Vidya Prasarak Mandal's
Maharshi Parshuram College of Engineering, Velneshwar
At: Velneshwar, Hedvi-Guhagar road, Taluka: Guhagar,
Dist: Ratnagiri (Maharashtra) 415 729
(AICTE & DTE approved and affiliated to University of Mumbai)

Tel No. 02359-243102/3/4
Fax No. 02359-243102
E-mail:
mpcoe@vpmmpcoe.org
URL:www.vpmmpcoe.org

7.1.5 Liquid waste management

Sewage treatment Plant:-

The sewage treatment plant for the entire campus of MPCOE which includes sewage from hostels, residential staff quarters, administrative buildings, academics building was designed and installed in Jan 2013. It is in working condition since installation. It is based on the activated sludge process principle. The treated water from this plant is reused for gardening purpose.

Following are the design parameters of the STP.

Flow : 200 m3/day

BOD : 30.0 mg/L

TSS: <50 mg/L

pH: 7.0 to 8.0

Installed sewage treatment plant can treat daily sewage up to 200 m3/day but now maximum daily inflow is 40 m3/day during peak period because all hostels and other amenities are not fully utilized.

Components of STP:

1. Inlet chamber, Bar screen
2. Raw sewage holding tank (Equalization tank)
3. Aeration tank
4. Tube settler clarifier tank
5. Treated sewage holding tank
6. Sludge drying beds

7. Pressure sand filter media
8. Activated carbon filter media
9. Chlorination unit
10. Sludge pump, filter feed pump, Air blowers, Sewage feed pump
11. MCC panels

Sewage treatment plant at MPCOE campus

Aeration tank

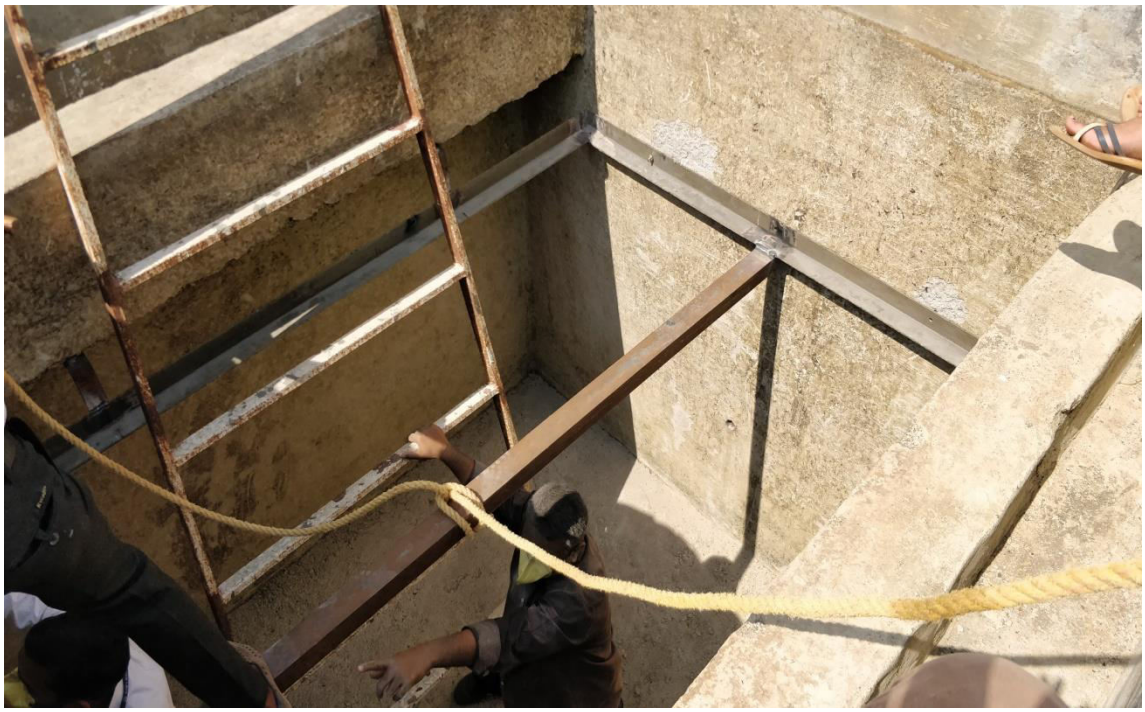
Compressed air blower, filter pump, feed pump assembly

Tube settler clarifier

Replacement of filter media (22th March 2018)

Installation of new bar screen

Aeration Grid



Installation of tube settler

PANSE CONSULTANTS

NSIC CRISIL -SE3B

June 8, 2011
PC/VL/01

VIDYA PRASARAK MANDAL

ENGINNERING COLLEGE, VELNESHWAR.

