

Rain Water Harvesting



कार्यालय मुजफ्फरनगर विकास प्राधिकरण, मुजफ्फरनगर

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दिनांक - 8/12/2017

निर्माण कार्य पूर्ण होने का प्रमाण पत्र

प्रमाणित किया जाता है कि श्रीराम कॉलेज, स्थित अलमासपुर टेलीफोन एक्सचेंज के सामने, परिक्रमा मार्ग, मुजफ्फरनगर का रैन वाटर हार्वेस्टिंग मनाचित्र प्राधिकरण के पत्र संख्या 38/चार (मो नियन्त्रण), 2017 दिनांक 13.04.2017 द्वारा स्वीकृत किया गया था। दिनांक 29.11.2017 को संस्थान के भवन का निरीक्षण किया गया है जिसमें रैन वाटर हार्वेस्टिंग का निर्माण सन्तोषजनक एवं सभी प्रकार से पूर्ण पाया गया।

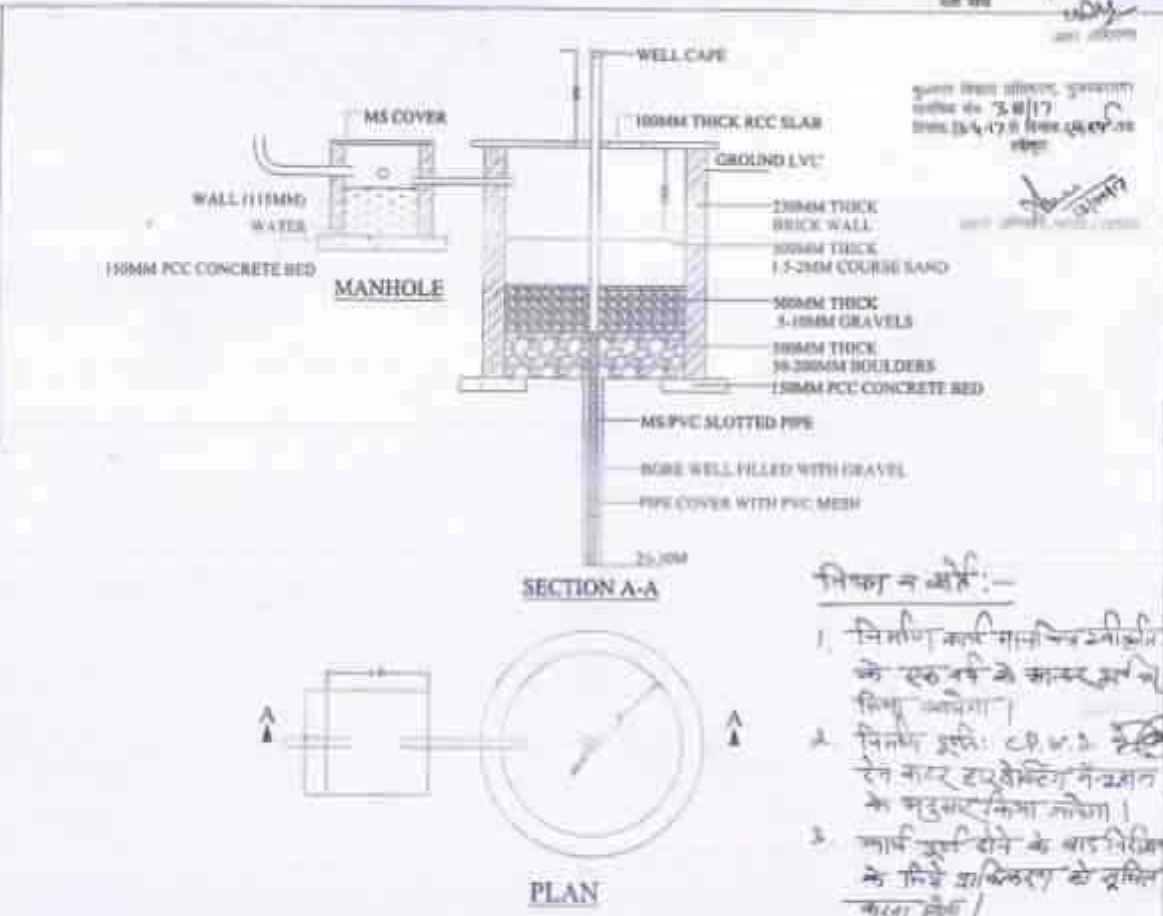



प्रभारी अधिकारी
मुजफ्फरनगर विकास प्राधिकरण
मुजफ्फरनगर


Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar


Principal
Shri Ram College
Muzaffarnagar

संकेत क्र. 30/17 की सं.
 सं. सं.
 20/17



प्रमाणित किया जा सकता है, मुद्रणांक
 संकेत सं. 30/17
 दिनांक 15/4/17 को प्रमाणित किया गया
 संकेत

RAIN WATER HARVESTING SYSTEM	
PROPOSED RAINWATER HARVESTING SYSTEM AT SHRI RAM COLLEGE, OPP. ALMASPUS TELEPHONE EXCHANGE, FARIDABAD ROAD, MUZAFFARNAGAR (SHRI RAM CHARITABLE TRUST)	
SHEET 1/1	
OBJECT OF WORK 1. FOR BLOCK (A) - 117200 METERS ROOF SURFACE AREA (100 FT X 100 FT) 2. FOR BLOCK (B) & (C) - 117200 METERS ROOF SURFACE AREA (100 FT X 100 FT)	
DIMENSION OF TANK 1. FOR BLOCK (A) - 8000 X 100 FT DEPTH - 2 FT 6 IN 2. FOR BLOCK (B) & (C) 8000 X 100 FT DEPTH - 2 FT 6 IN	
	
APPROVED HARVESTING SYSTEM AT SHRI RAM COLLEGE, MUZAFFARNAGAR	DATE 15/04/2017
100% ARCHITECT & STRUCTURAL ENGINEER A. V. JAYARAMA 6/144, TAJURU ROAD, BAROLI, 191127000	

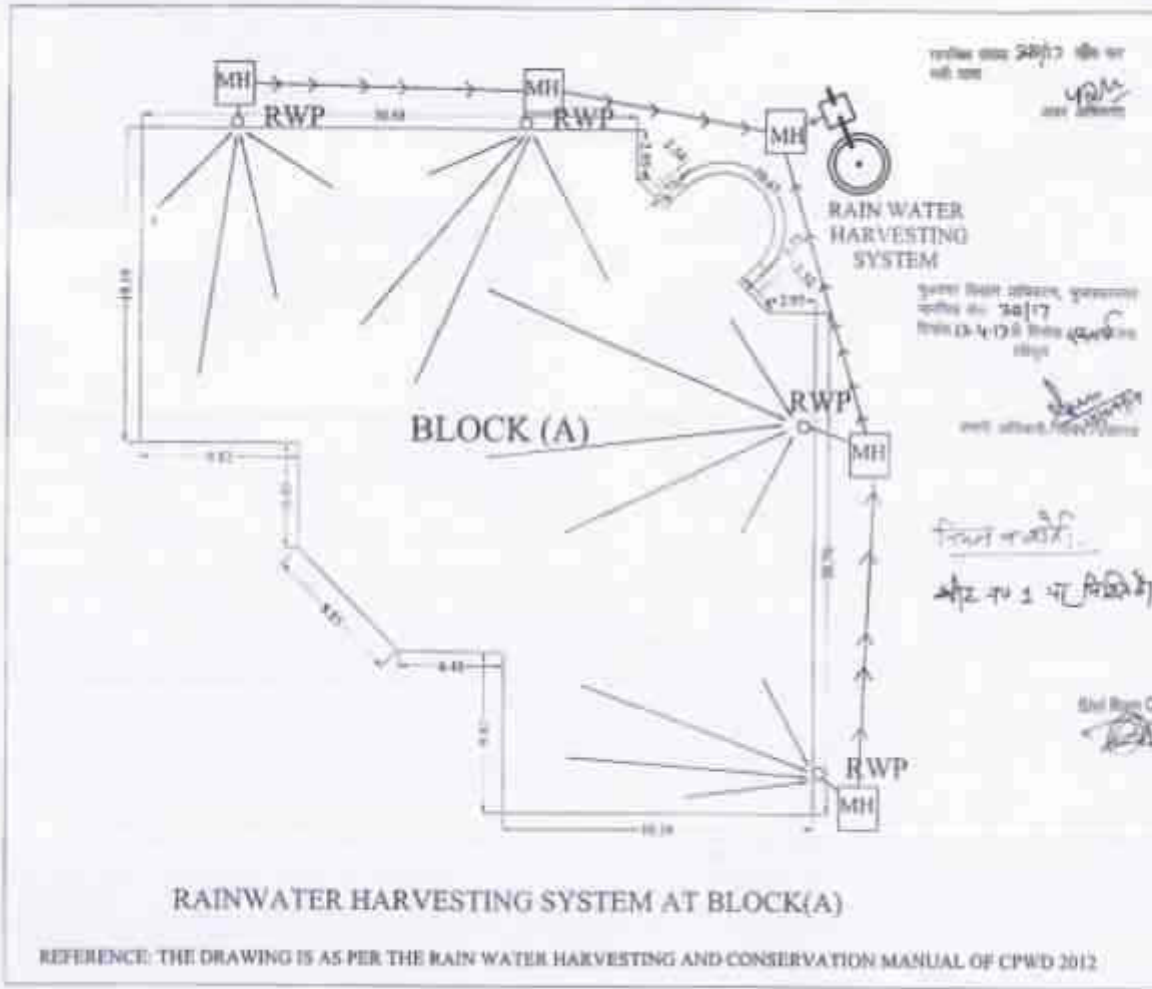
नियंत्रण कार्य:-

1. निर्माण कार्य समाप्त होने के बाद तब तक काम करने से रोका जाएगा।
2. निर्माण शुरू होने के बाद हर 20 दिनों में प्रगति के अनुसार रिपोर्ट जमा करनी होगी।
3. कार्य शुरू होने के बाद निर्माण के लिए प्रतिक्रिया के तहत किया जाएगा।

REFERENCE: THE DRAWING IS AS PER THE RAIN WATER HARVESTING AND CONSERVATION MANUAL OF CPWD 2012

Muzaffarnagar
 Principal
 Shri Ram College
 Muzaffarnagar

Co-ordinator
 IOAC, Shri Ram College,
 Muzaffarnagar



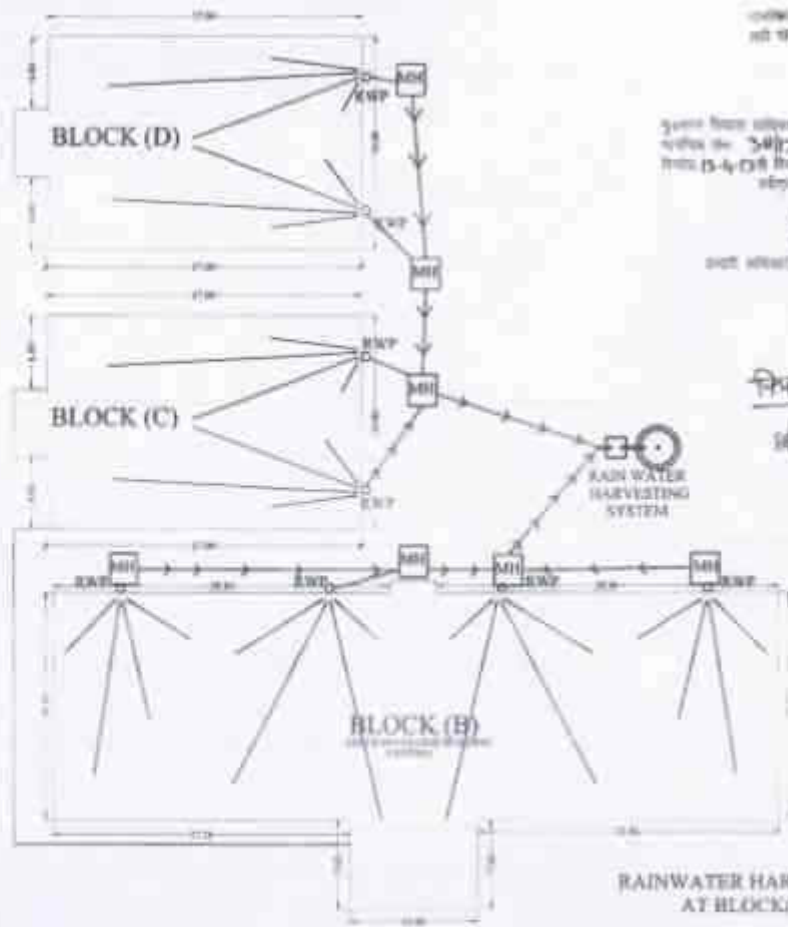
RAINWATER HARVESTING SYSTEM AT BLOCK(A)

