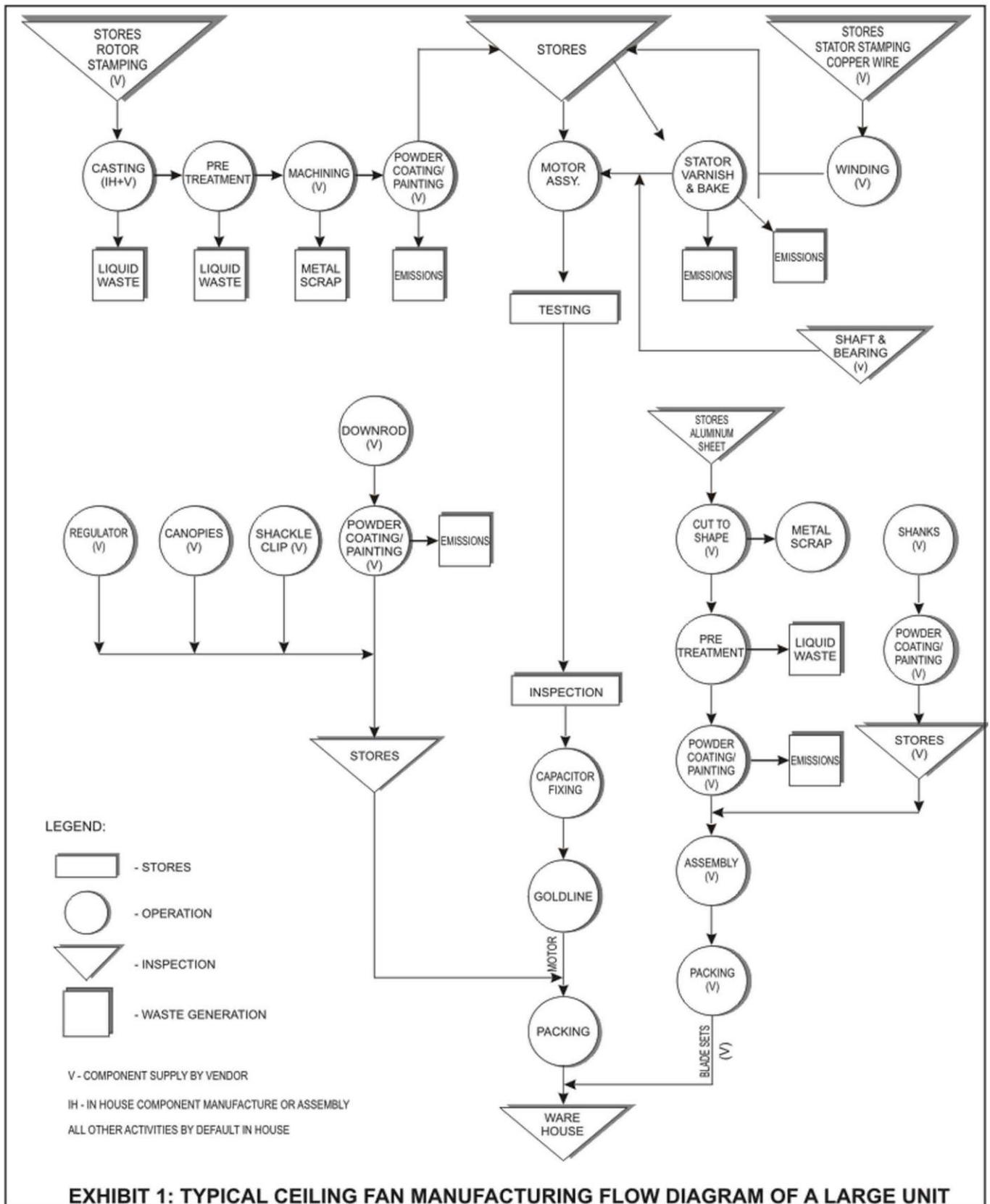
The manufacturing of ceiling fan components has potential for pollution for waste generation, whereas no such potential exist in the assembling of ceiling fans. The most notable operations which have potential for waste generation are:

- Pre-treatment of Steel and Aluminum components to de-rust, de-degrease and preparatory chemical coating prior to painting process
- Aluminum die-casting operations
- Paint shop (liquid paint and powder paint) operations
- Scrap from sheet metal cutting, machining and punching, among others
- Sanitary waste from shop floor toilets, administrative blocks and sullage from canteen blocks

5.1 Pre Treatment of Steel and Aluminum Components

The metal surface treatment is a seven step process for degreasing, derusting, and creating a physical barrier or film that will protect metal against a corrosive environment and provide an absorptive surface for painting. The process is known as phosphating process.

The surface films used in chemical conversion coatings are formed by a means of a non-electrolytic chemical reaction that occurs between the metal surface and solution. They are adherent, inorganic crystalline or amorphous films, which are less reactive to corrosion than the original metal surface. The films impart equal potential to the surface and neutralize the possible anodic and cathodic corrosion areas and provide an absorptive base for adhesion to paint finish.



There are several steps included in the metal surface treatment process. The first step is cleaning where the mill oils, stamping compounds and rusting is removed. This will be followed by a cleaner rinse and then on to a conversion coating stage of either iron or zinc phosphate, followed by an inorganic-organic sealer. The final step is rinsing with pure water like de-ionized or reverse osmosis water. The parts are then conveyed to a dry-off oven to remove all moisture before painting.

All pretreatment operations are carried out by dipping the metal components in baths, which are emptied at regular intervals for a fresh fill of chemical solutions. This waste needs treatment prior to final disposal and/or recycled back into the system for preparation of a fresh chemical solution.

5.2 Aluminium Die Casting Operations

Die casting is a metal casting process by forcing molten metal under high pressure into a mould cavity. The mould cavity is created using two hardened tool steel dies which have been machined into shape and work similar to an injection mould process. Most die castings are made for non-ferrous metals like specifically for Zinc, Copper, Aluminium, Magnesium, and Tin based alloys.

Depending on the type of metal being cast, a hot- or cold-chamber machine is used. For Aluminum die casting operations, a cold-chamber die casting machine is used. The casting process starts with melting the metal in a separate furnace and then a precise amount of molten metal is transported to the cold-chamber machine and fed into an unheated shot chamber (or injection cylinder). This shot is then driven into the die by a hydraulic or mechanical piston.

All die casting operations essentially involve four steps: die preparation, filling, ejection, and shakeout. The dies are prepared by spraying the mould cavity with lubricant. The lubricant is used to control the temperature of the die and also assist in the removal of the casting. The dies are then closed and molten metal is injected into the dies under high pressure; between 10 and 175 megapascals (1,500 and 25,400 psi). Once the mould cavity is filled, then pressure is maintained until the casting solidifies. The dies are then opened and the mould shot are ejected by the ejector pins. Finally, the shakeout involves separating the scrap and unwanted formations, if any from the shot. This is often done using a special trim die in a power press or hydraulic press.

In die casting operations, either solvent based or water-based lubricants can be used. However, in recent years, water-based lubricants, called *emulsions*, are the most commonly used lubricant, due to health, environmental, and safety reasons. There are four types of water-based lubricants: oil in water, water in oil, semi-synthetic, and synthetic. Among these, Oil in water lubricant is most preferred, because when the lubricant is applied, the water cools the die surface by evaporating while depositing the oil, which subsequently helps in releasing the shot. Oils that are generally used in lubricants are heavy residual oil (HRO), animal fats, vegetable fats, and synthetic fats. Emulsifiers are also added to water-based lubricants, so that oil based additives can be mixed into the water; these include soap, alcohol esters, and ethylene oxides. In addition, some chemical additives are also added to the lubricants to inhibit rusting and oxidation.

During the die casting operations, the used water based lubricants comes out as a liquid waste. This wasted water based lubricants are to be treated for removal of oil and grease and other contaminations prior to final disposal and/or recycled back into the system for preparation of a fresh lubricant recharge.

5.3 Paint Shop Operations

The paint (liquid and powder types) operations are presently carried out in closed chambers through automatic spray machines and therefore no manual paint operations are involved. The components which are to be painted is transmitted into paint booths through conveyor systems. Therefore, there is no scope for liquid and solid waste generation from these operations. However, odour and obnoxious fumes in and around the paint booths is an environmental and occupational health concern.

5.4 Sheet Metal Cutting, Machining and Punching Operations

The sheet metal cutting and punching operations and machining operations of ceiling fan components generate metal scrap, which has market value. Other than this, there is no liquid or solid waste generation, which requires treatment and /or disposal from these operations

5.5 Sewage and Sanitary waste

The toilets of assembly shop floors, administrative blocks and sullage from canteen blocks generate sewage and sullage, which needs to be treated, prior to its disposal or directly discharged into public sewers, depending upon the consent conditions stipulated by the State Pollution Control Board and/ or depending upon availability of a public sewer in the proximity of the industrial unit.