Kind Attn: Pansare Consultants.

Subject: Offer for "Sewage Treatment Plant-200 CMD" for Engineering College at Velneshwar .

Dear Sir,

We have gone through the final layout sent from our office. It has been found that STP location has been changed from maintenance staff region to nearby canteen area. In concern to that please note following points:

1) We have visited Velneshwar site, twice, before going for the recommendation of the exact STP site location. As per site conditions, contour map provided to us, it is most convenient to carry maximum raw sewage generated from various points to sewage collection tank near "Maintenance staff" are and provide the STP within same area because:
   a) We are getting maximum gradient towards the recommended area.
   b) Minimum routing of the drainage piping.
   c) There is plain terrain at maintenance staff area along with hard 'Jambha 'rock, which will minimise the cost of the foundation work for RCC structures.
   d) STP system is having only one RCC tank below the ground (raw sewage collection tank). All other tanks are above the ground. So very minimum work for footing will be required for these civil structures.
   e) For canteen, guesthouse, Gym club area, we have suggested to collect the raw sewage in a one common holding tank and pump it to main trunk of the raw sewage carrying line. There is one more option of

30, SIDDHARTH COMPLEX, K.P. NAGAR, BALAJINAGAR, PUNE – 43.
E-MAIL-panseconsultants@gmail.com, M. - 9422400860.TELE - FAX – 02169-244860
www.panseconsultants.com.

making the trench to maintain the gravity, but it requires excavation of about 3-4 mtr.

f) After receiving your revised layout drawing we have again visited the site to assess the feasibility.

So as per our technical assessment we recommend the STP location near maintenance staff area.

Kindly send us your approval in accordance to start the design work of the STP units.

2) For structures "Th- 1 – Th-7" , we have recommended for provision of septic tank – common for every two building because of low laying area. Over flow of the septic can be sent to garden and organic matter settled in the tank can be sent to STP, when required.

So in all, as per total topography of the plot , it is strongly recommend to have a STP unit near maintenance staff region.

Kindly let us know your feedback/approval on urgent basis to start the design work of civil tanks. We can provide all drawings within 10 days after your approval for the start up of the civil activity. We are sure that, as the quantum of the civil work is small, it will be get completed within 3-4 months and plant will make ready before scheduled target of June-2012.

Kindly send us your comments/approval accordingly.

Thanking you,

FOR PANSE CONSULTANTS,

U.R.PANSE

9422400860.

PANSE CONSULTANTS

March 13, 2011
PC/QT/11/21

VIDYA PRASARAK MANDAL,THANE.

Kind Attn: Dr.Bedekar.

Subject: Offer for "Sewage Treatment Plant-200 CMD" for Engineering College at Velneshwar .

Dear Sir,

We are thankful for the enquiry generated to us for STP. System has been designed to recycle the treated sewage effluent for gardening, floor washing, with disinfection system. System meets the outlet parameters prescribed by pollution control board.

Please find the detailed offer as given below:

We hope you will find our offer in line with your requirements and favor us with your valuable order. In case you need any further details we shall be glad to clarify the same.

Assuring you of our best products and services at all times.

Thanking you

Yours faithfully,

For Panse Consultants,

U.R.PANSE

30, SIDDHARTH COMPLEX, K.P. NAGAR, BALAJINAGAR, PUNE – 43.
E-MAIL-panseconsultants@gmail.com, M. - 9422400860.TELE - FAX – 02169-244860.

PACKAGE SEWAGE TREATMENT PLANT

200 – M3/DAY

ENGINEERING COLLEGE-VELNESHWAR.

30, SIDDHARTH COMPLEX, K.P. NAGAR, BALAJINAGAR, PUNE – 43.
E-MAIL-panseconsultants@gmail.com, M. - 9422400860.TELE - FAX – 02169-244860.