REFERENCE: THE DRAWING IS AS PER THE RAIN WATER HARVESTING AND CONSERVATION MANUAL OF CPWD 2012

RAIN WATER HARVESTING SYSTEM	
PROPOSED RAINWATER HARVESTING SYSTEM AT SHRI RAM COLLEGE, OFF. ALMASPLUS TELEPHONE EXCHANGE, PARKKARMA MARG, MUZAFFARNAGAR (SHRI RAM CHARITABLE TRUST)	
SHEET 2	
DRAWN BY: [Signature]	
CHECKED BY: [Signature]	
DATE: 15.08.2017	
SYMBOL	MH
SYMBOL	RWP
SYMBOL	[Circular symbol with wheel]
ENGINEER SHRI RAM CHARITABLE TRUST MUZAFFARNAGAR	
PROJECT: RAINWATER HARVESTING SYSTEM AT SHRI RAM COLLEGE, OFF. ALMASPLUS TELEPHONE EXCHANGE, PARKKARMA MARG, MUZAFFARNAGAR	
DATE: 15.08.2017	
PROJECT NO: 20/17	

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 Co-ordinator
 IQAC, Shri Ram College,
 Muzaffarnagar

[Handwritten Signature]
 Co-ordinator
 IQAC, Shri Ram College,
 Muzaffarnagar



RAINWATER HARVESTING SYSTEM AT BLOCK(B, C AND D)

REFERENCE: THE DRAWING IS AS PER THE RAIN WATER HARVESTING AND CONSERVATION MANUAL OF CPWD 2012

DATE: 24/12/2017
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पिपिंग 4 ब्लॉक
 शिवाजी नगर मुजफ्फरगढ़

RAIN WATER HARVESTING SYSTEM	
PROPOSED RAINWATER HARVESTING SYSTEM AT SHRI RAM COLLEGE, OPP. ALMASPUR TELEPHONE EXCHANGE, PARIKARMA MARG, MUZAFFARNAGAR (SHRI RAM CHARITABLE TRUST)	
SHEET - 3	
WORK SUBJECT AREA	100% 100%
EXISTING BUILDING BLOCK (B)	100% 100%
EXISTING BUILDING BLOCK (C)	100% 100%
EXISTING BUILDING BLOCK (D)	100% 100%
LEGEND	
STORAGE TANK	ST
RAIN WATER PIPE	RWP
RAINWATER HARVESTING SYSTEM AT SHRI RAM COLLEGE, MUZAFFARNAGAR	
PROJECTED BY	DR. N. K. SINGH
DATE	24/12/2017
PROJECTED BY	DR. N. K. SINGH
DATE	24/12/2017

Principal
 Shri Ram College
 Muzaffarnagar

Shri Ram Charitable Trust
 Muzaffarnagar



Co-ordinator
 IQAC, Shri Ram College,
 Muzaffarnagar

Water Distribution & Conservation Audit Report, 2019-20



**Shri Ram College
Muzaffarnagar**



Shri Ram Colleges, Muzaffarnagar

Water Distribution & Conservation Audit Committee

External Auditors

S.No.	Name	Department/Dept
1.	Er. S K Kulshreshtha	(Rtd) Xen, Jal Nigam, Bareilly
2.	Er. Arjun Singh	Head, Deptt of Civil Engg, SRGC
3.	Er. Sangeet Grover	Managing Partner, SRT

Internal Auditors

S.No.	Name	Department/Dept
1.	Dr Rishabh Bhardwaj	Head, Deptt of Chemistry, SRC
2.	Dr Bushra Aquil	Head, Deptt of Agriculture, SRC
3.	Mr Pranjul Kulshreshtha	Manager, Maintenance, SRC

Water Distribution & Conservation Audit

at

Shri Ram College, Muzaffarnagar

Certificate of Audit

Certified that we have conducted water Distribution & Conservation Audit in premises of Shri Ram College, Muzaffarnagar from 2nd April 2020 to 25th April 2020. The college is executing the best practices of water management and its saving.

It may further conserve the water resources for which the audit team has prescribed certain suggestions.

Dated: 30 April 2020

Place : Muzaffarnagar



(Er. S K Kulshreshtha)

Retd. Xen, Jal Nigam
Bareilly



(Er. Arjun Singh)

Head, Deptt of Civil Engg
Shri Ram Group of Colleges,
Muzaffarnagar



(Er. Sangeet Grover)

Managing Partner
Shri Ram Technologies
Muzaffarnagar



(Dr Rishabh Bhardwaj)

Head, Deptt of Chemistry
Shri Ram College
Muzaffarnagar



(Dr Bushra Aquil)

Head, Deptt of Agriculture
Shri Ram College
Muzaffarnagar



(Pranjul Kulshreshtha)

Manager, Maintenance
Shri Ram College
Muzaffarnagar

Water Distribution & Conservation Audit

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Water Distribution & Conservation Audit

Preface

Water is a precious natural national resource which is becoming increase day by day. With continuous growth in country's population, per capita availability of utilizable water is going down, whereas with ever-rising standard of living of people, all around rapid industrialization and urbanization, demand of fresh water is going up continuously. Unabated discharge of industrial effluents into water bodies is further aggravating the situation of scarcity of water of acceptable quality. In spite of the fact that fresh water is rapidly becoming scarce it is continued to be used wastefully.

At the global level, about 60-70 percent of total annual water consumption is in irrigation sector. In India water use for irrigation is about 83 percent of current level of total water utilization. Thus apparently there is ample scope of water saving in irrigation sector. Similar is the case with drinkable water resources.

Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water not in irrigation sector alone but in other sectors of water use such as domestic, power and industrial as well.

In educational institution like Shri Ram College which is extending over several acres land with lawns, gardens, grooves, green houses and farming besides drinking, toilet water, floor cleaning for more than 3500 students auditing of water consumption becomes imperative. I hope "General Guidelines for Water Audit & Water Conservation" brought out by the **Shri Ram College, Muzaffarnagar** will serve as a useful reference for undertaking water saving measures in all sectors of water use and facilitate State Governments to formulate their own region-specific, project-specific, system-specific or service-specific guidelines.

I sincerely acknowledge the contribution of Er S K Kulshreshtha for leading the team, Er Arjun Singh for coordination and Er Sangeet Grover for auditing equipments and technologies. The efforts of the entire team has been commendable and appreciable.


(Dr Aditya Gautam)
Principal

Water Distribution & Conservation Audit

INTRODUCTION

Availability of natural resources, particularly land and water, for people of India is inequitable at global level. Presently, with 2.4 per cent of land and 4 per cent of water resources, India has to support 16 per cent of world's population and 15 per cent of livestock.

India gets an average precipitation of 4000 billion cubic meters (BCM) per annum. Precipitation is highly unevenly distributed with respect to time and space, over the country. As much as 75% of total average annual precipitation occurs in 4 months of monsoon period. Even during the monsoon months, about 50% of total annual rainfall takes place only in 15 days and in less than 100 hrs. As far as spatial unevenness is concerned, the average rainfall in Meghalaya is 10900 mm, whereas, in Rajasthan it is as low as 100 mm against the national average annual rainfall of 1100 mm. On the other hand demand for fresh water is increasing with every passing day. It is not only due to rapid population growth alone, but also on account of many other factors such as rise in per capita water demand arising out of continuous upward movement of living standards, increased reliance on irrigated agriculture, massive urbanization and industrialization etc.

As per the present indication, population of the country may stabilize by the year 2050 at around 1.6 billion. The available utilizable water resource of the country is considered insufficient to meet all future needs. Under such a situation, in order to face the challenge of water deficit, apart from accelerating pace of development of available utilizable water resources, all out efforts, on the part of people from every walk of life, would need to be made to conserve every drop of water and improve efficiency in all areas of water use.

With a view to improving performance of irrigation projects and to increase productivity per drop of water, "Performance Evaluation Studies of Irrigation Projects" have been taken up in the country since the seventies. Central Water Commission started such exercise since the 8th plan period. So far (till the end of Ninth Five Year Plan) performance evaluation studies of 110 major and medium irrigation projects from various regions / states of the country have been successfully accomplished by the Central Water Commission (CWC), State Governments, Central Board of Irrigation and Power (CBIP) and Ministry of Water Resources (MOWR), Govt. of India. Ten irrigation projects have been identified for undertaking post project evaluation studies in the tenth five year plan by Central Water Commission. Besides performance evaluation of irrigation projects, benchmarking of irrigation systems has also been taken up since 2002. Benchmarking may provide an effective 2

tool for measurement of relative performance of irrigation projects and suggest ameliorative measures for performance improvement.

1.1) Water Audit

Water audit determines the amount of water lost from a distribution system due to leakage and other reasons such as theft, unauthorized or illegal withdrawals from the systems and the cost of such losses to the utility. Comprehensive water audit gives a detailed profile of the distribution system and water users, thereby facilitating easier and effective management of the resources with improved reliability. It helps in correct diagnosis of the problems faced in order to suggest optimum solutions. It is also an effective tool for realistic understanding and assessment of the present performance level and efficiency of the service and the adaptability of the system for future expansion & rectification of faults during modernization.

Elements of water audit include a record of the amount of water produced (total water supply), water delivered to metered users, water delivered to unmetered users, water loss and suggested measures to address water loss (through leakages and other unaccounted for water losses).



Water leakage, wastages and unaccounted of water losses

1.1.1) Benefits of Water Audit

Water audit improves the knowledge and documentation of the distribution system, problem and risk areas and a better understanding of what is happening to the water after it leaves the source point. Leak detection programs help in minimizing leakages and tackling small problems before they become major ones. These programs lead to

- (a) reduced water losses,
- (b) improved financial performance,
- (c) improved reliability of supply system,
- (d) enhanced knowledge of the distribution system,
- (e) efficient use of existing supplies,
- (f) better safeguard to public health and property,
- (g) improved public relations,
- (h) reduced legal liability, and
- (i) reduced disruption, thereby improving level of service to customers

2) Water for irrigation technology purpose

2.1 Water Demand

In irrigation sector, water demand is region specific depending upon the type of soil, cropping pattern/practices, climatic condition, etc. Irrigation water demand also depends upon the type of infrastructure, conveyance system, water application technique etc. **In Shri Ram College** uses a drip, sprinkles and fogging technology in Gardens and Loan. Among various methods available for working out irrigation water demand, Modified Penman Method is considered the most suitable and is recommended for assessing crop water demand.

2.2 Irrigation Efficiencies

2.2.1 Field Application Efficiency

On application of water to fields, a part of it gets evaporated, another part goes as losses (run off, percolation loss, etc) and the remaining is used by the crops to meet evapotranspiration needs. Actual quantity of irrigation water required to be released at field head is called Field Irrigation Requirement (FIR). Field application efficiency (E_f) takes into consideration above losses in application of irrigation water and may be defined as ratio of Net Irrigation Requirement (NIR) over Field Irrigation Requirement (FIR) i.e. $E_f = \text{NIR}/\text{FIR}$



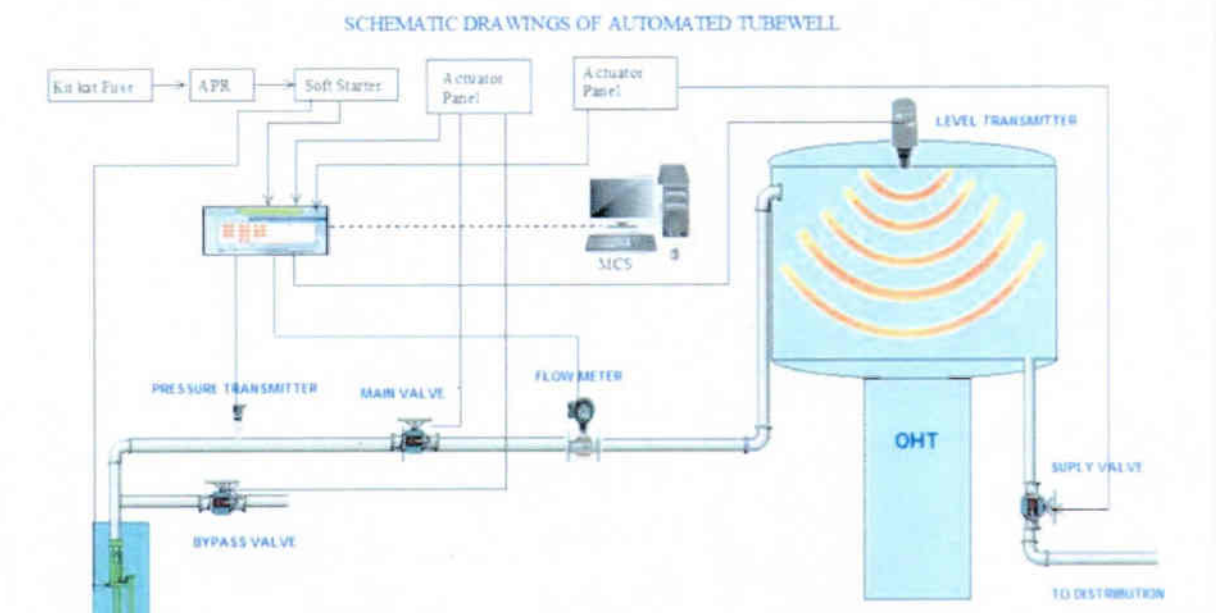
Scada Based Water Flow Control Panel

2.2.2 Pump Safety / Preventer

Today overvoltage, over current, overload, over temperature, and under voltage are the most commonly occurred problems in protection circuits of induction motor. We usually design Protection circuits with components such as timers, contactors and current relays. In order to reduce the mechanical components usage we prefer to use Personal Computer (PC) and REAL TERMINAL UNIT (RTU). In this method Induction motors current, voltage, Speed, temperature values and fault occurred history are monitored in PC with an Alarm Message during fault occurrence. **Shri Ram College** using RTU-based protection methods are costs less, provides higher accuracy with safe mode of operation when compared with the other protection systems.