Essentially, not all units carry out all the above mentioned pollution potential operations. The units either outsource all the above operations or may carry out any one or two operations in house, depending upon each corporate entity's operations strategy. The outsourcing of a specific component to a vendor appear to be mainly based on economic consideration and not based on manufacturing process involving pollution potential or otherwise.

The manufacturing units, which have in house operations with potential for pollution like die-casting operations, pre-treatment of metals for de-rusting and degreasing have installed effluent treatment plants within their premises and have systems in place for recycling of treated water. The scrap from sheet metal cutting, machining, punching operations has resale value and sold as metal scrap.

6 Applicable National Environmental Regulatory Framework

The ceiling fan manufacturing industry does not fall under the purview of Environmental Impact Assessment (EIA) Notification, 2006 of the Ministry of Environment and Forests(MOEF), Government of India(GOI) and thus does not require any prior environmental clearances. At the State level, ceiling fan manufacturing industry is listed under 'Green Category' by the State Pollution Control Boards for consent management in accordance with section VIII of the EPA, 1986 enacted by the Ministry of Environment & Forests, Govt. of India.

Listing of ceiling fan manufacturing units under Green Category for consent management is an indicator of a 'non-pollution intensive' industry and thus benefit from liberal procedure for issuance of Consents for Establishing (CFE) & Consent for Operation (CFO) and also the subsequent consent compliance requirements.

The applicable environment regulatory requirements for ceiling fan manufacturing industry are summarized hereunder.

Table: Applicable National Environmental Regulations for Ceiling Fan manufacturing units

Sl. No.	Regulatory Requirements	Regulatory Body	Applicability for Ceiling Fan manufacturing units	Action Required
1	Prior Environmental Clearances under EIA Notification, 2006	MOEF, Govt. of India	Not Applicable. This industry does not fall under the purview of the EIA Notification, 2006	None
2	'Consent For Establishment' (CFE) during Pre-construction Stage & 'Consent For Operation' prior to commencement of commercial operation/ production.	State Pollution Control Boards	Applicable for only new units. CFE needs to be obtained from the respective State Pollution Control Boards	Applications are to be submitted to State Pollution Control Board in the prescribed application form and consent fee, depending upon capital investment of proposed facility.
3	'Consent For Operation'(CFO) prior to commencement of commercial operation/ production and compliance to consent conditions	State Pollution Control Boards	Applicable. CFO needs to be obtained from the respective State Pollution Control Boards	Applications are to be submitted to State Pollution Control Board in the prescribed application form and consent fee, depending upon capital investment of proposed facility.

7 Environmental Health and Safety Due Diligence (EDD)

7.1 Methodology Adopted for EDD

The methodology adopted for undertaking the EDD comprised:

- Literature Search on ceiling fan industry in line with objectives of SEEP
- Development of a checklist for collection of information from industries
- Review of environmental regulatory requirements for ceiling fan Industry
- Selection of ceiling fan industries for on-site Assessment
- Onsite assessment, interaction with industry officials and collection of required information from selected industries
- Development of an Environmental Safeguard Due Diligence Screening checklist (EDD Protocols) for determining the safeguards compliance of any ceiling fan manufacturing unit to enable its participation in SEEP through development of energy efficient ceiling fans.

7.2 Criteria for Selection of Industries

The ceiling fan market is largely dominated by the major brands like Crompton Greaves, Bajaj, Orient, Khaitan, Havell's, Ortem, Usha and Polar among others. Based on the ceiling fan industry scenario, expectedly, these major brands are manufactured by large scale industries. Therefore, it was considered essential to cover these large industries under this EDD study to understand their current production methods and planned technological advancements, sources of waste generation, applicable environmental regulatory requirements, existing practices for waste management, regulatory compliance levels, among others.

7.3 Schedule for Visiting Selected Industries

Based on the assessment of the ceiling fan industry scenario and brand presence in the market, 7 ceiling fan industries were selected for the EDD study. The industries name, dates visits along with contract details of the persons at the industry are given in the following Table. In accordance with the Terms of Reference, out of these 7 industries, 3 were selected for site visit between 22nd to 31st October 2012. Notably,

Sl.	Unit Name	Visit Date to Unit	Contact Person
1	Orient Fans	22 nd October 2012	Mr. R. Gambhir, Head Tech gambhrr@orientfans.com
2	Bajaj Electricals	26 th October 2012	Mr. Shyam D. Agnihotri, G.M. (Technology) sda@bajajelectricals.com
3	Crompton Greaves Ltd.	31 st October 2012	Mr. U.H. Mahajani, General Manager uday.mahajani@cgglobal.com
4	Polar Mktg. Ltd.	Desktop Review Only	Mr. Tapas Ganguly, Manager tapas@vishvaelectro.in
5	Havells India Limited	Desktop Review Only	Mr. Anil Patil, Associate Vice President anil.patil@havells.com
6	Metro Ortem Ltd.	Desktop Review Only	Mr. Praveen Singhal, praveen.singhal@metrogroup.co.in
7	Khaitan Electricals Ltd.	Desktop Review Only	Mr. Neeraj Pandey, Vice President neeraj@khaitan.com

7.4 Checklist for Onsite Assessment and Collection of Information from Industries

A checklist was developed to compile required information for the EDD study, comprising ownership and year of establishment, siting criteria of unit, installed production capacity, market share of brand, seasonal variations in production and workforce, outsourcing and vendor registration process, potential for pollution and existing facilities for waste management, consent compliance status, recycle and reuse of treated waste water, environmental management measures, occupational health and safety policies and practices, among others. A specimen checklist is enclosed for reference as **Appendix 1**.

8 Summary Findings of EDD Study

The information collected through the checklist supplemented by onsite assessment as well as interactions with the top management functionaries of the visited fan industries was analyzed and compiled. The compiled findings of the study are summarized hereunder.

- i) All corporate entities covered during the study have their ceiling fan manufacturing units at more one location for logistical advantage as well as to avail benefits/exemptions provided by some states like Utrakhnad and Himachal Pradesh. However, only the mother or main units were covered under this study.
- ii) The manufacturing units covered during the study are established in approved industrial areas and conforms to the local designated land use plan. Since, the units are located in approved industrial areas, existing and functioning for several years, impacts relating to displacement and the resettlement and related social safeguard does not exist.
- iii) The manufacturing units covered under the EDD study fall under medium and/or large industry category and are covered by several State and Central Acts & Rules. An illustrative list of relevant Acts & Rules is given in **Appendix 2**. During the field visits, all units confirmed their compliance to every applicable State and Central Acts & Rules and reaffirmed that they could ill-afford any non-compliance in these matters. However, the units declined to share any evidence in these matters at this stage.
- iv) All manufacturing units are fully dependent on vendors for supply of ceiling fan components, thus these may more aptly be termed as ceiling fan assembly units. In addition, these units also source 'ceiling fans' made under their brand through captive or open market ancillary units to meet in house capacity constraints as per seasonal demand variations and more importantly to retain their respective brand's market share.
- v) The manufacturing units have complete in house facilities for assembling the ceiling fans including packing prior to dispatch to ware houses. The units have also set up in-house quality assurance (QA) procedures either on a 100% sample basis or fixed number of samples per lot basis, depending upon a specific component and/or stage of ceiling fan assembly.
- vi) The ceiling fan manufacturing process has potential for pollution or waste generation from the following operations:
 - Aluminum and Steel die-casting operations
 - Pre-treatment of Steel and Aluminum components to de-rust, de-degrease and preparatory chemical coating prior to painting process
 - Paint shop (liquid paint and powder paint) operations
 - Scrap from sheet metal cutting, machining and punching, among others
 - Sanitary waste from shop floor toilets, administrative blocks and sullage from canteen blocks

- vii) Essentially, not all units carry out all the above mentioned pollution potential operations. The units either outsource all the above operations or may carry out any one or two operations in house, depending upon each corporate entity's operations strategy. The outsourcing of a specific component to a vendor appear to be mainly based on economic consideration and not based on manufacturing process involving pollution potential or otherwise.
- viii) The manufacturing units, which have in house operations with potential for pollution like die-casting operations, pre-treatment of metals for de-rusting and degreasing have installed effluent treatment plants within their premises and have systems in place for recycling of treated water. The scrap from sheet metal cutting, machining, punching operations has resale value and sold to scrap dealers.
- ix) All ceiling fan manufacturing units are out of the purview of EIA notification, 2006 and do not require prior environmental clearances from Ministry of Environment and Forests, Government of India. At the state level, these units are listed under 'Green Category' by the State Pollution Control Boards for consent management in accordance with section VIII of the EPA, 1986 enacted by the Ministry of Environment & Forests, Govt. of India.
- x) Listing of ceiling fan manufacturing units under Green Category for consent management is an indicator that these are relatively 'non-pollution intensive' industry and thus benefit from liberal procedure for issuance of Consents for Establishing (CFE) & Consent for Operation (CFO) and also the subsequent consent compliance requirements. Any violation of compliance conditions can lead to impose of penalty and eventually closure of a unit by the State Pollution Control Board, which no corporate entity would risk.
- xi) All the manufacturing units, covered during the study had the mandatory CFO issued by the respective State Pollution Control Boards and are generally fulfilling all consent compliance requirements. A consent for operation (CFO) issued to a ceiling fan industry by the State Pollution Control Board is enclosed for reference as **Appendix3**.
- xii) During the study, some units could readily share copies of test reports of periodical monitoring of ETP and STP, before and after treatment, stack emission reports among others, an indicator of consent compliances as well as their sensitivity towards environmental safeguards. While other units, although informed that they are conducting the periodical environmental monitoring, but were not willing to share the test results for the study. The test reports of ETP & STP before and after treatment, stack emission test reports of DG set as monitored by a ceiling fan manufacturing unit and shared for the study is enclosed for reference as **Appendix4 and 5**.
- xiii) The assembly floor shops of the ceiling fan manufacturing units were generally kept orderly and reasonably well maintained. Although, use of personal protection equipments (PPE's) like helmets, hand gloves, safety shoes could not be seen except for unit, which had a ISO 14001 and ISO 18000 certifications.
- xiv) The indoor air quality and ambient noise levels at assembly floors shops will require to be managed better, to term it good.