ANNEXURE -I

DESIGN BASIS AND PERFORMANCE PROJECTION

The Sewage Treatment Plant for the Engineering College campus which includes sewage from hostels, residential staff quarters, administrative building, college utilities will be designed on basis of following inlet conditions:

Flow : 200 m^3/Day (Maximum)

The Proposed Sewage Treatment system upon reaching steady state would produce following results when operated under optimum design conditions and subjected to a regular testing programme and monitoring:

Flow	:	200 m^3/Day
BOD	:	30.0 mg/ L.
TSS	:	< 50 mg/L
pH	:	7.0 to 8.0
O&G	:	NIL.

ANNEXURE -II

PACKAGE STP PROCESS DESCRIPTION

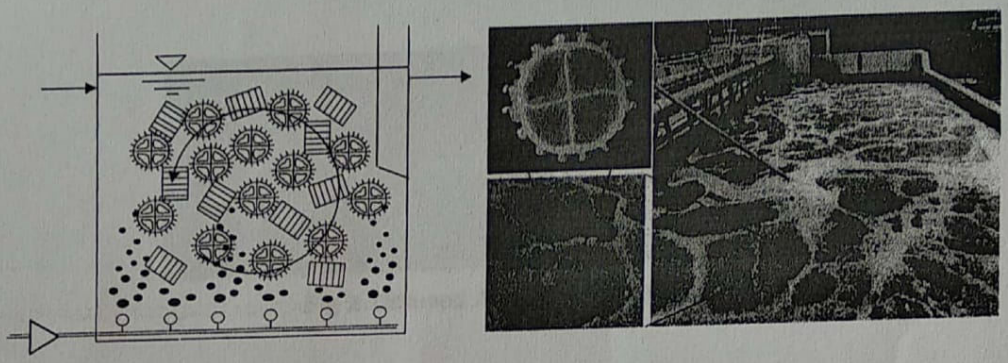


Fig 1. A View of the Bio Reactor in Operation

The Core of the MBBR Process is the biocarriers (media) made from High density Polyethylene. The design of associated aerators, grids, sieves, spray nozzles and other integral components is also of great importance in making up the system as a whole

The waste water after undergoing, screening, degritting is led to the MBBR™ reactor where biofilm, growing within the internal structures of the biocarriers, degrade the pollutants. These pollutants that need to be removed in order to treat the wastewater are food or *substrate* for growth of the biofilm. The biocarrier design is critical due to requirements for good mass transfer of *substrate* and oxygen to the microorganisms' Excess biofilm sloughs off the biocarrier in a natural way. The amount of biomass is self regulated and depends on incoming load and hydraulic retention time. The process is thus easier to maintain and monitor as compared to any other system. Since the bio carriers are constantly moving, the process is also insensitive to suspended solids

A diffused aeration system supplies oxygen to the biofilm along with the mixing energy required to keep the bio carriers suspended and completely mixed within the reactor. Since the microorganisms are retained together with the biomedia , there is no need for sludge Recirculation (RAS)

Treated water flows from reactor through a sieve into a clarifier/settler for separation of sludge. The screens retain the bio carriers in the MBBR reactor. The overflow from the clarifier/settler is disinfected and sent for tertiary treatment to treat the effluent to suit the client's reuse requirements of reuse or discharged off suitably. Settled sludge is thickened, dewatered and discharged

1.

Fig 2. Diffused Aeration System

2 Advantages of the MBBR Technology

2.1 Compact

- Smaller Foot Prints
- Low Investment Cost

2.2 Robustness and Operational Reliability

- Tolerant to disturbances and shock loads
- Quick recovery after upsets/stoppages
- No Clogging of reactors
- No risk of Sludge Bulking
- Simpler maintenance and operation. Dissolved Oxygen is required to be maintained at prescribed levels. Other parameters MLSS, F/M etc are not required to be monitored. The Biomass growth is self sustaining and adjusts itself depending on incoming organic load
- No Sludge recirculation unlike other process. The RAS line can be eliminated
- The bio carriers are long lasting and are guaranteed for a 15 year lifetime.

2.3 Flexibility

- Almost all shape of reactor can be utilized
- Possibility to utilize existing tanks for Bioreactors
- Easy to expand in future
- Can be upgraded from initial design – add more media

ANNEXURE -III

DESIGN BASIS AND PERFORMANCE PROJECTION

PROCESS UNITS

General Process Scheme followed for domestic sewage treatment is given below. This is provided as a guideline. The selection of unit processes is to be based on the specific site requirements and the desired treated water characteristics.