Objective

- Far superior repeatability.
- To reduced machine downtime.
- To reduced fault and increased accuracy
- Producing good quality product.
- To increase industrial profit
- Operating time is reduced.
- To increasing the production rate.



Scada Based Water Controlling System

2.2.3 Drip Irrigation in Flower Beds

Drip irrigation is sometimes called trickle irrigation and involves dripping water onto the soil at very low rates (2-20 liters/hour) from a system of small diameter plastic pipes fitted with outlets called emitters or drippers. Water is applied close to plants so that only part of the soil in which the roots grow is wetted, unlike surface and sprinkler irrigation, which involves wetting the whole soil profile. With drip irrigation water, applications are more frequent (usually every 1-3 days) than with other methods and this provides a very favourable high moisture level in the soil in which plants can flourish.



Drip Irrigation in Flower Beds



Mister Irrigation in Rose Beds

2.2.4 Mister for Rose Beds

For Rose Cultivation Showers of Water should not exceed the height of plants. It is because if water drops on petals of flowers will be decomposed. Therefore, misters with height of 45 cms are provided with mister. The mister takes encircling showers to provide water all around the plant. This method saves water also.

2.2.5 Sprinklers in Green House

Sprinkler irrigation systems apply irrigation water to the plants. In some greenhouse and shade structures, plumbing is mounted overhead. Overhead installation does have the advantage that the plumbing is protected from mechanical damage by vehicles and persons. Installations can also have supply lines buried in the soil below the crop or mounted to the infrastructure. Movable sprinkler systems are also in use in various parts. Crops for which it is undesirable to wet the foliage (e.g., some ornamental crops) can be irrigated with micro sprinklers to the base of the plants. One positive feature of sprinkler irrigation from above is that it supplies water to most of the top of the root zone with relatively low investment and low maintenance costs. Each sprinkler head type has a particular circular water distribution pattern; multiple sprinkler heads with short distances between emitters can be used to create a more uniform distribution pattern, but inherently sprinkler systems have uneven water distribution. For some crops, wetting of the foliage introduces a higher risk of plant disease development.

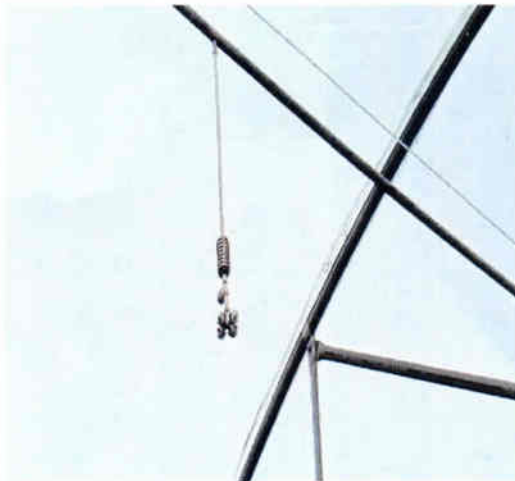


Sprinklers in Green House

2.2.6 Foggers for Protected Cultivation

Micro irrigation system is the best for watering plants in a Polyhouse. Micro sprinklers or drip irrigation equipments can be used. Basically the watering system should ensure that water does not fall on the leaves or flowers as it leads to disease and scorching problems. In micro sprinkler system,

water under high pressure is forced through nozzles arranged on a supporting stand at about 1 feet height. This facilitates watering at the base level of the plants.



Fogging Mist in Green House

Problem Definition

Protection of a press machine against possible problems, such as

- 1) Over current,
- 2) Overload
- 3) Over temperature
- 4) Over voltage

- Occurring in the course of its operation is very important.
- IMs can be protected using some components, such as timers, contactors, voltage and current relay

2.2.7 Filters and Vanchury for centralized water distribution

Irrigation water used for growing vegetables in urban areas in many low-income countries is contaminated with untreated wastewater. Many wastewater treatment methods are economically prohibitive and continued use of such irrigation water pose health risks for vegetable consumers and farmers. As part of a larger study on possible interventions for health risk reduction, the potential of simple interventions was explored. Column slow sand filters with three levels of sand depths (0.5 m, 0.75 m and 1 m) and fabric filters made of nylon, cotton and netting were assessed. More than 600 water samples were analyzed for helminth eggs and thermotolerant coliforms. Flow rates were also measured. From slow sand filters, 71-96% of helminths and 2 log units (from 7 to 5 log units) of thermotolerant coliforms were removed. Sand depths had no significant influence in the removal.

Lower removal rates were achieved by fabric filters, with an average removal of 12-62% for helminth eggs and 1 log unit for thermotolerant coliforms. Nylon filters had higher removal rates especially for helminth eggs (58%). Average flow rates for sand filters were 3 m per day and fabric filters had steady flows of about 1.5 liters per second, but flow reduced with time in cotton filters. The simple filters tested improved the microbial quality of irrigation water and could easily be used in combination with other interventions to further reduce health risks. The unit cost of the filters tested also appear acceptable to farmers and some incentives like better prices will motivate many farmers to invest in such simple interventions.



Filters and vanchury for centralized water Distribution

3. Water for Domestic Purpose

Domestic water is a basic need for human as well as livestock. The main objective of domestic water supply system is to provide safe and clean water in adequate quantity at reasonable cost. For sustainability, the planning may be required at national level as a whole for policies and subsequently at state or region or at community levels. Lot of waste water is generated specially in urban areas. It is estimated that return flow from urban and rural uses is about 50% of supplies and pollute the very fresh water resources. It is expected that 85 percent of the return flow would go the surface water source and balance 15 percent to ground water source. There are considerable losses in the distribution system on account of leakages due to networks being old and poor maintenance in addition to lack of efforts towards conservation.

3.1 Per Capita Water Requirement

The quantity of water required for domestic purposes depends mainly on habits, social status, climatic conditions and customs of the people. The per capita water requirement in urban areas is more than

that in the rural areas. As per yardstick of the Union Ministry of Urban Development & Poverty Alleviation, water requirement for domestic purposes in urban areas is 40 liters per capita per day (lpcd) in case of supply through public stand posts and 70 lpcd in the case of supply through house service connections, where no sewerage system is existing or is contemplated. Where sewerage system is existing or contemplated, water supply would be 135 lpcd in the urban areas. In the case of metropolitan cities having population of more than 1 million, the domestic water supply would be 150 lpcd. Over and above the aforesaid demand, 15% losses may be allowed for determining the quantity of raw water required.

3.2 Water Audit

In domestic water supply, water audit is considered very important, since treatment of water to bring it to drinking water standard costs a lot of money to the supplier. Water audit helps in determining the amount of water lost from a distribution system due to leakages etc. Water audit compares the amount of water supplied with the amount billed and accounts for the water loss.

3.2.1 Water Measurement

For the purpose of water audit, bulk metering system should be devised zone-wise, including group-consumer-wise in a system or a subsystem. This will facilitate identification of the reaches where actually the wastage of water is taking place. One can determine average daily water use by using one of the following two methods.

(a) Metered Water: In the case of metered water use, per capita per day consumption is to be obtained by dividing water usage by the number of days in the billing period and also by the number of residents of household.

(b) Unmetered Water: If water use is not metered, one must determine water use for each fixture. Flow rates for showers and faucets can be determined by using a container and stop watch to measure the amount of water discharged through the fittings in a minute. Toilet use per flush can be approximated by the capacity of the flushing tank.

3.3 Water Losses and Follow up

There are two types of losses, real and apparent losses. Real loss includes water lost through leakages in distribution systems, service connections, and storage tanks (including overflow). Apparent loss includes meter and record inaccuracies and unauthorized water uses such as theft and

unauthorized connections. Unauthorized/Unmetered uses can be considered a special type of water loss and they can also represent lost revenue and therefore they should be estimated carefully.

4. Action Plan for Water Conservation in SRGC

4.1 water level controller to avoid over flow

Water is very precious for the living beings and scarcity of the same is gradually increasing. Most of the cities in the county and that of the world are facing this problem. This is one of the motivations for the current work and to deploy techniques in order to save water and help the environment which in turn ensures water for the future. Hence, it is of utmost importance to preserve and save water. In many houses there exists unnecessary wastage of water due to overflow from overhead tanks etc. Automatic Water Level Controller can provide a solution to this problem. Present work does not use any microcontrollers etc. The operation of water level controller is based on the fact that water conducts electricity. As the water level rises or fall the sensing probes and circuits of the controller detect the same. These signals are used to switch ON or switch OFF the pump motor as per requirements. This system is used to automate the process of water pumping to over-head tank storage and has the facility to select the level of water to pump. This system is running in **Shri Ram College Muzaffarnagar** preventing water and electricity on every motor.



Automatic Pump Controller



Automatic Water Level Controller

4.2 Rainwater harvesting

Rainwater harvesting (RWH) is **the collection and storage of rain**, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water. **Shri Ram College** is very conscious to conserve the water. We use every technology to save the water.



Water Storing In Tank



Level Measuring In Reservoir

4.3 Ground Water Protection

Ground water resources are getting polluted at an alarming pace due to lack of proper wastewater and sewerage disposal system in urban areas. The application of excessive fertilizers in agriculture sector and disposal of hazardous effluents from the industries are putting great strain on availability of fresh water. **Shri Ram College** brings a technology of Japan to protect ground water and to reuse the waste water.



Recycle The Waste Water



Water Treatment Plant

4.4 Uses of Drip, Sprinklers and Foggers in Garden and Loans

Important action points towards water conservation in the irrigation sector are as follows:

1. Performance improvement of irrigation system and water utilization;
2. Proper and timely system maintenance;
3. Rehabilitation and restoration of damaged /and silted canal systems to enable them to carry designed discharge;
4. Selective lining of canal and distribution systems, on technoeconomic consideration, to reduce seepage losses;
5. Restoration / provision of appropriate control structures in the canal system with efficient and reliable mechanism;
6. Conjunctive use of surface and ground water to be resorted to, specially in the areas where there is threat to water logging;
7. Adopting drip and sprinkler systems of irrigation for crops, where such systems are suitable;
8. Adopting low cost innovative water saving technology;
9. Renovation and modernization of existing irrigation systems;
10. Preparation of a realistic and scientific system operation plan keeping in view the availability of water and crop water requirements;
11. Execution of operation plan with reliable and adequate water measuring structures.
12. Revision of cropping pattern in the event of change in water availability;
13. Utilisation of return flow of irrigation water through appropriate planning;
14. Imparting trainings to farmers about consequences of using excess water for irrigation;
15. Rationalization of water rate to make the system self-sustainable;
16. Formation of Water Users Associations and transfer of management to them;
17. Promoting multiple use of water;
18. Introducing night irrigation practice to minimize evaporation loss;

19. Assuring timely and optimum irrigation for minimizing water loss and water-logging;



Sprinklers & Foggers

4.5 Uses of Sensors Operative automatic taps in SRC

Sensor taps save much more water than regular taps. Sensor taps provide the minimal levels of water consumption because they switch off automatically, like when you are soaping or foaming your hands. Hence this can lead to a cut down of water wastage by up to 70%.



Sensor Based Automatic Water Tap

5. PROFIT – LOSS ACCOUNT OF WATER

It is observed that the college authorities, management, staff and students are quite conscious in using water resources. The management has provided all advance irrigation means like drip, foggers, sprinkles and misters to save as high as 66 percent of water with comparison to open field irrigation. Similarly, a pipe line network for all lawns and gardens is provided instead of open ditches, this is saving as much as 42 percent of water. In toilets low capacity cisterns are provided with

pressure discharge mechanism to save 39 percent of water. Similarly, sucking pumps were provided for floor cleaning instead of washing the floors.

Water is being recycle for rough uses in kitchen to save 28 percent water. At all important places wash hand basins are provided with sensor driven automatic taps to save 24 percent water.