- xv) Out of the three units visited, only one had ISO 9001: 2008, ISO 14001: 2004 and OHSAS 18001: 2007 certifications, whereas other units had ISO 9001: 2008 certifications and further indicated willingness to get ISO 14001: 2004 and OHSAS 18001: 2007 certifications and may go in for the same after the approval of top management. The copies of the ISO 9001: 2008, ISO 14001: 2004 and OHSAS 18001: 2007 certifications of a unit as shared for the study is enclosed as **Appendix 6**.
- xvi) The present study covered only the mother or main unit of a few selected corporate entities and these were found to be generally environmental safeguards compliant as per the applicable environmental regulatory requirements at the state level and thus did not carry any significant environmental safeguards risk.

9 Development of EDD Protocol and Safeguards Compliance Assessment

- i) Based on the findings of the EDD study of ceiling fan manufacturing industries, a screening checklist for environmental safeguards due diligence (EDD Protocol) has been developed. The EDD Protocol is attached as **Appendix 7**.
- ii) The EDD protocol is intended to determine the environmental safeguard compliance of any ceiling fan manufacturing unit. The EDD Protocol covers various essential parameters like siting criteria, statutory compliances at State and Central Levels, production processes having pollution potential, vendor's statutory compliances, status of consent for operation, effluent treatment plants, disposal arrangements, occupational health and safety issues, periodical monitoring of environmental parameters, among others.
- iii) As per the EDD Protocol, the following are to be complied by the participating ceiling manufacturing units under SEEP
- Mandatory for participating manufacturing units to be fully compliant with applicable Pollution Control Board (PCB) norms
 - Manufacturing units shall have valid consent for operation and meet applicable emission standards of Government of India
 - The units should not be in violation of Consent Condition(s), if any imposed by pertinent PCB
 - Units shall make available to BEE the documentary evidence of compliance to PCB norms at the time of signing of Project Implementation Agreement (PIA).
 - Units are expected to source/engage vendors, compliant to PCB norms and accordingly conduct internal due diligence as part of vendor selection process /registration. Units shall make available to BEE a declaration in this regard at the time of signing of PIA.
- iv) The filled-in EDD protocol along with all supporting information can be used as a basis to ascertain the safeguards compliance of any specific ceiling fan manufacturing unit or otherwise.

- v) Based on the scrutiny of the EDD Protocol, if a unit is ascertained to be environmental safeguardscompliant, it poses no reputational risk to the super efficient energy program by its participation through development of energy efficient ceiling fans.

10. Institutional Framework for Application of EDD Protocol

The institutional framework for application of EDD protocol for ceiling fan units under SEEP at the Request for Proposal (RFP) and Operational Stagesare given in **Exhibit 2** and briefly presented hereunder:

- i) The Environmental Regulatory and Safeguards compliance requirements of ceiling fan units will be included as a mandatory eligibility criteria, in the RFP documents, for the prospective bidders (ceiling fan manufacturing units) under SEEP.
- ii) The EDD protocols are to be filled in and submitted by the prospective biddersalong with RFP documents in order to qualify for participation under SEEP.
- iii) The Monitoring and Verification Agency (MVA), appointed by BEE for facilitating implementation of SEEP shall be a BEE empanelled Indianagency and shall beresponsible for scrutiny of the filled in EDD protocol along all supporting documentation.
- iv) Based on the scrutiny of the EDD Protocol, the MVA will ascertain the safeguards compliance of the prospective bidder (any specific ceiling fan manufacturing unit) to be an environmental safeguard compliant or otherwise as hereunder.
- a) The unit is deemed to be a fully environmental safeguards compliant, if the responses to all queries of the EDD protocol from Sl. no. 7 to 15 and from 18 to 19 are affirmative with supporting documentation and further response to query under Sl. no. 16 is negative.
- b) If the responses to the queries of the EDD protocol from Sl. no. 7 to 15are affirmative but with no supporting documentation and further response to query under Sl. no. 16 is negative, the unit can be deemed to be partially compliant, subject to furnishing the supporting documentation prior to signing of MOU between BEE and selected fan manufacturing units but not later than award/claim of incentive under SEEP.
- c) If the responses to the queries of the EDD protocol from Sl. no. 7 to 15 are negative, the unit can be deemed to be non- compliant to environmental safeguards, until such time the unit can provide affirmative responses to all queries from Sl. no. 7 to 15 and from 18 to 19 along with supporting documentation.

Based on the scrutiny of the EDD Protocol in line with the above mentioned criteria, if a unit ascertained to be environmental safeguardscompliant, it poses no reputational risk to the super efficient energy program by its participation through development of energy efficient ceiling fans.

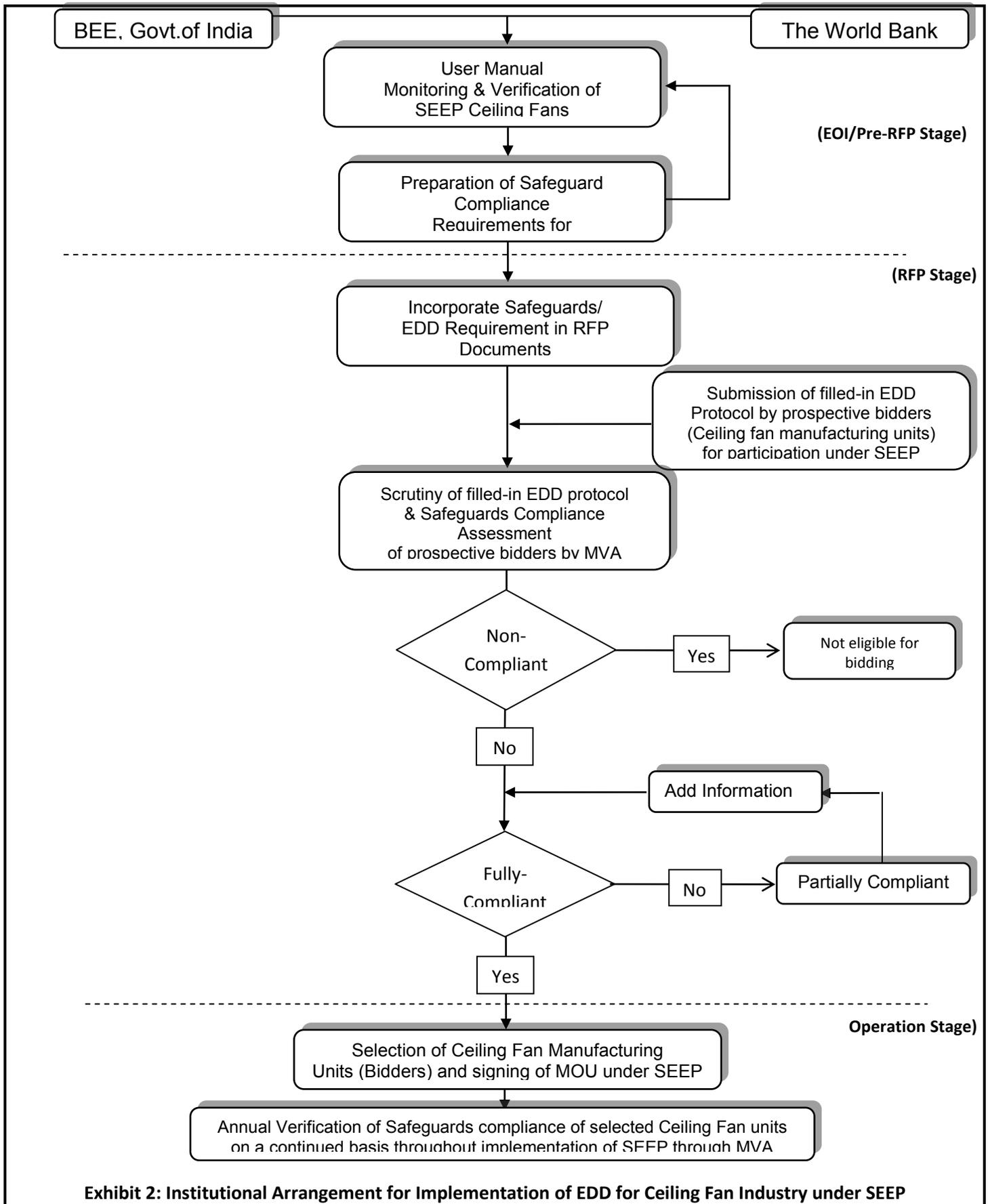


Exhibit 2: Institutional Arrangement for Implementation of EDD for Ceiling Fan Industry under SEEP

Appendix 1

**Checklist for Seeking Information
from
Ceiling Fan Manufacturing Industry**

**Super Efficient Equipment Program (SEEP) for Ceiling Fan Manufacturing Industries
 by BEE, Government of India with The World Bank Assistance**

Checklist for Seeking Information from Ceiling Fan Manufacturing Industries

1. Name and Address of the Manufacturing Unit

Name

Address

..... PIN

Contact Person Mobile:.....