3.1 Pre-Treatment

a)Bar Screen unit:

The incoming raw sewage will be pre-treated in the existing pre-treatment system comprising of mechanical screen and detritors.The incoming raw sewage to be screened before proceeding to the treatment plant. A coarse screen of 10mm shall be used for this. Screening is important to protect the mechanical equipments in the treatment system. After screening wastewater flows to the grit chamber. Oil and Grease separator follows the Grit Removal system for the removal of free floating oil & grease from the kitchen wastewater. Degritting and Oil & Grease separation are optional and are to be included in the treatment scheme after the careful examination of the raw sewage.

b) Sewage Equalization and Pumping System:

An existing Collection Tank shall be modified to increase the capacity of receiving the raw sewage. The Collectionn tank shall be sized in a manner to have adequate volume to counter the peak flow.

The equalization tank is installed with coarse bubble aeration grids to provide aeration for mixing and to prevent anaerobic condition in the

tank. Raw sewage transfer pumps shall pump the sewage at a uniform rate to the aerobic treatment system. Two Pumps shall be provided to run one on duty, and the other on standby.

3.2 MBBR System

The pre-treated sewage will flow by gravity into the MBBR tank.

The proposed Treatment System shall have the following major components:

a. Bio carrier

This is the critical element in the design and performance of the MBBR system. Different wastewater characteristics and treatment objectives place different demands on the bio carrier construction. For example, high contaminant loads demand efficient mass transfer, high amounts of fibres require an optimized bio carrier geometry, and slow-growing bacteria, such as nitrifiers, need to be protected within the bio carrier.

b. MBBR Reactor

Anox Kaldnes manufacture several types of bio carriers for different applications. All these are characterised by high surface area. The Reactor is designed for completely mixed conditions. This is to ensure maximum Oxygen diffusion across the Biofilm Boundary layer.

Depending on layout and foot print requirements, the tank can be designed for water depths up to 12 M.

Bio carrier fill percentage is optimised for each application in order to provide adequate diffusion time, displacement of MLSS and sloughing effect. The HRT of the effluent in the Reactor is typically between 1 to 2 hours

c. Aeration system

Air is provided by a diffused aeration system that allows the right oxygenation while ensuring a completely mixed reactor. The system is designed to provide sufficient oxygen at the bio film diffusion interface for enhanced mass transfer efficiency. Execution is in Stainless Steel construction

3.3 Tube settler clarifier

MBBR is followed by settling where large particles or flocs will settle at the bottom of the settling tank. Tube settlers are placed in the settling tank to enhance the settling by providing more settling area. Clear water from the settling tank overflows into the filter feed tank.

3.4 Disinfection (Chlorination)

The Disinfection System, which comprises of a dosing system, ensures complete removal of any remaining harmful organisms in the water. The water flowing from the Tube Settler into the Polishing Filter Feed Tank is dosed with a disinfectant from above and then allowed to remain in the tank for a predetermined time so that there is enough contact time for the disinfectant to totally disinfect the water.

3.5 6 Pressure Sand Filter:

The device is provided to filter the clarified effluent to remove the suspended solids impurity in the effluent. Clarified water from the settling tank passed through the system to remove traces of suspended particles.

3.6 Activated Carbon filters:

Activated carbon filter shall be provided to remove the traces of organic material present in the effluent. It adsorbs the traces of oils, detergents and solvents.The clarified water shall be disposed as final disposal and recycled back in the process

ANNEXURE – IV

LIST OF EQUIPMENTS OF PACKAGE - STP-200 CMD

SR. NO.	EQUIPMENT	QTY.
	PRIMARY TREATMENT	
1.	Bar Screen	1
2.	Oil Skimmer	1
3.	Air Blowers for MBBR	1W+1S
4.	Air Grid for Equalisation	2
5.	Distribution Grid	Set
6.	Bio Media - Kaldnes Media K3 Type	1 Lot.
7.	Tube Settler Clarifier Media.	1
8.	Sewage feed Pumps	1W+1S
9.	Filter feed pumps	1W+1S
10	Sludge Pumps	1W+1S
11	Pressure Sand Filter Media	1
12	Activated Carbon Filter Media	1
13	**Chlorination Unit.**	**1 Set.**
	OTHERS	
15	Valves, Pipes & Fittings	1 Lot
16	**M.C.C. Panel**	1 No.
17	Electrical Cables, Cable Trays, Accessories & Fittings	1 No.
18	Earthing Material	1 Lot
19	Local Push Button Stations For each Motor	Lot