It is observed that very good practices are followed to save the water. The overall figure of saving comes to 34.86 percent.

Typical Use of Water and its saving

1.	Drinking water	24 %
2.	Cooking and other kitchen uses	28%
3.	Washing clothes	10%
4.	Toilets Flushing and House Cleaning	39%
5.	Lawns and Gardens	42%
6.	Farming	66%

6. AWARENESS PROGRAMS FOR WATER CONSERVATION

Water conservation is a key challenge, which requires public participation. Mass awareness on the need for water conservation and providing common tips to effectively participate in this important mission is need of the time. The simple information on typical use of water for domestic purpose and how to save water under this sector, as given below, may help in creating awareness.

Recommended Saving of Water in Hostel

What we do generally	What we are doing in SRC	Saving of water
Bathing with Shower 100liter	Bathing with Bucket 18 liter	82 liter
Bathing with running water 40liter	Bathing with Bucket 18 liter	22 liter
Using old style flush in Latrines 20 liter	Using new style flush 6 liter	14 liter
Shaving with running water 10 liter	Shaving by taking water in mug 1 liter	9 Liter
Brushing teeth with running water 10 liter	Brushing teeth by taking water in mug 1 liter	9 Liter
Washing clothes with running water 116 liter	Washing clothes with bucket 36 liter	80 liter
Washing hands with running tap 10 liter.	Washing hands with mug 0.5 liter	9.5 liter

6.1 Tips in Shri Ram College for Conserving Water for Domestic and Municipal Use

- Timely Detection and repair of all leaks;
- Turning off water tap while brushing teeth;
- Use of mug rather than running water for shaving;
- Avoiding / minimising use of shower/bath tub in bathroom;
- Turning off faucets while soaping and rinsing clothes;
- Avoiding use of extra detergent in washing clothes;
- Using automatic washing machine only when it is fully loaded;
- Avoiding use of running water while hand-washing;
- Avoiding use of running water for releasing ice tray ahead of time from freezer;
- Using smaller drinking glasses to avoid wastage;
- Using over flow stop valve in the overhead tanks to check over flow of water;
- Turning off the main valve of water while going outdoor; • Avoiding use of hose for washing floors; Use of broom may be preferred;

- Minimizing water used in cooling equipment by following manufacturer's recommendations;
- Watering of lawn or garden during the coolest part of the day (early morning or late evening hours) when temperature and wind speed are the lowest. This reduces losses from evaporation.
- Avoiding use of excess fertilizers for lawns in view of the fact that application of fertilizer increases the requirement of water in addition to polluting the groundwater.
- Planting of native and/or drought tolerant grasses, ground covers, shrubs and trees. Once established, they do not need to be watered as frequently and they usually survive a dry period without much watering.
- Grouping of plants based on water needs while planting them;
- Turning off water tap a little before watering time so as to use full water available in hose;
- Avoiding over watering of lawns. A good rain eliminates the need for watering for more than a week.
- Setting sprinklers to water the lawn or garden only, not the street or sidewalk;
- Avoiding installation or use of ornamental water features unless they recycle the water and avoiding running them during drought or hot weather;
- Installation of high-pressure, low-volume nozzles on spray washers;
- Replacement of high-volume hoses with high-pressure, low-volume cleaning systems;
- Equipping spring loaded shutoff nozzles on hoses;
- Installation of float-controlled valve on the make-up line, closing filling line during operation, provision of surge tanks for each system to avoid overflow;
- Adjusting flow in sprays and other lines to meet minimum requirements;
- Washing vehicles less often, or using commercial car wash that recycles water;



Shri **Rajendra Singh** "Jal Purush" Magsaysay awardee addressing on Seminar on Water & Environment: Issue, Challenges & Solutions in Auditorium of Shri Ram College, Muzaffarnagar

It is concluded that Shri Ram College, Muzaffarnagar is observing best practices of water saving. All the stake holders are well aware of the importance of water resources. The college authorities regularly running campaign and awareness drive to save water. They have invested considerably for advanced technologies of water saving.

Remote Terminal Unit Based Motor Controller and Water Level Controllers



SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE)

CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Dated: 01.09.2019

To,

M/s Shri Ram Technologies
Parikrama Marg
Muzaffarnagar

Subject: Installation of Remote Terminal Unit based Motor Controllers and Water Level Controllers.

Dear Sir,

Please refer to your quotation dated 28/8/2019 We are herewith placing an order on you as per following: -

- | | | | |
|----|------------------------------------------------------------------|-------|-----------------------|
| 1. | Remote Terminal Unit based Motor Controllers | 8 Nos | @ Rs-14,589/-
each |
| 2. | Wireless water level controllers with 433 Mhz
frequency range | 8 Nos | @ Rs- 8480/-
each |

Terms & Conditions

1.	Prices are firm in all respect and no escalation in any form or condition shall be given.
2.	100% payment shall be made after completion of the work.
3.	All equipments shall be Warranted for one year from the date of installation.
4.	Prices are exclusive of GST. Which will be paid extra.
5.	Prices are inclusive of complete packing in all respect FOR Muzaffarnagar.
6.	All disputes are subject to Muzaffarnagar (UP) jurisdiction.

Thanking you,

Yours faithfully

(Sankalp Kulkshreshtha)
Secret



TAX INVOICE



SHRI RAM TECHNOLOGIES
 Work office- Parikarmamarg Muzaffarnagar U.P
 (251001)E- mail- shriramtechnologies19@gmail.com
 Tel- +91 9520505060 , +91 8077715112
 GSTIN No. - 09ADYFS7744L1ZU

Billed To	Place of Supply		INVOICE No	Dated
Shri Ram College Muzaffarnagar UP	Shri Ram College Muzaffarnagar UP		SRT/2019-20/033	10-SEP-2019
Description of Services	QTY	Units	RATE	Amount
Wireless water level controller with 433 Mhz frequency range	8	Nos	8,480	67,840
<p><i>Recive & Payed</i></p> <p style="text-align: center;">PAID</p> <p style="text-align: center;">Rs. 99070/-</p> <p style="text-align: center;">Cash/Cheque No. 118950 DL18/9/19</p> <p style="text-align: center;">Bank PNB - JA MZM - SRT</p>			Total (Rupees)	67,840
Taxable Value ADD CG ST 9% SG ST 9%				6,105 6,105
HSN CODE -			Total (Rupees)	80,050
Amount Chargeable (in words) eighty thousand fifty only			Authorised Signatory 	
Bank Detail: SHRI RAM TECHNOLOGIES A/C No. 2514002100018907 IFS CODE PUNB0251400 BANK ADD- PUNJAB NATIONAL BANK MUZAFFARNAGAR				
NOTE - All Disputes are Subject to the Jurisdiction of Muzaffarnagar Courts Only				



TAX INVOICE



SHRI RAM TECHNOLOGIES
 Work office- Parkarmamarg Muzaffarnagar U.P (251001)
 E-mail- shriramtechnologies19@gmail.com
 Tel- +91 9520505060 , +91 8077715112
 GSTIN No. - 09ADYFS7744L1ZU

Billed To	Place of Supply		INVOICE No	Dated
Shri Ram College Muzaffarnagar UP	Shri Ram College Muzaffarnagar UP		SRT/2019-20/050	14-OCT-2019
Description of Services	QTY	Units	RATE	Amount
Remote Terminal Unit based Motor Controller	8	Nos	14,589	1,16,712
			Total (Rupees)	1,16,712
				10,504
				10,504
				1,37,720
HSN CODE - Amount Chargeable (in words) One lakh thirty seven thousand seven hundred twenty only Bank Detail: SHRI RAM TECHNOLOGIES A/C No. 2514002100018907 IFS CODE PUNB0251400 BANK ADD- PUNJAB NATIONAL BANK MUZAFFARNAGAR				Total (Rupees) 1,37,720
NOTE - All Disputes are Subject to the Jurisdiction of Muzaffarnagar Courts Only				Authorised Signatory

*Received
Pranay*

PAID
 Rs. ~~1,37,720/-~~
 Cash/Cheque No. ~~118987~~ 0122/10/19
 Bank ~~PUNB-INDIA-SRI~~



GSTIN : 09AALFM3414F1ZD

Original For Buyer

TAX INVOICE**KRISHNA TRADERS**43-B, NEW MANDI, MUZAFFARNAGAR (U.P.) 251001
Tel.: 9319372705 email : krishnatraders1983@gmail.comInvoice No. : B-2251/ 2018-19
Date of Invoice : 19/02/2019
Place of Supply : Uttar Pradesh (09)
Reverse Charge : N
GR/ RR No. :Transport : 9358734984
Vehicle No. : UP12AT6039
Station :
E-Way Bill No. : 411051573412**Billed to :**SHRI RAM COLLEGE
PARIKRAMA MARG, MUZAFFARNAGAR
UTTAR PRADESH - 251001, INDIAParty E-Mail ID :
Party Mobile No. : 9837793050 SANKALP
GSTIN / UIN :**Shipped to :**SHRI RAM COLLEGE
PARIKRAMA MARG, MUZAFFARNAGAR
UTTAR PRADESH - 251001, INDIAParty E-Mail ID :
Party Mobile No. : 9837793050 SANKALP
GSTIN / UIN :

S.N	Description of Goods	HSN/SAC Code	Qty.	Unit	Price	CGST Rate	CGST Amount	SGST Rate	SGST Amount	Amount (₹)
1.	POLO SWAN NECK SENSOR FAUCET (AUTOMATIC)	691090	5.000	Pcs.	13940.70	9.00%	6273.32	9.00%	6273.32	82,250.00
2.	ESSZ WALL TILES	6907	2.000	Box	225.00	9.00%	40.50	9.00%	40.50	531.00

Grand Total **7.000** Units

₹

82,781.00

HSN/SAC	Tax Rate	Main Qty.	Main	Taxable Amt.	CGST Amt.	SGST Amt.	Total Tax
6907	18%	2.000	BOX	450.00	40.50	40.50	81.00
691090	18%	5.000	Pcs	69,703.50	6,273.31	6,273.31	12,546.62
Totals		5.000		70,153.50	6,313.81	6,313.81	12,627.62

Rupees Eighty Two Thousand Two Hundred Fifty Only**Terms & Conditions**

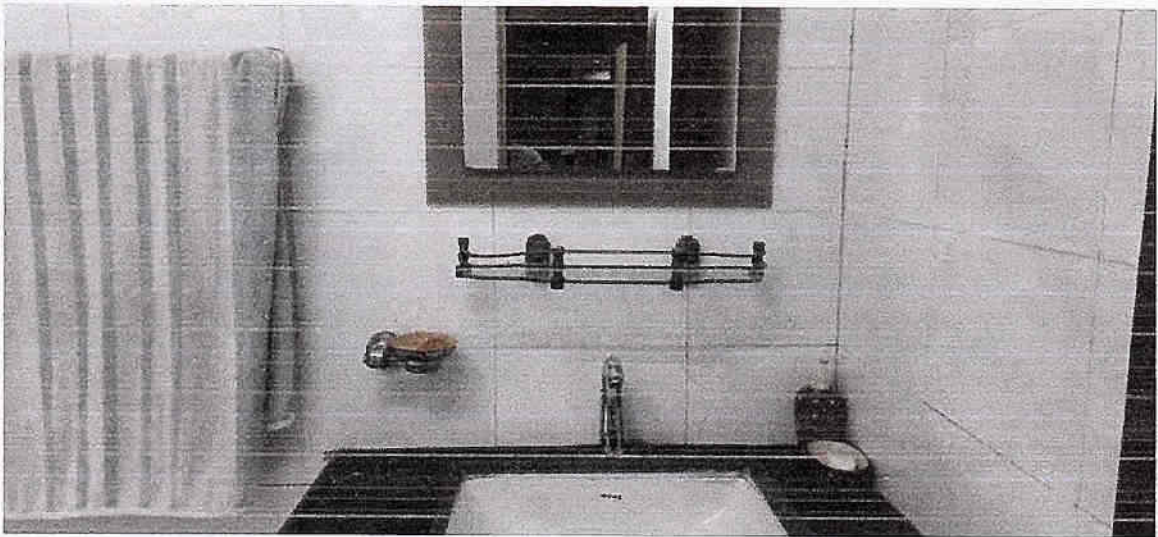
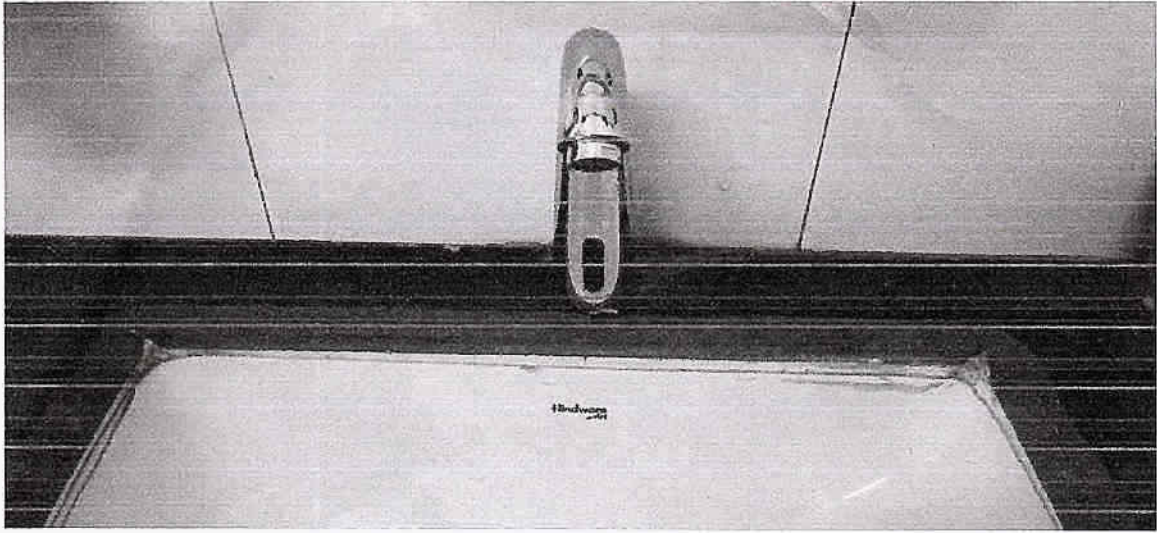
E.& O.E.