Tel. No. Fax No.

Email ID Website.....

2. Legal Status of Manufacturing Unit:

- Proprietorship/Partnership
- Private Limited/Public Limited
- Others

3. Annual Turnover of Manufacturing Unit (Rs. in Crores) for last financial years

F.Y. ----- INR (Crores)

4. State Category of manufacturing unit

Small /Medium/ Large scale/Others

5. List of unit's Statutory Compliance requirements

.....

.....

.....

6. Line of Manufacture:

A) Annual Production

S. No.	Products	Manufacturing Capacity (annual)	Market Share (%age)
1			
2			
3			
4			
5			

B) State Seasonal variation in manufacturing output/sales

.....

7. Brief Description of Manufacturing Process: (use additional sheets, if required)

.....

8. Technological Advancements in the Manufacturing Process to reduce power consumption for eg. Use of DLDC motors etc: (use additional sheets, if required)

.....

9. Employment Potential:

Description	Male	Female
Staff		
Permanent Workers		
Temporary Workers		
Others		
Total		

10. State Seasonal Variation in engagement of work force

.....

11. Location of the Manufacturing Unit:

- Industrial Estate/Industrial Development Authority
- Export Zone/Rural Area/Built-up Urban Area
- Others (Please specify)

12. Month and Year since Manufacturing Unit is in Operation / Production

Month Year

13. Does the unit out source manufacturing of parts to vendors/ ancillary units

Yes/No

- 14 Does these vendors/ancillary units are on an exclusive contract with main unit or free to supply to open market
- 15 Does the Unit has a vendor registration process (Yes/NO)
- 16 Does your unit undertake the periodic inspection of vendors/ancillary unit(s)?
yes/No
- 17 Source of Process Know how:
- In-House R & D
 - National/Regional Research institutes/ Test houses
 - Foreign Collaborations/Other(s)
- 18 State the source of water for the Manufacturing Unit
Public Supply/Canal/Ground Water/River/Lake/Others
- 19 Water Requirements of Manufacturing Unit (in KL / Day)
- Drinking Water (Domestic/Sanitary use)
.....
 - Water for Industrial use
 - Total Requirement
.....
- 20 Is any pre-treatment for water is necessary:
Yes / No
- 21 Waste Water Discharges per day from (in Kilo Litres)
- Industrial Waste Water
 - Cooling
 - Sewage and Sanitary Waste
 - Total
- 22 Type of treatment waste water unit has adopted:
.....
.....
- 23 What standards for quality of treated effluents being adopted:
SPCB CPCB Local Authority Others

- 24 Point of final discharge:
Land Agricultural Land Public Sewer Open Drains
River/ Lake Bay/Estuary/Sea
25. Whether Unit generates solid waste, which requires disposal Yes/No
- 26 Methods proposed for disposal including of treatment plant sludge, if applicable:
Landfill Dumping Composting Incineration
- 27 Have you considered the possibility of recovery and reutilization of solid waste?
Yes / No If Yes, give details
.....
- 28 Cost of Pollution Control Systems Installed at Unit
- Total capital investment made for pollution monitoring and control(State Year and Cost)
Rs.
 - Annual Recurring cost on Pollution Control system per annum
Rs.
- 29 Whether Consent to Establish for the unit has been obtained?
Yes / No If yes, provide a copy of Consent
.....
- 30 Whether Consent for Operation for the unit has been obtained?
Yes / No If yes, If yes, provide a copy of Consent
.....
- 31 Whether unit is in compliance of all conditions stipulated in Consent to Operate?
Yes / No Furnish a copy of the periodical report being submitted to SPCB
- 32 Whether unit conducts periodical monitoring of air, water and noise levels within the unit?
Yes / No If yes, furnish a copy of latest test reports (for last one year)
.....
- 33 Does SPCB officials visit the unit for checking the compliance of consent conditions?
Yes / No If yes, state when last visit was undertaken along & their observations
.....

34 Whether any pollution related complaints has been made against the unit?

Yes / No If yes, furnish details

.....
.....

35 Whether SPCB has ever issued a show-cause notice on violation of conditions stipulated in Consent to Operate?

Yes / No If yes, state the issue or reasons & remedial measures taken by unit.

.....
.....

36 State whether unit has adopted Occupational Health & Safety Practice to be followed at unit?

Yes / No

.....

37 Furnish the injuries / incidents / accidents at unit involving work-force) in last one year.

.....

38 Does the unit has the following? No/Yes, if yes, furnish details

- Landscaping/Plantations

.....

- Rainwater Harvesting and Ground Water Recharging

.....

- Reuse and Recycling of treated waste water

.....

- CSR Activities

.....

- Occupational Health Monitoring Programs for workforce

.....

39 Whether the unit has received awards/recognition on Quality, Pollution Management Systems/Environment Conservation Measures -

No/Yes , if yes, furnish details

Important Note for Participating Ceiling Manufacturing Units under SEEP

- Mandatory for participating manufacturing units to be fully compliant with applicable Pollution Control Board(PCB) norms
- Manufacturing units shall have valid consent for operation and meet applicable emission standards
- The units should not be in violation of Consent Condition(s), if any imposed by pertinent PCB
- Units shall make available to BEE the documentary evidence of compliance to PCB norms at the time of signing of Project Implementation Agreement
- The units are expected to source/engage vendors, compliant to PCB norms and accordingly conduct internal due diligence as part of vendor selection process /registration

Appendix 2

Illustrative List of State & Central Acts, Rules, Applicable for Ceiling Fan Manufacturing Units

Illustrative List of State & Central Acts, Rules, applicable for Ceiling Fan Manufacturing Units

A	State Acts & Rules
1	Employment Exchanges (Compulsory Notification of Vacancies) Rules, 1960
2	State wise Himachal Pradesh Shops and Commercial Establishment Act, 1969
3	State wise Industrial Establishments (National & Festival Holidays, Casual & Sick leave) Act, 1970
4	Compliance of Licensing and Registration of Factories
B	Central Acts & Rules
1	Bonded Labour System (Abolition) Act, 1976
2	Contract Labour (Regulation and Abolition) Act, 1970
3	Child Labour (Regulation and Prohibition) Act, 1986
4	Employees provident fund and miscellaneous provisions Act, 1952
5	Employees State Insurance Act, 1948
6	Equal remuneration Act, 1976
7	Factories Act, 1948
8	Industrial Disputes Act, 1947
9	Industrial Employment (standing orders) Act, 1946
10	Interstate migrant workman (Regulation of Employment and Conditions of Service) Act, 1979
11	The Labour Laws (exemption from furnishing returns and maintaining registers by certain establishments) Act, 1988
12	Maternity Benefit Act, 1961
13	Minimum Wages Act, 1948
14	Payment of Bonus Act, 1965
15	Payment of Gratuity Act, 1972
16	Payment of Wages Act, 1936
17	Plantation Labour Act, 1951
18	Sales Promotion Employees (Conditions of Service) Act, 1976
19	Trade union Act, 1926
20	Workman Compensation Act, 1923
21	Boilers Act, 1923
22	The Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959

Appendix 3

**Typical Consent for Operation Issued
to
Ceiling Fan Manufacturing Industry**



Phone Nos. : 2438557, 2438528
2438583, 2438550.
Tel / Fax No : 2438528
Web : seep@rediffmail.com

Demco Towers, 1st Floor,
ECO Park Plaza
Panaji, Goa 404 001.

No: 5/44/88-PCB/1838

Date: 19/06/12

Renewal of Consent to Operate under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization/ Renewal of Authorization under Rule 5 of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules 2008

[To be referred as Water Act, Air Act and HW (M,H & T) Rules respectively]

RENEWAL OF CONSENT AND AUTHORISATION is hereby granted to:

M/s. CROMPTON GREAVES LIMITED.
(Large Scale Industry)
(Green Category)

**Plot No: 1,
Bethora Industrial Estate,
Bethora, Ponda-Goa.**

Located in the area declared under the provisions of the Air Act and Authorisation under the provisions of HW (M,H & T) Rules, subject to the provisions of the Act and the Rules and the Orders that may be made further and subject to the following terms and conditions:

1. This renewed Consent to operate & Authorisation is issued in supersession of the earlier Consent Orders issued vide Order nos: 5/44/88-PCB/1067 dt 24/6/11, No: 6/784/2003-PCB/6583, Dated 16/12/09, No: 10/181/06-PCB/2181, Dated 8/06/10, is valid upto **31/10/2014**.