LIST OF CIVIL UNITS

SR. No.	CIVIL UNITS	SIZE - M	QTY	MOC
1.	Platform for installation of package STP	5.0 X 6.0 M	1	RCC-M-15
2.	Raw Sewage Holding Tank	5.0 X 5.0X3.0	1	RCC-M-30
3.	Sludge Drying Beds (Optional)	~~Nil~~	2	Masonry Brick work.
4.	MBBR Reactor Tank.	3.50x3.50x3.0SWD +0.50 F.B.	1	RCC-M 30
5.	Tube Settler Clarifier	2.50x 2.50x2.70	1	RCC-M-30
6.	Treated Sewage Holding Tank	3.0 x3.0 x 3.0	1	RCC-M-30
7.	Sludge Drying Bed	2.0 x 2.0 x1.0	4.0	Brick masonry

ANNEXURE – V

SCOPE OF WORK

SCOPE OF WORK:

- **PC.'s Scope:**

  a) Process Design
  - Process Flow Diagram
  - Basic Equipment Specifications
  - Pipe and Valve Schedule

  b) Detail Engineering
  - P & I Diagram
  - Civil Design and Drawings
  - Electrical Drawings

  c) Supply and installation of all Electro-Mechanical equipment required for the treatment within battery limits as specified in Annexure – III.

- **Client's Scope of Work: -**

1. To carry out the entire civil work related to the augmentation of STP as per designs and drawings given by PC.
2. Chemicals required for operation of the plant.
3. Necessary facilities for unloading of Plant, Machinery, Equipment, etc and Workshop facilities.

ANNEXURE – VI

PRICE SCHEDULE

A. PRICE:

Our price for the above scope of work, which includes Process Design, Drawings, Supply of Electro-mechanical equipments as per Annexure - III, including supervision of erection and commissioning shall be:

Rs. 20, 00,000.0/- (Rs. Twenty Lac Only.)

20.00
2.50 VAT
.40 PF
22.90

The above price excludes the following:

a. VAT @12.50%.
b. Packing and forwarding charges @ 2% extra.
c. Freight & Insurance shall be charged extra at actual.

B. TERMS OF PAYMENT: -

a) 30% of the price as an advance along with order.
b) Further 10 % of the price on submission of system drawing.
c) Further 50 % against proforma invoice at the time of despatch of equipment.
d) 10.0% after installation of unit at site.

C. DELIVERY:

The system is expected to be ready for commissioning in about 1 month time from the placement of technically and commercially clear purchase order and payment of advance. However it is subject to completion of civil work.

This is subject to timely availability of cleared workable site, specific approval of all drawings/documents, if agreed, other infrastructure facilities and strict adherence to the payment schedule.
In case any of these activities are delayed, there would be proportionate extension in the delivery period.

D. VALIDITY:

This offer is valid for a period of 30 days from the date of issue of this offer.

STP MAINTENANCE RECORD

PAGE:
DATE: / /

Date	Natire of Work	Attended by	Sign	Remark
3/04/2017	Blower (4B) checking on site	Mr. H. Sawant		
05/04/17	Dismantling of blower (4B) and checking for bearing	Mr. H. Sawant		
27/04/17	Fitting of new 4B blower on site	Mr. S. Wore		
3/05/17	Fixing the chock cup of 2A water Pump	Mr. H. Sawant		
17/05/17	Oil level maintaining of both 4A & 4B blower	Mr. S. Wore		
30/05/17	3B Pump (connection) removing & keeping at spare - 1	Mr. K. Oak Mr. S. Kale		
2/06/2017	Making screen for STP	Mr. H. Sawant		
05/06/2017	Arrangement of bubb in STP.	Mr. K. Oak		
05/06/17	STP cleaning work details are provided in next page.	~~Mr. S. Sawant~~ Mr. N. Shewale		Details are given on page no. 3.
20/07/2017	4B pump pully calibration	Mr. H. Sawant		
04/07/2017	4B blower pully Fitting	Mr. S. Wore		
05/07/2017	Electric Panel Fitting	Mr. K. Oak Mr. S. Kale		
22/08/2017	Dismantling of 3B pump	Mr. H. Sawant Mr. S. Dheepse		