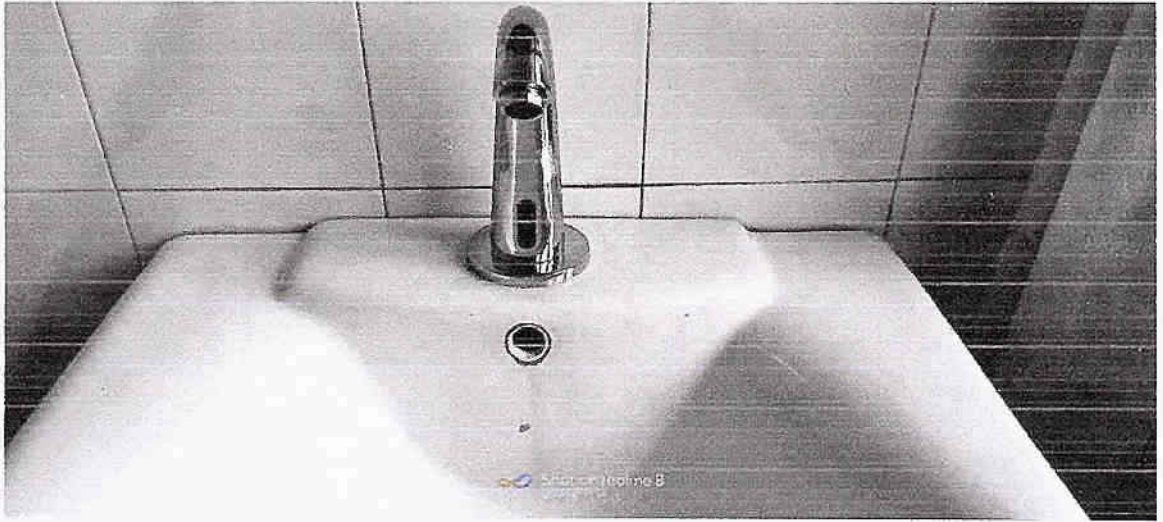
1. Goods once sold will not be taken back.
2. Interest @ 18% p.a. will be charged if the payment is not made within the stipulated time.
3. Subject to 'MUZAFFARNAGAR' Jurisdiction only.

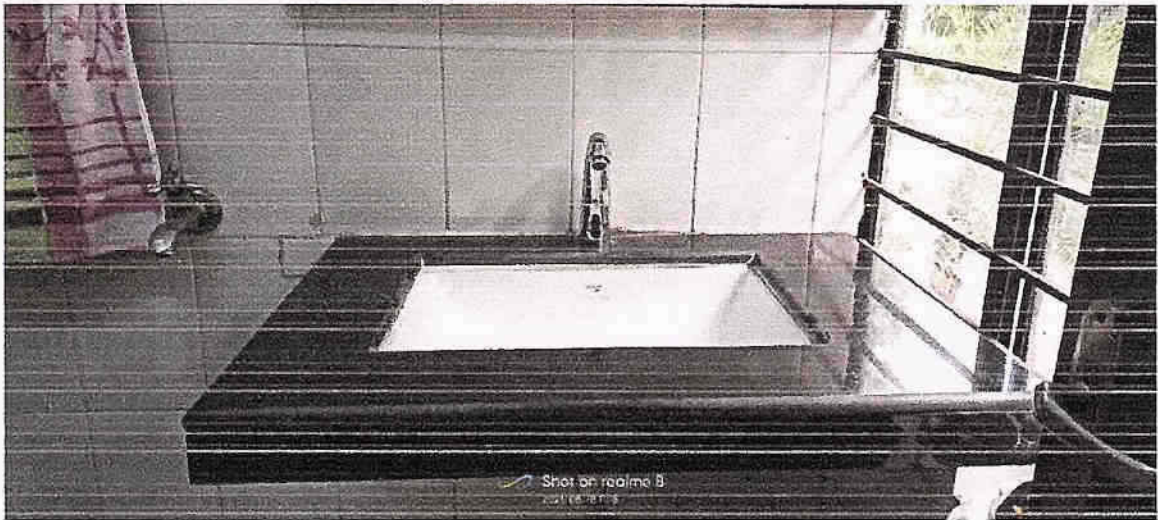
Receiver's Signature :

For KRISHNA TRADERS

Authorised Signatory









Shri Ram Technologies

Parikrama Marg, Muzaffarnagar - 251002

+91-9719199847, 9837027475, 8077715112

Email @: shriramtechnologies19@gmail.com Website: www.shriramtechno.com

Dated: 28.08.2019

To,

The Director/ Secretary
Shri Ram College,
Muzaffarnagar

Subject: Supply & Installation of Remote Terminal Unit based Motor Controllers and Water Level Controllers.

Dear Sir,

Kindly refer to your quotation enquiry dated 06.06.2019. We offering the following equipments for controlling the water level flows automatically: -

- | | | |
|-----------------------------------------------------------------|-------------------|-------|
| 1. Remote Terminal Unit based Motor Controller | @14,589/-
each | 8 Nos |
| 2. Wireless water level controller with 433 Mhz frequency range | @ 8480/-
each | 8 Nos |

We assure you that by providing the above mentioned devices there will be not less than 20% saving of motor running period, energy consumption and water watages.

All terms and conditions are enclosed herewith alongwith technical proposal. The work shall be excuted within one month of confirmed the order.

Looking for this valueable order from you.

Thanking you,

Yours faithfully

Sangeet Grover
(Sangeet Grover)
Partner

Encl: As Above

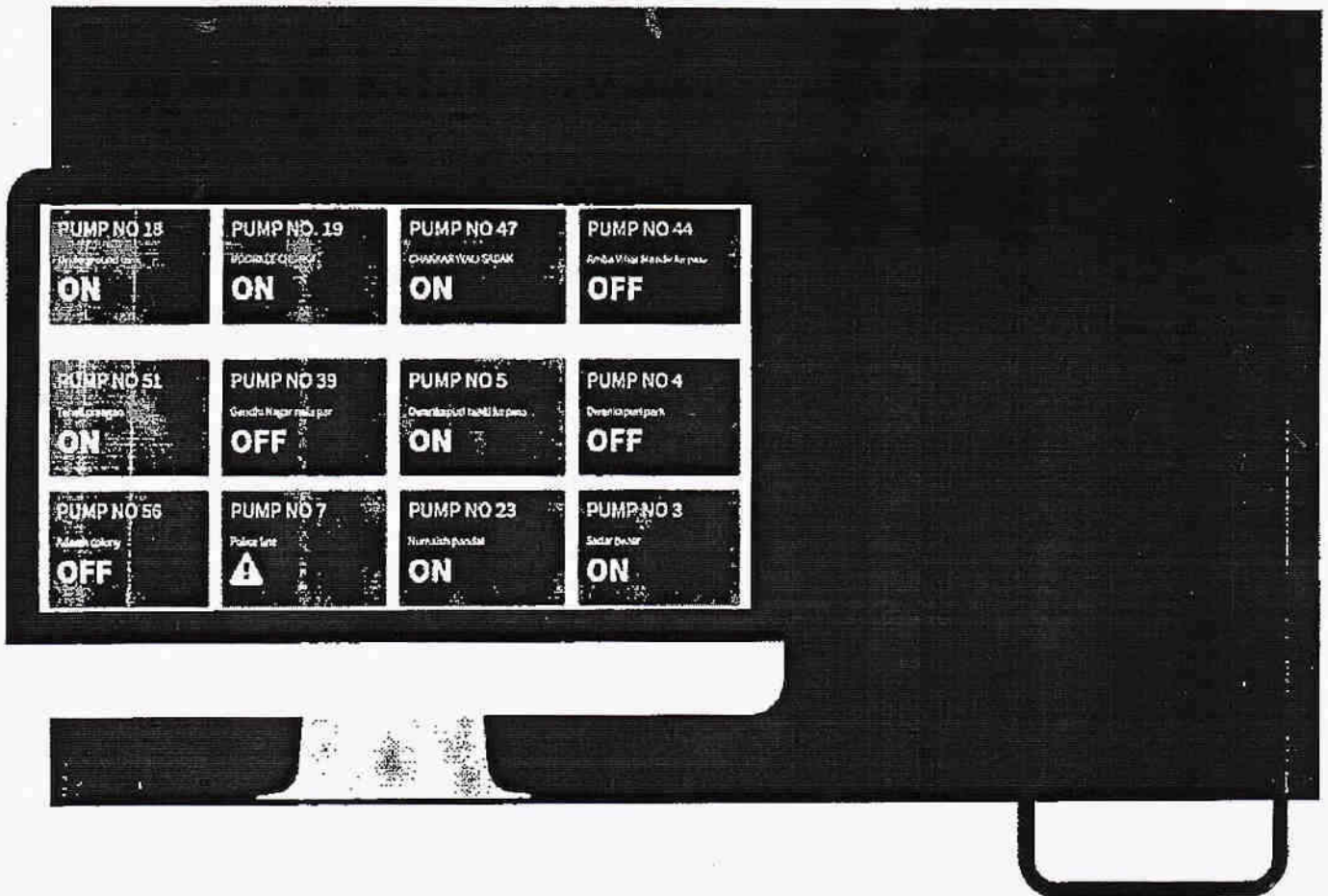




Shri Ram Technologies

Parikrama Marg, Muzaffarnagar-251002

Proposal for Saving of Water Pump running period,
Energy and Water Wastage by Providing
RTU based Technology in campus of
Shri Ram College, Muzaffarnagar

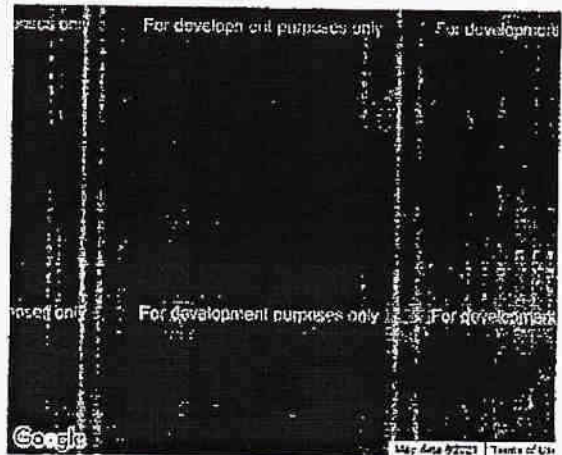
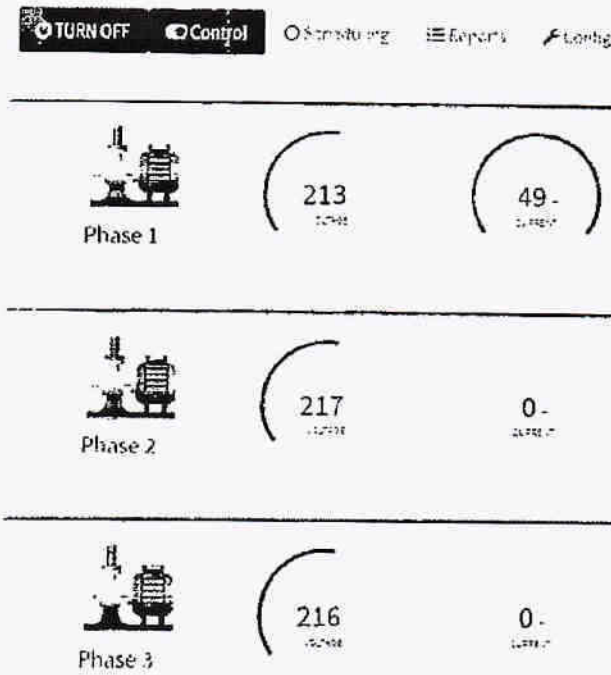


SOFTWARE AVAILABILITY

YOU CAN WATCH EACH MOTOR MOMENT AND OPERATIONS ON JUST A SINGLE SCREEN, OUR SOFTWARE AVAILABLE FOR BOTH TYPES OF DEVICES
DESKTOP AND MOBILE

GET REAL-TIME EACH PHASE VOLTAGE AND CURRENT VALUE.