2. This Renewed Consent to operate & Authorisation is valid for the operation of:

Sr. No	Product	Quantity
1.	Ceiling fans	1,75,000 per month

3. **CONDITIONS REQUIRED TO BE COMPLIED UNDER THE WATER ACT:**

- (i) The daily quantity of industrial effluent from the factory shall not exceed 4 KLD
- (ii) The daily quantity of domestic effluent from the factory shall not exceed 7 KLD

(iii) **Industrial Effluent/ Sewage Treatment:**

The unit shall provide comprehensive Effluent Treatment Plant consisting of (20 KLD) & Sewage Treatment Plant consisting of (5 KLD) primary/ secondary and/ or tertiary treatment as is warranted with reference to influent quality and operate and maintain the same continuously so as to achieve the quality of the treated effluent to the following standards:

pH	Between	5.5 & 9.0
Suspended Solids	Not to exceed	100 mg/l
BOD, 3 days, 27° C	Not to exceed	30 mg/l
COD	Not to exceed	250 mg/l
Oil & Grease	Not to exceed	10mg/l

Other parameters should meet the standards specified in Schedule 1 (Rule 3) and Schedule VI [Rule 3(3A)] of the Environment (Protection) Act 1986 for the relevant Industry

(iv) **Industrial Effluent/ Sewage Disposal:**

The treated effluent/Sewage shall be recycled to the maximum extent and remaining shall be used on land for gardening. There shall not be any discharge outside the factory premises.

(v) The unit shall at his own cost get the effluent samples collected both before and after treatment and analyse, every month the parameters indicated above from a laboratory recognized by Ministry of Environment and Forest under the Environment Protection Act, 1986 and rules there under and results shall be submitted regularly to this Board.

(vi) A good house-keeping shall be maintained within the factory premises. All pipes, valves and drains shall be maintained in leak-proof condition. Floor washings shall be maintained to the effluent collection system only and shall not be allowed to find way in open areas.

(vii) **Non-Hazardous Solid Waste:**

All the Solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by:

- Landfill, incase of inert materials, care should be taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
- Controlled incineration wherever possible in case of combustible organic matter.
- Composting in case of bio degradable material
- As per the Authorization issued by this Board in case of non Hazardous waste.

The total quantity shall be segregated and treated as follows:

Sr. no.	Type of segregated solid waste	Quantity	Disposal
1	Paper	5000 kg	} Sold To Scraps
2	Plastic	2700 kg	
3.	Wood	3000 kg	
4.	Aluminium Dross	2300 kg	


Member Secretary
Goa State Pollution Control Board

- (viii) The unit shall comply with the provisions of the Water (Prevention & Control of Pollution) Cess Act, 1977, as amended (to be referred as Cess Act) and the Rules there under.

The daily water consumption for the following categories shall not exceed, as under:

Domestic	18 KLD
Process	2 KLD
Industrial cooling	2 KLD
Wash Water	3 KLD
Others specify (Gardening)	5 KLD

The unit shall submit Water Consumption statement annually by 30th April online in the prescribed format and pay the Cess as specified under Section 3 of the Cess Act.

- (ix) The unit should implement rain water harvesting and ground water re-charge measures in consultation and approval of the Water Resource Department, Govt. of Goa and Directorate of Industries, Trade and Commerce, Govt. of Goa.
- (x) **The unit should have zero discharge policy. Ie, the treated waste water may be re-used in process/green belt development /or any other use as deemed fit by the unit with due permission from the Board.**

4. CONDITIONS REQUIRED TO BE COMPLIED UNDER THE AIR ACT:

- (i) The unit shall maintain and operate air pollution control system of adequate capacity for the following equipments

Sr. No.	Name of Equipments/ Installation	No of Installation	Capacity	SO ₂ Kg/Hr	Particulate Matter mg/Nm ³
1.	D.G Set	2	320 KVA	0.64	150
2.	D.G Set	1	250 KVA	0.43	150
3.	Furnace	6	200 kg		150

- (ii) The unit shall erect the chimney(s) of the following specifications:

Sr. No	Chimney attached to	Height
1.	D.G Set (320 KVA)	8mts
2.	D.G Set (250 KVA)	8mts
3.	Furnace	8mts

- (iii) The unit shall observe the following standards:-

Sr. No	Type of fuel	Quantity /hr
1.	H.S.D for (320 KVA)	18 litres /day
2.	H.S.D for (250 KVA)	12 litres/day

- (iv) The unit should comply with all the standards for D.G. Sets prescribed at Sr. no. 94, 95 and 96 of Schedule I of the Environment (Protection) Rules, 1986.
- (v) The unit should carry out emission monitoring from the stacks every once in 3 months from a laboratory recognized by Ministry of Environment and Forest under the Environment Protection Act, 1986 and the result shall be submitted to this Board.

Member Secretary
Goa State Pollution Control Board

The unit shall take adequate measures for control of noise levels from its own sources within the premises in respect of noise. The limits are as follows

Category of Area/ Zone	Limits in dB (A) Leq	
	Day time	Night time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

Day time is reckoned between 6 a.m. to 10 p.m. and night time is reckoned between 10 p.m. to 6 a.m.

- (vii) Adequate mitigation measures shall be taken to control emissions of SO₂, NO₂, PM_{2.5}, RSPM. Unit shall achieve following Ambient Air Quality standards:

SO ₂	Not to Exceed (Annual Average)	50 µg/ m ³
	Not to Exceed (24 hours)	80 µg/ m ³
NO ₂	Not to Exceed (Annual Average)	40 µg/ m ³
	Not to Exceed (24 hours)	80 µg/ m ³
PM ₁₀	Not to Exceed (Annual Average)	60 µg/ m ³
	Not to Exceed (24 hours)	100 µg/ m ³
PM _{2.5}	Not to Exceed (Annual Average)	40 µg/ m ³
	Not to Exceed (24 hours)	60 µg/ m ³

All other parameters should meet the standards specified in NAAQS notification dated 18th November 2009 for the relevant unit

- (viii) The Stack Port Hole and Platform is to be designed as per CPCB guidelines Method 1 Part 1 of Stack Monitoring –Material & methodology for isokinetic sampling.

5. **CONDITIONS REQUIRED TO BE COMPLIED UNDER THE HAZARDOUS WASTES (MANAGEMENT, HANDLING AND TRANSBOUNDARY MOVEMENT) RULES 2008:**

- (i) The unit is hereby granted authorization to operate a facility for collection, storage and disposal of hazardous wastes as specified below:

Sr. No.	Category	Type of waste	Quantity	Mode of disposal
1.	5.1	Used /Spent Oil	1.8 MTA	To recycler registered with CPCB and having valid authorization of SPCB
2.	5.2	Cotton waste contaminated with oil	0.3 MTA	To be sent to M/s Mumbai Waste Management Ltd. At Taloja for incineration
3.	34.3	Effluent Treatment Plant Sludge	1.2 MTA	Chemical-Physical Treatment followed by disposal in a secured landfill site having valid authorization from SPCB

- (ii) The authorization shall comply with the provisions of the Environment (Protection) Act, 1986 and the rule made thereunder.

Member Secretary
Goa State Pollution Control Board

- (iii) The person authorized shall not rent, lend, sell or transfer or otherwise transport the hazardous waste without obtaining prior permission of the State pollution Control Board.
- (iv) Any unauthorized change in personnel, equipment or working conditions as mentioned in the unit by the person authorized shall constitute a breach of his authorization.
- (v) It is a duty of the authorized person to take permission of the State Pollution Control Board to close down the facility.
- (vi) The inner bottom surfaces of the tank shall be impervious enough to prevent leakage or seepage of these wastes into the sub surface soil or ground water.
- (vii) The occupier shall maintain a manifest system as per Rule 21 (1) for disposal of hazardous wastes to ensure that these wastes are delivered to the designated facility preventing pilferage and clandestine disposal due to unforeseen events that may occur during transit.
- (viii) The manifest shall be endorsed by the dispatcher, transporter and receiver of hazardous wastes. The endorsed copy shall be furnished to the Goa State Pollution Control Board.
- (ix) Under any circumstances the hazardous waste shall not be disposed to unauthorized facilities.
- (x) The occupier shall maintain the records for collection, storage and disposal of hazardous waste in Form 3 of as per Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008.
- (xi) The occupier shall furnish annual returns for collection, storage and disposal of hazardous waste in Form 4 by 30th June of every year for the preceding period April to March.
- (xii) The unit shall put up an online board (minimum size 6x4 Feet) at prominent location near the main gate providing details as follows in English and Konkani languages:-
 - Hazardous Waste category number.
 - Hazardous Waste quantity number.
 - Treatment facility for each category.
 - Mode of disposal for each category.
 - Hazardous Waste Authorization number, date and validity period.
 - Water Consent number, date and validity period.
 - Air Consent number, date and validity period.
 - Quantity and Nature of Hazardous Chemicals being used.
- (xiii) The occupier shall ensure that the Hazardous Wastes are not allowed to be stored for more than 90 days.
- (xiv) **An Authentic MSDS (Material Safety Data Sheet) is to be provided for the products manufactured, byproducts & waste generated, duly signed & stamped by an authorized representative of the unit.**

5. **GENERAL CONDITIONS:**

- (i) The unit shall not change or alter the quantity, quality of discharge, temperature or the mode of the effluent/ emission or hazardous wastes or control equipments provided for without previous permission of the Board.