PAGE :
DATE : / /

Date	Nature of Work	Attended by	Sign	Remark
22/08/2017	Checking SB pump for bearing or other issue	Mr. H. Sawant		
04/09/2017	Fitting SB pump after repairing	Mr. H. Sawant Mr. S. Wase Mr. S. Dhepse		
04/09/2017	Making connection (electric) for SB pump	Mr. K. Oak Mr. S. Kale		
06/09/2017	Oiling, Greasing for 4A & 4B Blower	Mr. S. Wase		
09/09/2017	Making Return connection for Lifting pump	Mr. C. Salvi		
	Blower Pipe Feeting	Malware		
08/09/2017	A1 Filter pump checking	Mr. H. Sawant Mr. S. Dhepse		
08/11/2017	A1 Filter pump connection checking	Mr. S. Kale		
09/12/2017	S.T.P Water Tank Sensor feeting	Mr. K. Oak		

PAGE:
DATE: / /

Date - 09/06/2017

STP, Cleaning work - Work is completed with group of Labours from Zambadi.
14 Labour were there

Work done :-

1. Cleaning of inlet chamber
2. Cleaning of equilisation tank.
3. Cleaning of Aeration tank
4. Cleaning of Sedimentation Tank
5. Installation of New screen.

Work duration - 1 Day - (from 10AM to 10PM)

PAGE :
DATE : / /

Date	Nature of Work	Attended by	Sign	Remarks
19/01/2018	Oiling & Greasing	S.Patate C.Patate		
16/02/2018	Oiling & Greasing	S.Patate C.Patate		
14/02/2018	Tube Settler Frame Making	H.Sawant		
23/02/2018	Tube Settler Frame Fitting & Installation & Tubesettler	H.Sawant S.Dhopse S.Patate C.Patate Students BE		
22/03/2018	Filter Media Replacing	S.Patate External Technician students Site office staff		
23/03/2018	Oiling and Greasing	C.Patate S.Patate		
26/03/208	Installation of NRV at 2A & 2B	Malwade S.Patate C.Patate		

PAGE :
DATE : / /

Date	Nature of Work	Attended by	Sign	Remark
27/03/18	Installation of NRV 1A & 1B	Mallsone S.Rokate C.Rokate		
28/03/18	Installation of NRV at 3A & 3B	S.Rokate C.Rokate Mallsone		
18/04/2018	Oilling & Greasing	S.Rokate C.Rokate		
02/05/2018	Oilling & Greasing	S.Rokate C.Rokate		
02/05/2018	Installation Chlorine dosing System	S.Rokate C.Rokate K.Oak S.Kale		
07/05/2018	Multiport Valve at Filter replaced	C.Salvi S.Rokate C.Rokate		

PAGE :
DATE : / /

Date	Nature of Work	Attended by	Sign	Remarks
18/5/2018	Flower Belt Replaced	H.Sawant C.Rahate		
28/6/2018	Oiling & Greasing Done	S.Rahate C.Rahate		
12/06/2018	Oilling & Greasing Done	S.Rahate C.Rahate		
28/06/2018	Oilling & Greasing Done	S.Rahate C.Rahate		
10/07/2018	Oilling & Greasing Done	S.Rahate C.Rahate		
20/08/2018	Oiling & Greasing done	S.Rahate C.Rahate		

PAGE:
DATE: / /

Date	Nature of Work	Attended by	Sign	Remark
25/08/2018	Oiling & Greasing Done	S. Rahate C. Rahate		
06/09/2018	Oiling & Greasing Done	S. Rahate C. Rahate		
08/10/2018	Oiling & Greasing Done Blower Belt Replaced	S. Rahate C. Rahate H. Sawant		
16/11/2018	Oiling & Greasing done	S. Rahate C. Rahate		
16/12/2018	Door Fitting Done.	C. Sahi S. Rahate C. Rahate		
07/12/2018	Blower Belt Replaced	~~S. Wore~~ C. Rahate H. Sawant		
17/12/2018	Oiling & Greasing done.	S. Rahat C. Rahate		
17/12/2018	Blower Belt Replaced	S. Wore C. Rahat S. Rahate		