⚡ PUMP NO 18 (Underground tank):



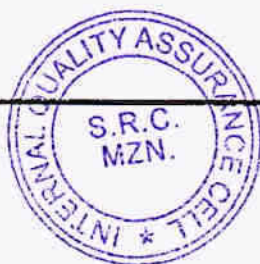
VOLTAGE AND CURRENT

Here you can see live how much voltage and current on each phase of the motor.

as you can see our software shows:
PUMP NO. 18

Voltage:
phase 1- 213v
phase 2- 217v
phase 3- 216v

Current:
Phase 1- 49A
Phase 2- 0A
Phase 3- 0A



SET MOTOR TIME SCHEDULE

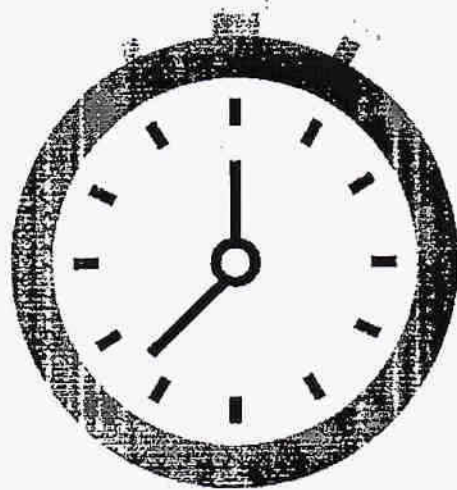


TIMER

Here you can set the time schedules, which your motor will turn ON and OFF, you can maximum of 10 schedules set for each motor.

as you can see one of the examples set on the upper software screen short, here is 2-time schedules that are set for this motor.

one is Set 5:00 AM to 12:00 PM
Second is Set 16:00 Pm to 20:00 Pm



CHECK LIVE! DATA

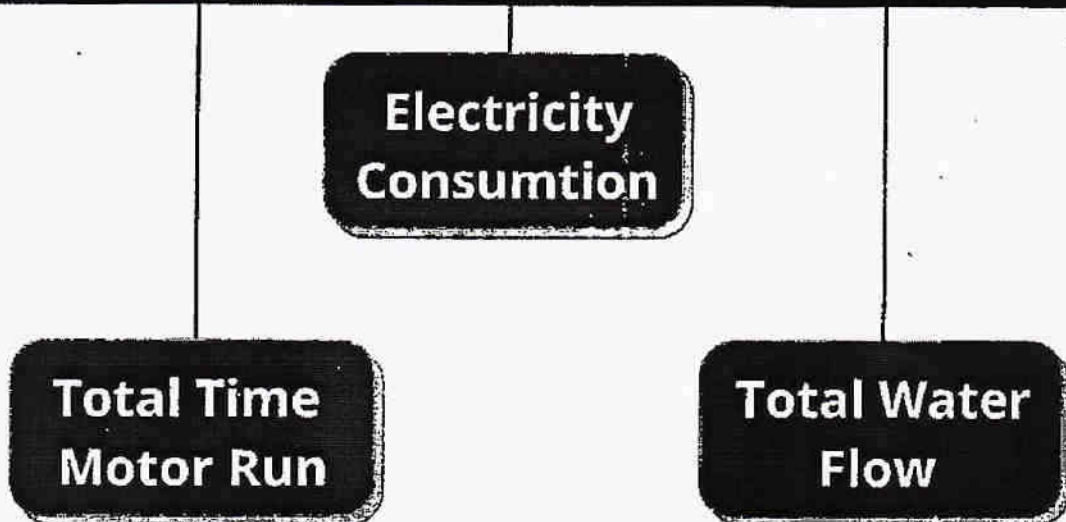
with help of our SCADA based system, you can monitor, total **minutes** of the motor run, how much **electricity unit** consumed by the motor, and also how total litre **water flow** per days by a single motor.

here below the actual motor data shows.

Monthly Report

March, 2021 [Get Data](#) [Export](#)

Total Run (minute)	Total power used (units)	Total water flow (litres)
669	115.158	13520120
856	113.193	13593218
659	111.144	13337316
552	97.5164	11713970
639	106.326	12999126
854	110.609	13273082
450	75.8569	9078528
442	75.8974	9107686
669	110.705	13284650



MOTOR HIGH/LOW VOLTAGE PROTECTION!

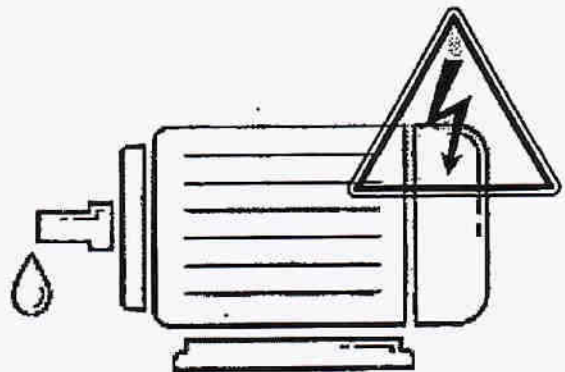
Parameter	Status	Min - Max	Multiplier	Action
Voltage(-)	Enabled	0210 - 0260	0052	<input type="button" value="Edit"/>
Voltage(+)	Enabled	0210 - 0260	0052	<input type="button" value="Edit"/>
Voltage(R)	Enabled	0210 - 0260	0052	<input type="button" value="Edit"/>

WITH THE HELP OF OUR DEVICE, YOU CAN SET THE **MAXIMUM AND MINIMUM VOLTAGE VALUE,**

Example **Voltage(R)**

Here is mini Voltage is 210v and max 260v, if motor voltage(R) going to below set mini voltage 210v. in this case, supply to the motor is stopped.

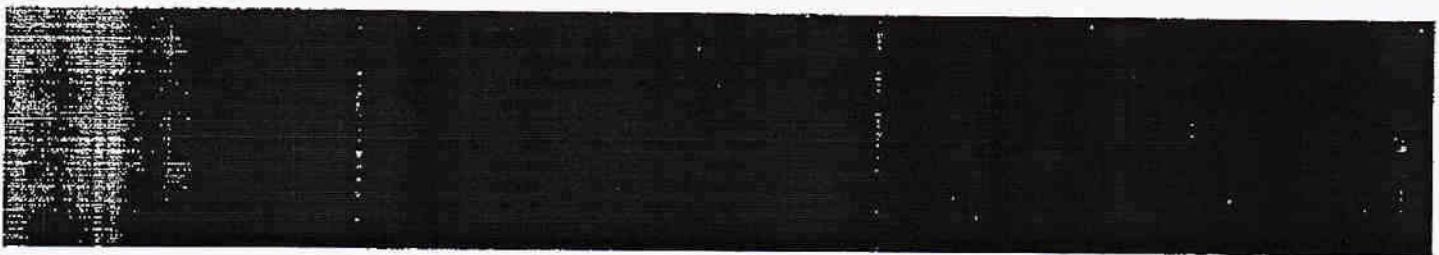
as same if voltage going to higher than set voltage 260v, supply to the motor is stopped also.



MOTOR HIGH/LOW CURRENT PROTECTION



Current(R)	Enabled	0044 - 0050	0232	Edit
Current(Y)	Disabled	0005 - 0010	0067	Edit
Current(L)	Disabled	0005 - 0010	0067	Edit

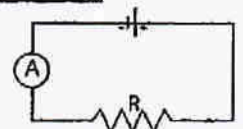
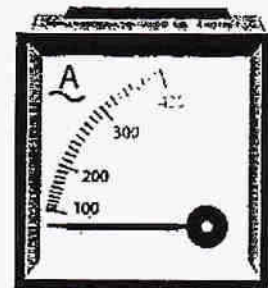


WITH THE HELP OF OUR DEVICE, YOU CAN SET THE MAXIMUM AND MINIMUM CURRENT VALUE.

Example Current(R)

Here is mini Current is **44A** and max **50A**, if motor Current going to below set mini Current **44A** value, in this case, supply to the motor is stopped.

as same if Current going to higher than set Current **50A**, supply to the motor is stopped also.



IMBALANCE VOLTAGE PROTECTION!

BETWEEN 2 PHASE IF A HUGE VOLTAGE DIFFERENCE COMES IS CALLED IMBALANCED VOLTAGE WHICH CAN DAMAGE THE MOTOR WINDING.

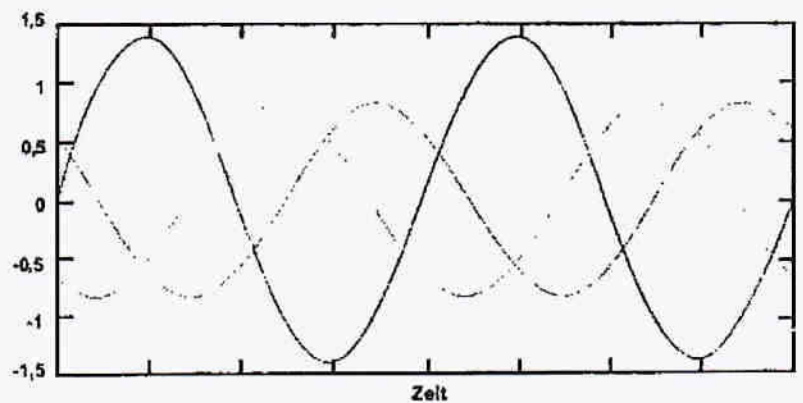
Imbalance voltage(R-Y)	Enabled	0000 - 0010	0000	Exit
Imbalance voltage(Y-B)	Enabled	0000 - 0010	0000	Exit
Imbalance voltage(B-R)	Enabled	0000 - 0010	0000	Exit

3 phase use to operate the motor, each single-phase have the same voltage. But if between any two-phase voltage difference is not correct, then the motor will damage in this case.

here is we providing the protection limit.

Example: imbalance(R-Y)

Here is Voltage difference is 10V, which means if the voltage between R-Y is more than 10V, then the power supply to the motor is stopped, and save the motor from damaged.

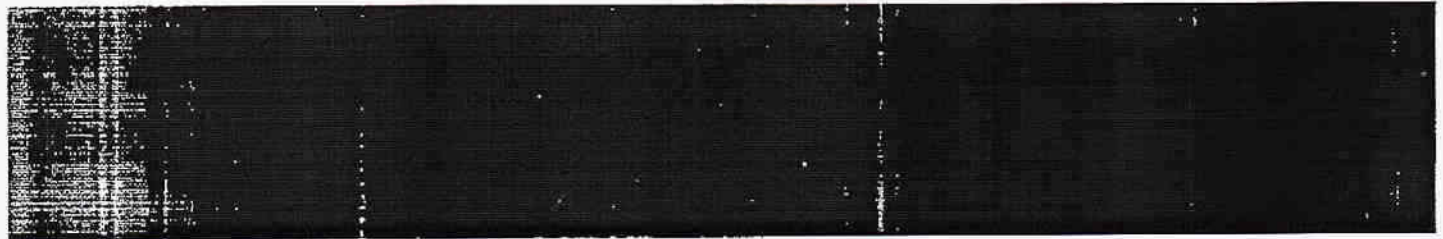


IMBALANCE CURRENT PROTECTION!

BETWEEN 2 PHASE IF A HUGE CURRENT DIFFERENCE COMES IS CALLED IMBALANCED CURRENT WHICH CAN DAMAGE THE MOTOR WINDING.



imbalance current(R-Y)	Disabled	0000 - 0002	0000	<input type="button" value="Edit"/>
imbalance current(Y-B)	Disabled	0000 - 0002	0000	<input type="button" value="Edit"/>
imbalance current(B-R)	Disabled	0000 - 0002	0000	<input type="button" value="Edit"/>

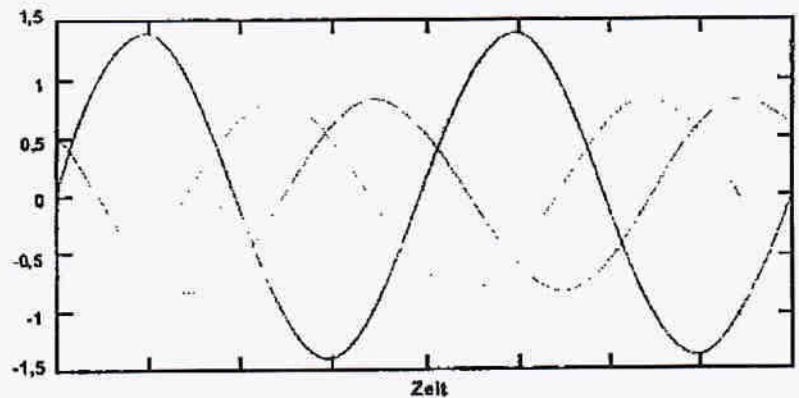


3 phase use to operate the motor, each single-phase have the same Current value. But if between any two-phase Current difference is not correct, then the motor will damage in this case.

here is we providing the protection limit.