Member Secretary
Goa State Pollution Control Board

- (ii) The unit shall provide facility for collection of samples of effluent, air emissions and hazardous wastes to the Board staff.
- (iii) An unit in prescribed form along with the prescribed fees for renewal of Consent shall be submitted at least 60 days before the expiry of validity of this Consent. An unit for renewal of Consent submitted after expiry of the validity shall accompany with penalty of 50% of the Consent fees in addition to the prescribed consent fees.
- (iv) The Board shall be forthwith informed of any accident or unforeseen event involving discharge of any poisonous, noxious or polluting matter into a stream or well or on land or into the atmosphere, as result of such discharge water/ air is being polluted.
- (v) This Consent is granted without any prejudice to any of the permission(s) required under any law, by laws and regulations in force.
- (vi) The Board reserves the right to amend or add any conditions in this consent and the same shall be binding on the applicant.
- (vii) The unit shall submit to this office, the Environmental Statement Report in Form V for the Financial Year ending April to March by 30th September of the succeeding year as per the provisions of the rule 14 of the Environment (Protection) (Second Amendment) Rules, 1992.


Member Secretary
For GOA STATE POLLUTION CONTROL BOARD

To,
M/s. CROMPTON GREAVES LIMITED
Plot No: 1,
Bethora Industrial Estate,
Bethora Ponda-Goa.

Copy to:-
1 Accounts Section
2 Concerned File
3 Guard File

Received Consent fee of: **The capital Investment of the unit is Rs.5,92,03724.00**

Challan no.	Amount	Date
2795	40,500/- (Air consent late fees)	12/12/11
3885	10,800/- (water consent fees)	18/5/12
4095	5,400/- (water late fees)	6/7/12

Appendix 4

**Typical Test Report of Effluent and Sewage Treatment Plants
of
Ceiling Fan Manufacturing Industry**

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101, Goa State, India. ☎: 2411322 / 23 • Fax: (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



ANALYSIS REPORT FOR WATER SAMPLE

Report No.	SEE/09/12/1147	Report Date	10/09/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 05/09/12		
Sampling Point	ETP		
Sample Details	Raw effluent	Date of Collection	05/09/12
Sample Collected By	SEEPL Representative	Sample Received On	05/09/12
Analysis Started On	05/09/12	Analysis Completed On	10/09/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Method
1.	pH	6.05	-	APHA-4500-H
2.	COD*	1824.00	mg/lit	APHA-5220-B
3.	BOD (27°C 3 day)*	439.00	mg/lit	APHA-5210-B
4.	SS*	83.00	mg/lit	APHA-2540-D
5.	TDS	685.00	mg/lit	APHA-2540-C
6.	O & G*	12.80	mg/lit	APHA-5520-B

Note : Test results related only to the sample tested.
: This certificate may not be reproduced in part, without the permission of this laboratory.
: "The tests marked with an * are not accredited by NABL".
: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.



Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.
☎: 25338243, 25435481 • Fax: (91-22) 25438838 • E-mail: psadekar@yahoo.com / prs@sadekarenviro.com
BRANCH OFFICE : 310, Dempo Towers EDC Patto, Panaji-403001, Goa State, India. ☎: 2437048 / 6454160 • Fax: (0832) 2437048.
E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



T-2190



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE			
Report No.	SEE/09/12/1148	Report Date	10/09/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 05/09/12		
Sampling Point	ETP		
Sample Details	Treated effluent	Date of Collection	05/09/12
Sample Collected By	SEEPL Representative	Sample Received On	05/09/12
Analysis Started On	05/09/12	Analysis Completed On	10/09/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Limits	Method
1.	pH	6.98	-	5.5 – 9.0	APHA-4500-H
2.	COD*	120.00	mg/lit	250.00	APHA-5220-B
3.	BOD (27°C 3 day)*	24.83	mg/lit	30.00	APHA-5210-B
4.	SS*	55.00	mg/lit	100.00	APHA-2540-D
5.	TDS	432.00	mg/lit	2100.00	APHA-2540-C
6.	O & G*	2.20	mg/lit	10.00	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.



Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada Thane-400602, Maharashtra State, India.
☎: 25338243, 25435481 • Fax: (91-22) 25438838 • E-mail: psadekar@yahoo.com / prs@sadekarenviro.com

BRANCH OFFICE : 310, Dempo Towers, EDC Patto, Panaji- 403001, Goa State, India. ☎: 2437048 / 6454160 • Fax: (0832) 2437048.
E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



T-2190



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE

Report No.	SEE/09/12/1149	Report Date	11/09/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 05/09/12		
Sampling Point	STP		
Sample Details	Inlet water	Date of Collection	05/09/12
Sample Collected By	SEEPL Representative	Sample Received On	05/09/12
Analysis Started On	05/09/12	Analysis Completed On	11/09/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Method
1.	pH	6.11	-	APHA-4500-H
2.	COD*	88.00	mg/lit	APHA-5220-B
3.	BOD (27°C 3 day)*	28.38	mg/lit	APHA-5210-B
4.	SS*	97.00	mg/lit	APHA-2540-D
5.	TDS	483.00	mg/lit	APHA-2540-C
6.	O & G*	5.40	mg/lit	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.




Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.
☎ : 25338243, 25435481 • Fax : (91-22) 25438838 • E-mail : psadekar@yahoo.com / prs@sadekarenviro.com
BRANCH OFFICE : 310, Dempo Towers, EDC Patto, Panaji-403001, Goa State, India. ☎ : 2437048 / 6454160 • Fax : (0832) 2437048.
E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE

Report No.	SEE/09/12/1150	Report Date	11/09/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 05/09/12		
Sampling Point	STP		
Sample Details	Outlet water	Date of Collection	05/09/12
Sample Collected By	SEEPL Representative	Sample Received On	05/09/12
Analysis Started On	05/09/12	Analysis Completed On	11/09/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Limits	Method
1.	pH	6.79	-	5.5 – 9.0	APHA-4500-H
2.	COD*	44.00	mg/lit	250.00	APHA-5220-B
3.	BOD (27°C 3 day)*	14.18	mg/lit	30.00	APHA-5210-B
4.	SS*	29.00	mg/lit	100.00	APHA-2540-D
5.	TDS	317.00	mg/lit	2100.00	APHA-2540-C
6.	O & G*	1.60	mg/lit	10.00	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.



Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.

☎: 25398243, 25435481 • Fax : (91-22) 25438838 • E-mail : psadekar@yahoo.com / prs@sadekarenviro.com

BRANCH OFFICE : 310, Dempo Towers, EDC Patto, Panaji- 403001, Goa State, India. ☎: 2437048 / 6454160 • Fax : (0832) 2437048.

E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazatted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



T-2190



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE			
Report No.	SEE/08/12/1013	Report Date	28/08/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 24/08/12		
Sampling Point	STP		
Sample Details	Inlet water	Date of Collection	24/08/12
Sample Collected By	SEEPL Representative	Sample Received On	24/08/12
Analysis Started On	24/08/12	Analysis Completed On	28/08/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Method
1.	pH	5.94	-	APHA-4500-H
2.	COD*	72.00	mg/lit	APHA-5220-B
3.	BOD (27°C 3 day)*	26.35	mg/lit	APHA-5210-B
4.	SS*	81.00	mg/lit	APHA-2540-D
5.	TDS	533.00	mg/lit	APHA-2540-C
6.	O & G*	4.20	mg/lit	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.



Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.
☎ : 25338243, 25435491 • Fax : (91-22) 25438838 • E-mail : psadekar@yahoo.com / prs@sadekarenviro.com
BRANCH OFFICE : 310, Dempo Towers, EDC Pato, Panaji-403001, Goa State, India. ☎ : 2437048 / 6454160 • Fax : (0832) 2437048.
E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1854(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE

Report No.	SEE/08/12/1014	Report Date	28/08/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 24/08/12		
Sampling Point	STP		
Sample Details	Outlet water	Date of Collection	24/08/12
Sample Collected By	SEEPL Representative	Sample Received On	24/08/12
Analysis Started On	24/08/12	Analysis Completed On	28/08/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Limits	Method
1.	pH	6.81	-	5.5 – 9.0	APHA-4500-H
2.	COD*	40.00	mg/lit	250.00	APHA-5220-B
3.	BOD (27°C 3 day)*	13.38	mg/lit	30.00	APHA-5210-B
4.	SS*	32.00	mg/lit	100.00	APHA-2540-D
5.	TDS	367.00	mg/lit	2100.00	APHA-2540-C
6.	O & G*	1.20	mg/lit	10.00	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.




Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.
☎: 25338243, 25435481 • Fax : (91-22) 25438838 • E-mail : psadekar@yahoo.com / prs@sadekarenviro.com
BRANCH OFFICE : 310, Dempo Towers, EDC Patis, Panaji-403001, Goa State, India. ☎: 2437048 / 6454160 • Fax : (0832) 2437048.
E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101,
Goa State, India. ☎: 2411322 / 23 • Fax: (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE			
Report No.	SEE/08/12/1011	Report Date	28/08/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 24/08/12		
Sampling Point	ETP		
Sample Details	Raw effluent	Date of Collection	24/08/12
Sample Collected By	SEEPL Representative	Sample Received On	24/08/12
Analysis Started On	24/08/12	Analysis Completed On	28/08/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Method
1.	pH	6.35	-	APHA-4500-H
2.	COD*	3160.00	mg/lit	APHA-5220-B
3.	BOD (27°C 3 day)*	891.96	mg/lit	APHA-5210-B
4.	SS*	215.00	mg/lit	APHA-2540-D
5.	TDS	861.00	mg/lit	APHA-2540-C
6.	O & G*	9.00	mg/lit	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.



Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.
☎: 25338243, 25435461 • Fax: (91-22) 25438838 • E-mail: psadekar@yahoo.com / prs@sadekarenviro.com

BRANCH OFFICE : 310, Dempo Towers, EDC Palto, Panaji-403001, Goa State, India. ☎: 2437048 / 6454160 • Fax: (0832) 2437048
E-mail: sadekarenviro@rediffmail.com

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid up to 30.07.2013

Accredited by NABL, T - 2190 valid up to 08.03.2014



SAVE WATER SAVE LIFE

ANALYSIS REPORT FOR WATER SAMPLE			
Report No.	SEE/08/12/1012	Report Date	28/08/12
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Plot No. 1 Bethora Industrial Estate, Ponda, Goa.		
Order / Reference	As per dated 24/08/12		
Sampling Point	ETP		
Sample Details	Treated effluent	Date of Collection	24/08/12
Sample Collected By	SEEPL Representative	Sample Received On	24/08/12
Analysis Started On	24/08/12	Analysis Completed On	28/08/12
Sample Container	Glass bottle	Sample Quantity	2000 ml

Chemical Parameters

Sr.No.	Parameters	Results	Units	Limits	Method
1.	pH	7.45	-	5.5 – 9.0	APHA-4500-H
2.	COD*	160.00	mg/lit	250.00	APHA-5220-B
3.	BOD (27°C 3 day)*	19.46	mg/lit	30.00	APHA-5210-B
4.	SS*	69.00	mg/lit	100.00	APHA-2540-D
5.	TDS	469.00	mg/lit	2100.00	APHA-2540-C
6.	O & G*	2.40	mg/lit	10.00	APHA-5520-B

Note : Test results related only to the sample tested.

: This certificate may not be reproduced in part, without the permission of this laboratory.

: "The tests marked with an * are not accredited by NABL".

: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.



Vinayak Kudkar
Authorized Signatory

HEAD OFFICE : 403/404, Paradise Tower, Opp. Alok Hotel, Gokhale Road, Naupada, Thane-400602, Maharashtra State, India.
☎: 25338243, 25435481 • Fax : (91-22) 25438838 • E-mail : psadekar@yahoo.com / prs@sadekarenviro.com
BRANCH OFFICE : 310, Dempo Towers, EDC Patto, Panaji- 403001, Goa State, India. ☎: 2437048 / 6454160 • Fax : (0832) 2437048.
E-mail: sadekarenviro@rediffmail.com

Appendix 5

**Typical Test Report of Stack Emission
of
Ceiling Fan Manufacturing Industry**

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No 61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: startabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA, S.O.1894(E) valid until 30.07.2013

Accredited by NABL, T - 2190 valid until 08.03.2014

SAVE WATER
SAVE LIFE

STACK EMISSION REPORT			
Report No.	SEE/AR/09/12/1207	Report Date	06/09/2012
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Bethora Industrial Estate, Bethora Ponda, Goa.		
Sample Collected By	SEEPL Representative		
Date of Sampling	05/09/2012		
Analysis Started On	06/09/2012	Analysis Completed On	06/09/2012

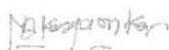
STACK DETAILS

Attached To	D.G. No. - I 320 KVA
Shape	Round
Diameter	0.2 Mtr
Height From Ground Level	8.0 Mtr
Material of Construction	M.S.
Temperature	209 °C
Velocity of Flue Gases	14.01 m/sec
Volume of Flue Gases	1513.08 m ³ /hour
Type of Fuel	H.S.D
Fuel Consumption	18 lit/hr

POLLUTIONAL PARAMETERS

Sr. No.	Parameters	Result	Limits	Units	Method
01.	Particulate Matter	32.96	150.00	mg/Nm ³	IS 11255 (part I) 1985
02.	SO ₂	0.18	0.64	Kg/hour	IS 5182 (part II) - 1969

Note : Test results related only to the sample tested.
: Test results relate only to the condition prevailing at the time of sampling
: This certificate may not be reproduced in part, without the permission of this laboratory.
: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.


Analysed by
Manoj Korgaonkar




Checked by
Vinayak Kudkar

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎ : 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

SAVE LRA
SAVE LI



Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid until 30.07.2013

Accredited by NABL, T - 2190 valid until 08.03.2014

STACK EMISSION REPORT			
Report No.	SEE/AR/09/12/1208	Report Date	06/09/2012
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Bethora Industrial Estate, Bethora Ponda, Goa.		
Sample Collected By	SEEPL Representative		
Date of Sampling	05/09/2012		
Analysis Started On	06/09/2012	Analysis Completed On	06/09/2012

STACK DETAILS

Attached To	D.G. 250 KVA
Shape	Round
Diameter	0.2 Mtr
Height From Ground Level	8.0 Mtr
Material of Construction	M.S.
Temperature	174 °C
Velocity of Flue Gases	13.97 m/sec
Volume of Flue Gases	1508.76 m ³ /hour
Type of Fuel	H.S.D
Fuel Consumption	12 lit/hr

POLLUTIONAL PARAMETERS

Sr. No.	Parameters	Result	Limits	Units	Method
01.	Particulate Matter	25.56	150.00	mg/Nm ³	IS 11255 (part I) 1985
02.	SO ₂	0.15	0.43	Kg/hour	IS 5182 (part II) - 1969

Note : Test results related only to the sample tested.
: Test results relate only to the condition prevailing at the time of sampling
: This certificate may not be reproduced in part, without the permission of this laboratory.
: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

Manoj Korgaonkar
Analysed by
Manoj Korgaonkar

Vinayak Kudkar
Checked by
Vinayak Kudkar

Sadekar Enviro Engineers Pvt. Ltd.

B-306 / 307, Plot No.61, Patel Estate, Reis Magos, Verem, Alto, Old Betim Road, Bardez, Porvorim, Panaji-Goa - 403101.
Goa State, India. ☎: 2411322 / 23 • Fax : (0832) 2411323 • E-mail: starlabgoa@rediffmail.com

Gazetted By Ministry Of Environment & Forest, GOVT. OF INDIA., S.O.1894(E) valid until 30.07.2013

Accredited by NABL, T - 2190 valid until 08.03.2014

SAVE WATER
SAVE LIFE



STACK EMISSION REPORT			
Report No.	SEE/AR/09/12/1209	Report Date	06/09/2012
Name of Client	M/s. Crompton Greaves Ltd.		
Address of Client	Bethora Industrial Estate, Bethora Ponda, Goa.		
Sample Collected By	SEEPL Representative		
Date of Sampling	05/09/2012		
Analysis Started On	06/09/2012	Analysis Completed On	06/09/2012

STACK DETAILS

Attached To	D.G. No. - II 320 KVA
Shape	Round
Diameter	0.2 Mtr
Height From Ground Level	8.0 Mtr
Material of Construction	M.S.
Temperature	193 °C
Velocity of Flue Gases	14.47 m/sec
Volume of Flue Gases	1562.76 m ³ /hour
Type of Fuel	H.S.D
Fuel Consumption	18 lit/hr

POLLUTIONAL PARAMETERS

Sr. No.	Parameters	Result	Limits	Units	Method
01.	Particulate Matter	30.15	150.00	mg/Nm ³	IS 11255 (part I) 1985
02.	SO ₂	0.13	0.64	Kg/hour	IS 5182 (part II) - 1969

Note : Test results related only to the sample tested.
: Test results relate only to the condition prevailing at the time of sampling
: This certificate may not be reproduced in part, without the permission of this laboratory.
: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