PAGE :
DATE : / /

Date	Nature of work	Attended by	Sign	Remark
07/01/2019	Oiling & Greasing done	M&S. Pahate Ms. C. Pahate		
29/01/2019	Oil level checked	Mr. C. Pahate Ms. S. Pahate		

Vidya Prasarak Mandal's
Maharshi Parshuram College of Engineering, Velneshwar
Hedvi-Guhagar road, At: Velneshwar, Taluka: Guhagar,
Dist: Ratnagiri (Maharashtra) 415 729
(AICTE & DTE approved and affiliated to University of Mumbai)

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E-mail:
mpcoe@vpmthane.org
URL:www.vpmmpcoe.org

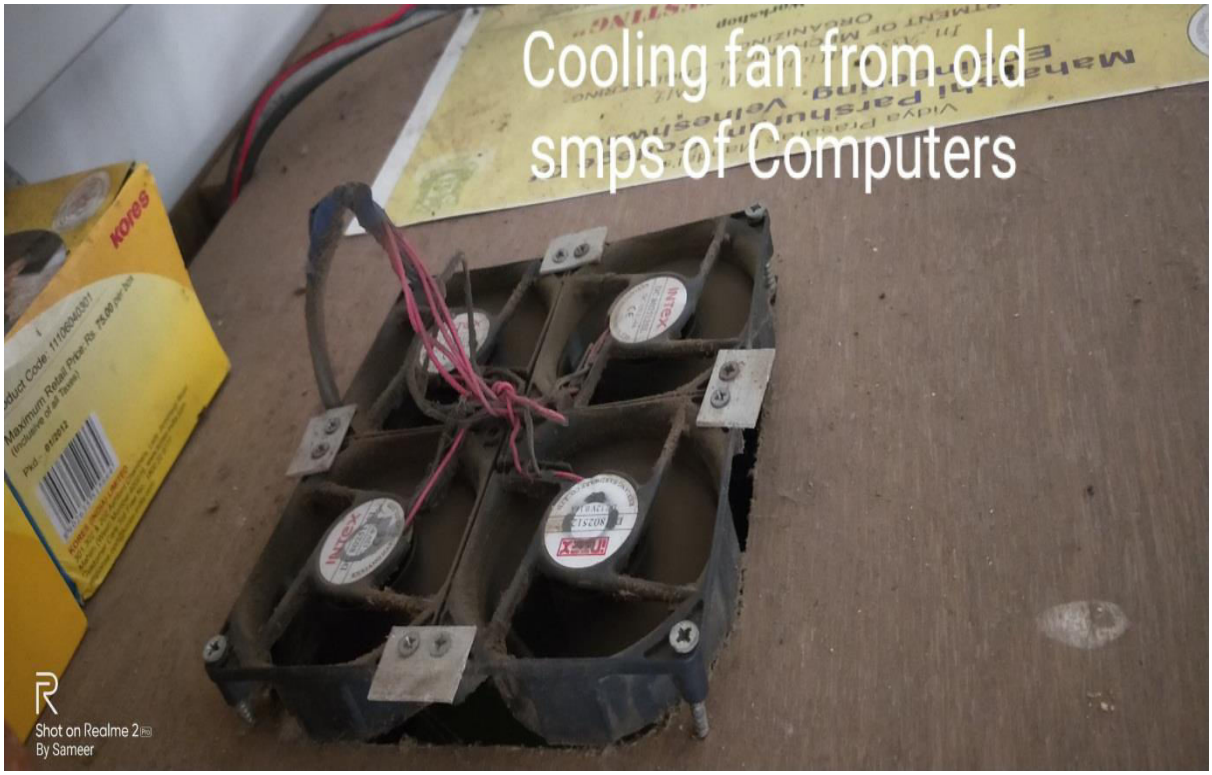
REPORT ON E-WASTE MANAGEMENT

Our college has a "maintenance room" where all the maintenance of computers, tube lights & other electrical equipment is done. The useful material from the faulty equipment is utilised in repairing of some other equipment as apart of management of e- waste.

Cooling fan from the damaged CPUs are utilised for EPABX telephone system. The components from the chokes of tube lights are reused in automatic street light system.Wires of the faulty tube lights are utilised for making connections.

Maintenance room

Tools in maintenance room




Cooling system for telephone
CHALK
unify


Automatic
street light