Example: imbalance(R-Y)

Here is the Current difference is 2A, which means if the Current between R-Y is more than 2A, then the power supply to the motor is stopped, and save the motor from damaged.



TECHNICAL FAULT

THE FAULT THAT COMES FROM OUTSIDE OR INSIDE MOTOR ROOM

Technical fault(R)

Edit

Technical fault(Y)

Edit

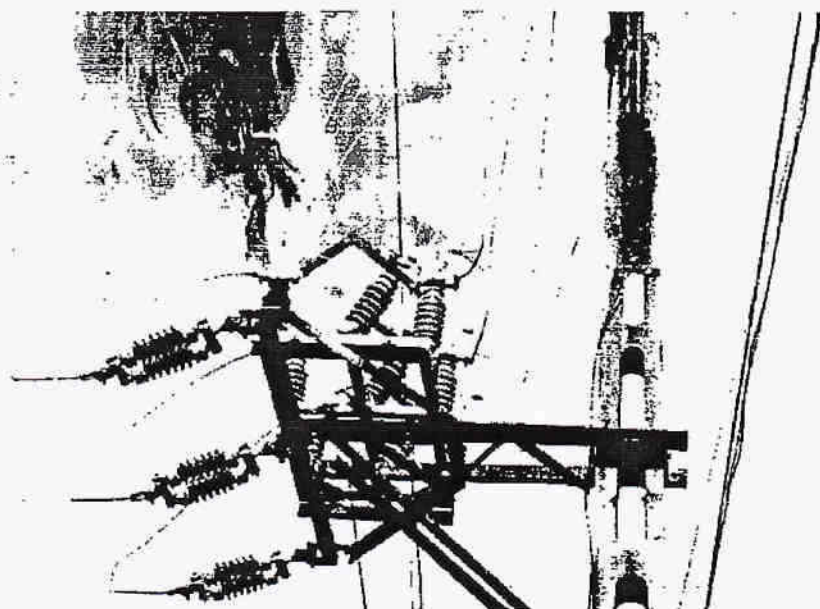
Technical fault(B)

Edit

TECHNICAL FAULT
(R)

TECHNICAL FAULT
(Y)

TECHNICAL FAULT
(B)

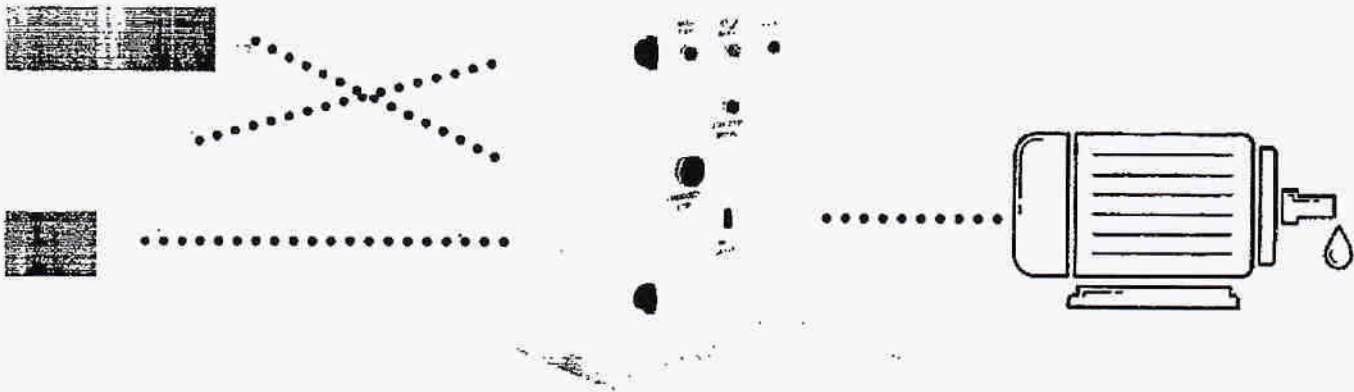


in technical fault, all types of fault come like, sparking, loose wiring, heating device, unwanted supply etc.



PHASE CHANGE PROTECTIONS

IN CASE THE PHASE CHANGED, THE MOTOR WINDING WILL BE DAMAGED, MOST OF THE TIME MOTOR DAMAGED BY PHASE CHANGES.



The phase change is the biggest issue for motor, it will happen due to some outside wiring issues, manual wiring Changed, or some other wiring pole issues.

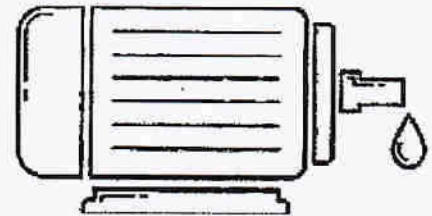
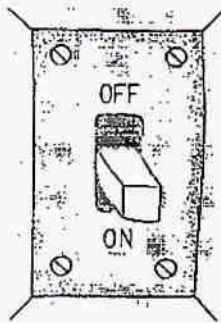
when phase changed motor may run a reverse or maybe high probability of damaged the motor winding

After using our device which has phase change protections, protect the motor from damaged, when phase changed, our system will automatically stop the supply to the panel and motor, and protect the motor from damaged.



DIRECT MOTOR ON/OFF

THIS THE SIMPLEST AND THE VERY IMPORTANT PART OF THE DEVICE.



⚡ PUMP NO 18 (Underground tank)



we can turn on and off any motor with help of our software and device from the control room which we set up.

we can use this also any emergency time or some other reasons, which saves lots of water and electricity, because it's happened in just second, not like man work type, which actions take after 4-5 hours, after getting the emergency news.

TURN ON AND OFF THE MOTOR FROM THE SOFTWARE



MOTOR REPORT



**GET A DAILY AND MONTHLY
MOTOR REPORT OF EACH
MOTOR.**

want to investigate, how much time motor run at that specific day and time, water flow and unit consumed, get the data just in few second

this type of facility does not get In manual power.

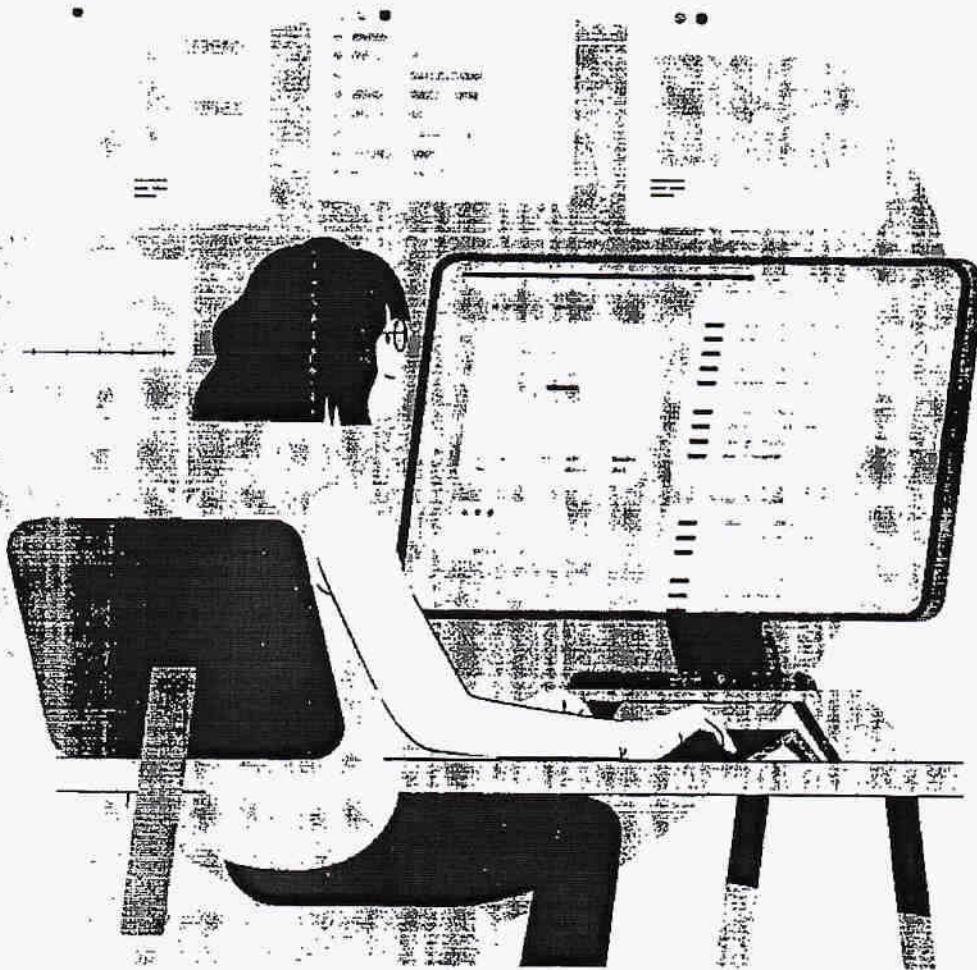
now no one can lie to you, about the motor is switched ON and OFF that time.



EVERYTHING CONTROL FROM OUR DESIGNED SOFTWARE

ITS CALLED

SCADA SOFTWARE



CONTROLLING

ALL SOFTWARE CONTROL BY OUR TECHNICAL STAFF, WHICH IS AVAILABLE IN THE CONTROL ROOM.

WHERE YOU CAN ASK THE DATA ABOUT ANY MOTOR OR CHANGES AS YOU WANT ANY TIME OF ANY MOTOR.