Analysed by
Manoj Korgaonkar



Checked by
Vinayak Kudkar

Appendix 6

Typical Certifications for Quality, Environmental and OSHAS
of
Ceiling Fan Manufacturing Industry



Certification International

Certificate of Registration

This is to certify that

**CROMPTON GREAVES LIMITED
(FANS & APPLIANCES DIVISION)**

At the sites listed on the attached Appendix

*operates a quality management system which has been assessed
as conforming to*

ISO 9001:2008

for the scope of activities

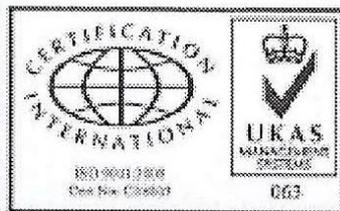
**Design and manufacture of ceiling,
table, pedestal and wall mounted fans.**

Certificate No: **CI/8007** Issue Date: **26 August 2011**

Valid until **06 October 2014** subject to adherence to the agreed ongoing audit programme,
successful endorsement of certification following each audit and compliance with CI Regulations
Date of original issue: 06 October 2008

Signed for and on behalf of

Group Head of Certification



CERTIFICATION INTERNATIONAL (UK) LIMITED
Debs 303, Debs Business Park, Great Western Way,
Swindon, Wiltshire SN5 7XP
UK

The use of the Accreditation Mark indicates accreditation in respect of
those activities covered by the accreditation certificate number 063



CERTIFICATION INTERNATIONAL

Certificate of Registration

This is to certify that

**CROMPTON GREAVES LIMITED
(FANS AND APPLIANCES DIVISION)**

At the sites listed on the attached Appendix

*operates an environmental management system which has been assessed
as conforming to*

ISO 14001:2004

for the scope of activities

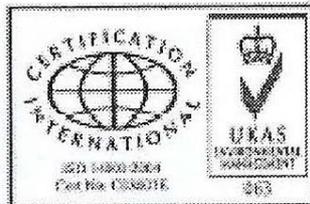
**Design and manufacture of ceiling, table,
pedestal and wall mounted fans.**

Certificate No: **CI/8007E** Issue Date: **20 April 2010**

Valid until **15 November 2012** subject to attendance to the agreed ongoing audit programme,
successful endorsement of certification following each audit and compliance with CI Regulations
Date of original issue: 14 November 2009

Signed for and on behalf of

Group Head of Certification



CERTIFICATION INTERNATIONAL (UK) LIMITED
Delta 200, Delta Business Park, Great Western Way,
Swindon, Wiltshire SN1 7XF
UK

The use of the Accreditation Mark indicates accreditation in respect of
these activities covered by the accreditation certificate number 863



CERTIFICATION INTERNATIONAL

Certificate of Registration

This is to certify that

**CROMPTON GREAVES LIMITED
(FANS AND APPLIANCES DIVISION)**

At the sites listed on the attached Appendix

*operates a health and safety management system which has been assessed
as conforming to*

OHSAS 18001:2007

for the scope of activities

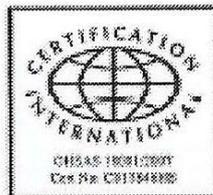
**Design, manufacture and supply of ceiling, table,
pedestal and wall mounted fans.**

Certificate No: **CI/11846HS** Issue date: **21 April 2010**

Valid until **20 April 2013** subject to adherence to the agreed ongoing audit programme,
successful achievement of certification following each audit and compliance with CI Regulations

Signed for and on behalf of

Group Head of Certification



CERTIFICATION INTERNATIONAL (UK) LIMITED
Delta 200, Delta Business Park, Great Western Way,
Basingstoke, Hampshire RG24 7XP
UK

Appendix 7

**Checklist for Screening
of
Environmental Safeguards Compliance (EDD Protocol)**

Checklist for Screening of Environmental Safeguards Compliance (EDD Protocol)

for

Ceiling Fan Manufacturing Industries

(Information to be provided shall be applicable for ceiling fan manufacturing division)

1	Name and Address of the Ceiling Fan Manufacturing Unit/Division (along with details of contact person, telephone, email and web site)	
2	Ownership status of unit (state whether Proprietorship / Partnership / Private Limited/ Public Limited/ Others)	
3	Year of Establishment of Unit :	Year
4	Scale/Size of Manufacturing unit (state whether Small /Medium/Large Scale)	
5	State whether the unit is located in an approved area for Industries (viz Industrial Estate / Area ,Industrial Development Authority /Export Zone / specify, if others	
6	Annual Turnover of Ceiling Fan Manufacturing Unit/Division	As per last F.Y. ----- INR (Crores)
7	State and confirm the Acts & Rules, that unit is in compliance both at STATE & GOVT. OF INDIA Level:	An illustrative list of Acts & Rules is given in Attachment 1. Tick whichever is applicable
8	Whether unit has a valid Consent for Operation issued by the State Pollution Control Board	Yes / No. if yes , State the validity and enclose a copy of valid Consent If no, state reasons for not having the consent
9	Whether unit out source manufacturing of component involving above operations to vendors/ ancillary units?	Yes / No
10	Whether unit follows a vendor registration process?	Yes / No
11	Is it mandatory for the vendor to be a legal entity and in compliance with all applicable State Acts/Rules and Central Labour & Employment Act	Yes / No
12	State whether it is mandatory for the vendor to have Consent for Operations issued by State Pollution Control Board, as part of unit's vendor registration process	Yes / No
13	Whether verification of Legal/Statutory Compliance(s) including Consent for Operations issued by State Pollution Control Board is carried out during vendor registration process	Yes / No
14	Whether unit is in compliance of all conditions imposed in Consent issued by State Pollution Control Board	Yes / No Furnish a copy of the latest compliance report submitted to SPCB
15	Whether unit conducts periodical monitoring of effluent, air, water and noise levels within the unit?	Yes / No If yes, state the frequency and furnish a copy of latest test reports (quarterly/half yearly/annual reports, as applicable
16	Whether SPCB has ever issued a show-cause notice to the unit for violation of consent conditions or for any other reason	Yes / No (if yes, state the reason and action taken)

Super Efficient Equipment Program (SEEP) - Ceiling Fan Industry
 Environmental Safeguards and Due-Diligence Protocols

17	State whether the issue(s) raised by SPCB has been resolved on a long-term basis?	Yes / No
18	State whether unit has Occupational Health & Safety Policy at the unit	Yes / No If yes, furnish a copy of policy
19	Whether the unit has accreditation for a) ISO 9001 : 2008 b) ISO 14001 :2004 c) OHSAS 18001:2007	Yes/No If Yes, furnish a copy of relevant certification If No, State whether unit has any plans to get accreditation & likely time frame.

Signed Declaration about the authenticity of Information by the Authorized Signatory of
 the Ceiling Fan Manufacturing Unit

Scrutiny of the Information provided by the Unit and Signature of Appraisal Officer of BEE
 or MVA on behalf of BEE

Attachment 1

List of State & Central Acts, Rules, Ceiling Fan Manufacturing Unit is in Compliance

A	State Acts & Rules	State Unit's Compliance
1	Employment Exchanges (Compulsory Notification of Vacancies) Rules, 1960	Yes/No
2	State wise Himachal Pradesh Shops and Commercial Establishment Act, 1969	Yes/No
3	State wise Industrial Establishments (National & Festival Holidays, Casual & Sick leave) Act, 1970	Yes/No
4	Compliance of Licensing and Registration of Factoryies	Yes/No
B	Central Acts & Rules	
1	Bonded Labour System (Abolition) Act, 1976	Yes/No
2	Contract Labour (Regulation and Abolition) Act, 1970	Yes/No
3	Child Labour (Regulation and Prohibition) Act, 1986	Yes/No
4	Employees provident fund and miscellaneous provisions Act, 1952	Yes/No
5	Employees State Insurance Act, 1948	Yes/No
6	Equal remuneration Act, 1976	Yes/No
7	Factories Act, 1948	Yes/No
8	Industrial Disputes Act, 1947	Yes/No
9	Industrial Employment (standing orders) Act, 1946	Yes/No
10	Interstate migrant workman (Regulation of Employment and Conditions of Service) Act, 1979	Yes/No
11	The Labour Laws (exemption from furnishing returns and maintaining registers by certain establishments) Act, 1988	Yes/No
12	Maternity Benefit Act, 1961	Yes/No
13	Minimum Wages Act, 1948	Yes/No
14	Payment of Bonus Act, 1965	Yes/No
15	Payment of Gratuity Act, 1972	Yes/No
16	Payment of Wages Act, 1936	Yes/No
17	Plantation Labour Act, 1951	Yes/No
18	Sales Promotion Employees (Conditions of Service) Act, 1976	Yes/No
19	Trade union Act, 1926	Yes/No
20	Workman Compensation Act, 1923	Yes/No
21	Boilers Act, 1923	Yes/No
22	The Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959	Yes/No
C	Specify any other State/Central Acts & Rules not listed above but Unit is Compliance	