Construction of tanks and bunds for Waste Water Treatment

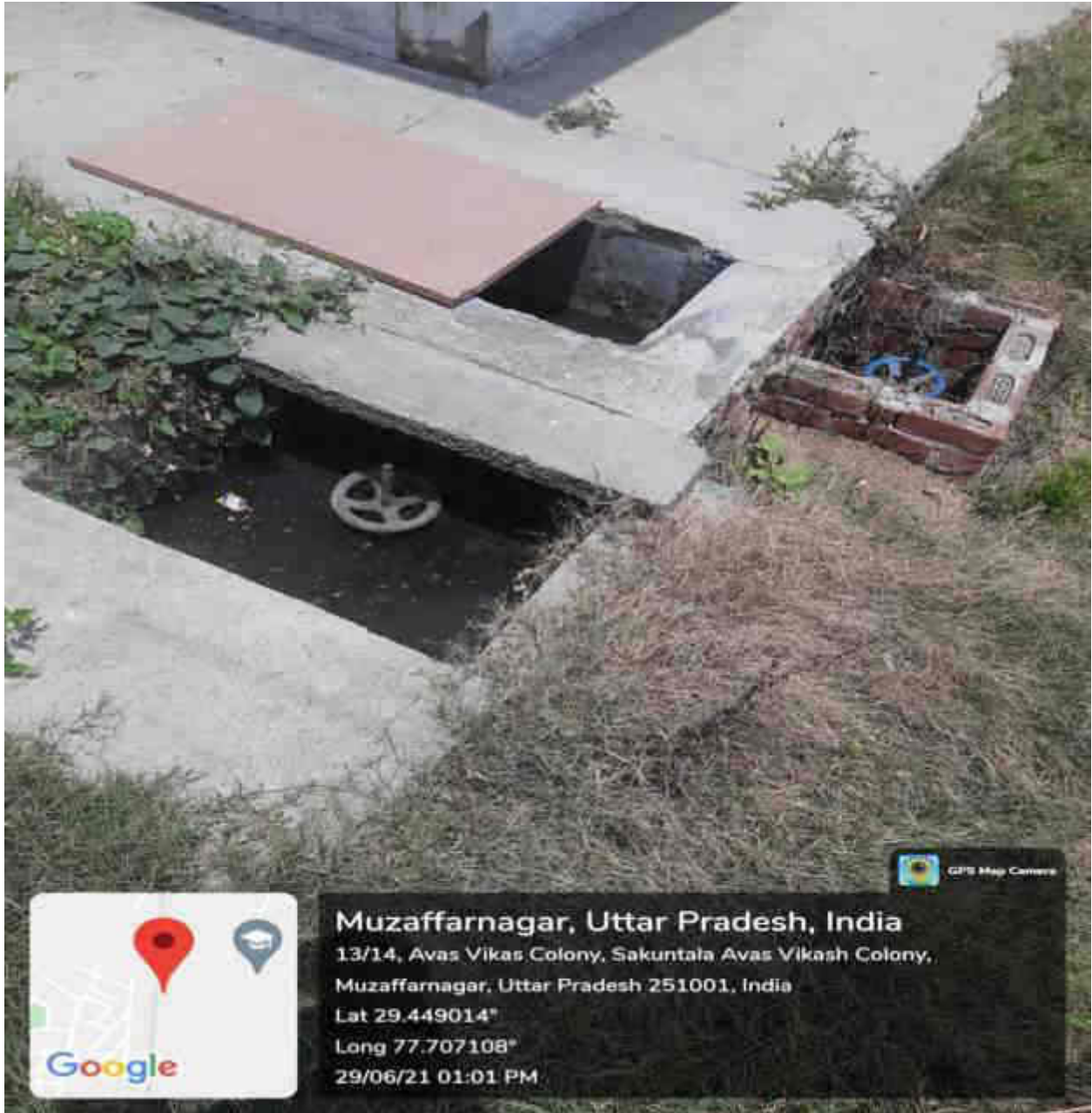




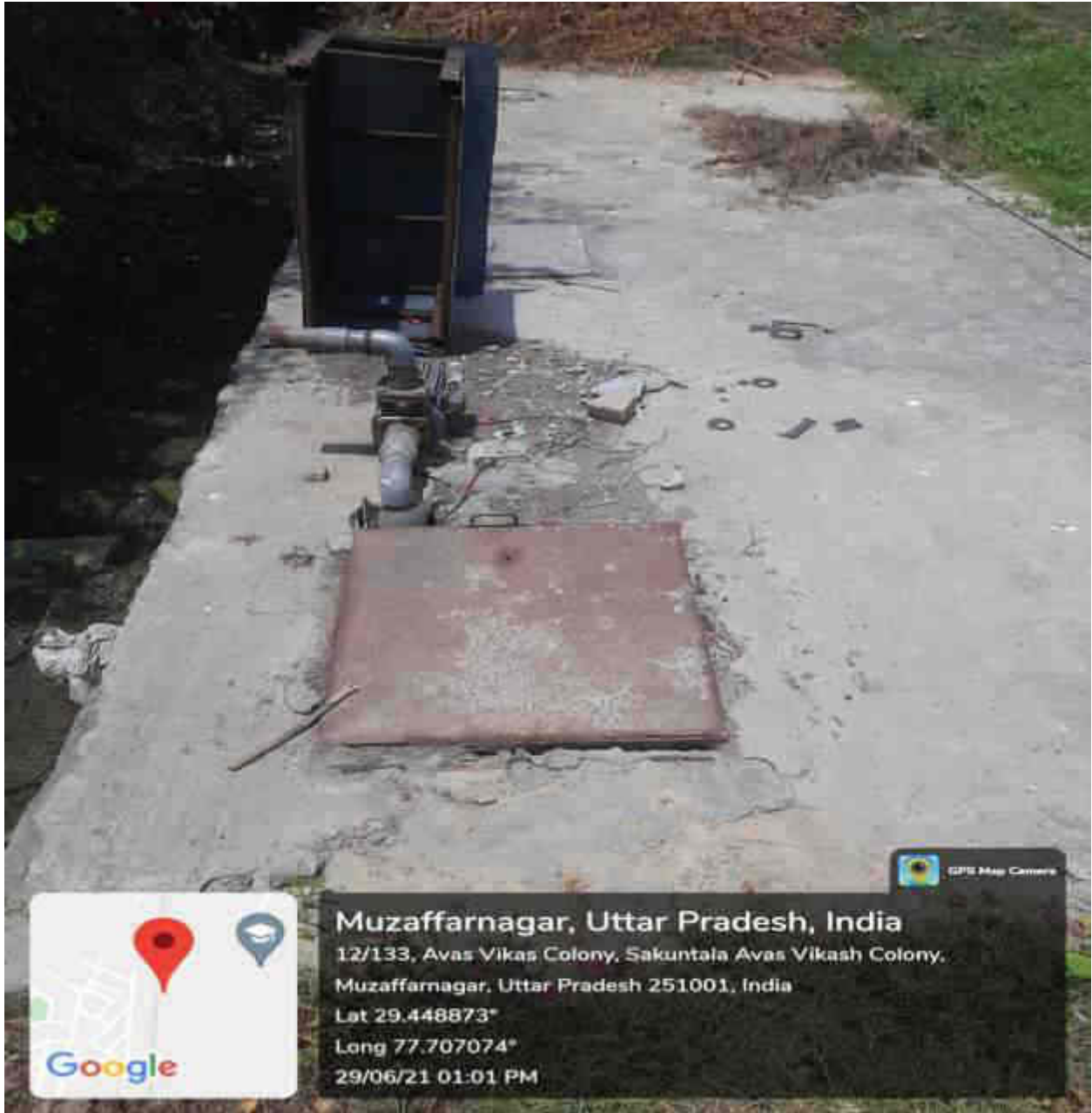




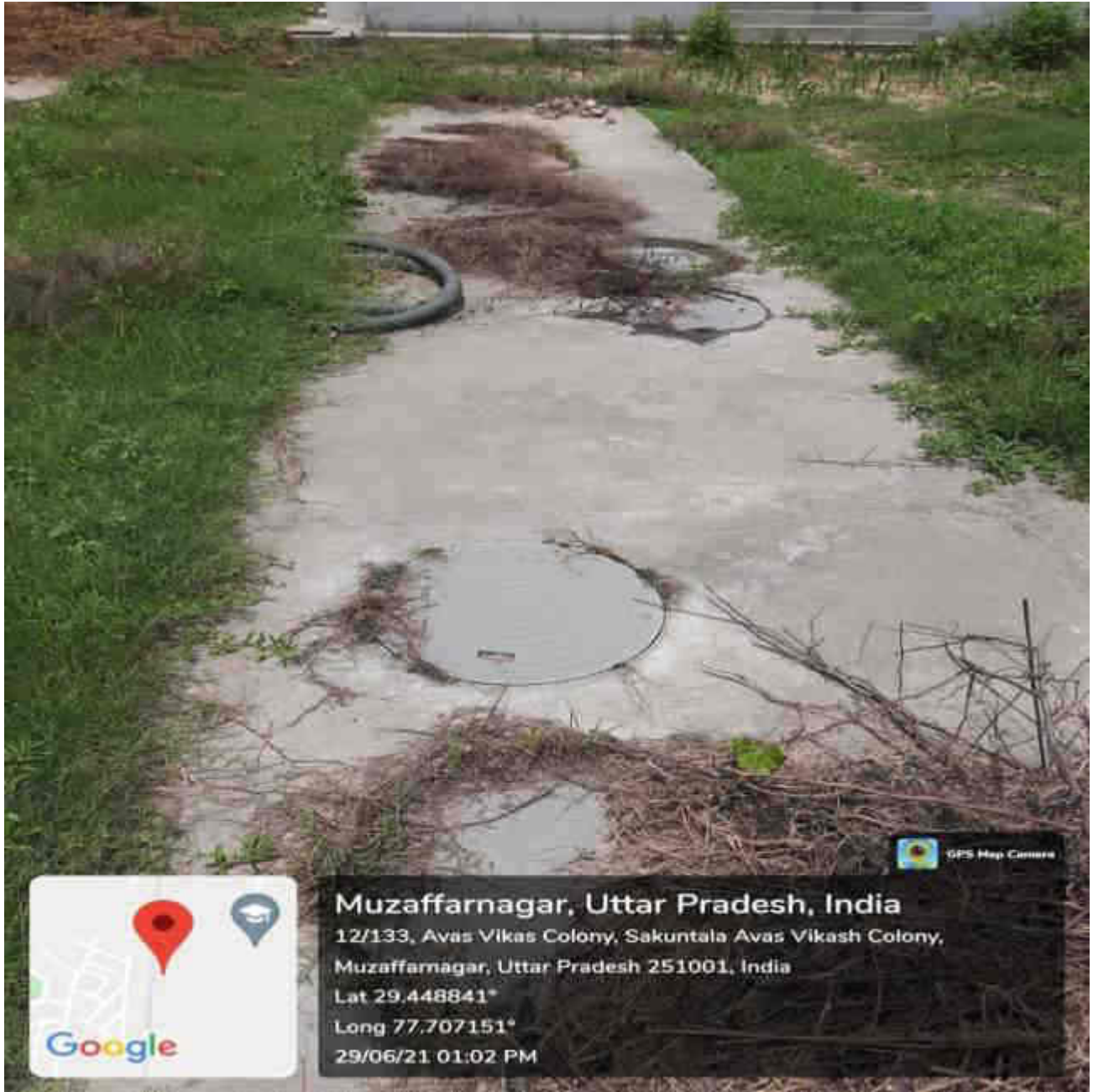




Waste water Storage Tank



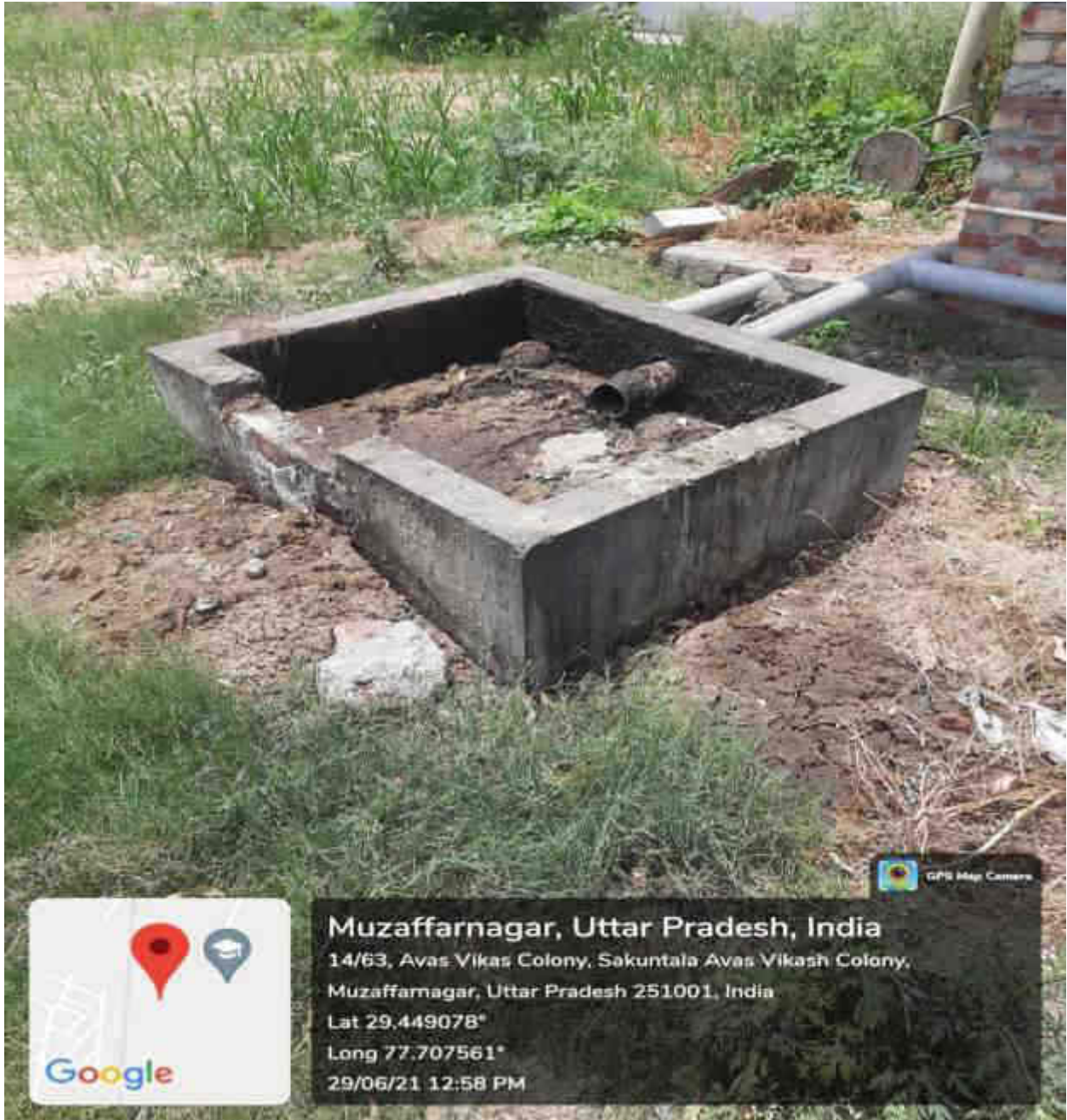
Waste water Storage Tank



Waste water treatment Project



Digital Water level Recorder



Waste water used for plants