

Water Audit: An entrepreneurship opportunities for women in textile sector

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Abstract:

Water audit is the methodology for reducing the unnecessary water usage by quantifying water flow of complex systems. Water audit identify water use point at each and every location and quantify of water used and unaccountable water losses and leaks. Possible potential of alternative source of water can be identified by water audit. It is water conserving and money saving approach. Principle of water audit is correlated with environment auditing, environment management system, resources conservation and legal frame work. Water audit is significant way for minimizing losses and optimizing various uses. In spite of economic advancement, India's gender balance in entrepreneurship remain lowest in the world. This paper approach that how sustainable and economic benefits can be achieved by women entrepreneur and industrialist through water audit and water conservation. This paper is encouraging female for ownership in solving innovative and green issues in textile sector.

Key words: water audit, water conservation in textile, women entrepreneurship in textile

INTRODUCTION:

Women as a textile Entrepreneur:

Textile is one of largest and oldest sector of India. Textile sector contribute 5% of Indian GDP and second largest employer. Indian technical textile offer wide opportunities for business for small and medium entrepreneur and play vital role in terms of employment, development and economic growth needs assistance from government. Textile sector is still unexplored by Indian women entrepreneur. Women should explore the possibilities of starting new venture. Development of women entrepreneurship can be considered as a possible area to economic development of women [1].

Development of women entrepreneur is one of most important area in the India. According to fobs magazine, India is great place for women entrepreneur. Currently men is dominated in auditing field than women, gender gap is main contributing factor for imbalance. This is major challenge in our profession. Obligation by family, motherhood and other social factors are major factors for hindrance of women advancement. By attractive scheme and support by government and nongovernmental organization this challenges can be overcome.

Ministry of textile (MOT) has released 9000 crore to textile industry under the textile upgradation scheme (TUFS) in the workshop for women entrepreneurs organized by FICCI. Research and development activity in technical textile is also wide area for Women entrepreneur. Beside it water audit, as Indian ruler area is based on agricultural activity agro-tech and geo-tech are developing areas for textile entrepreneur. The Ministry of Textiles, Government of India, Maharashtra Government and SIDBI has launched various financial schemes for women to start their business and help existing entrepreneurs to expand their business. Major aim of this paper is this paper is to growth and development of women entrepreneurship in the field of textile.

WATER AUDIT:

Water is basic need for human and animals. As water is free, people are wasting water excessively without seeking future consequences [2]. World's water resources are under major threat due to continuous population growth and shifts. Fundamental factor for man's benefit is development of water resources. To avoid water scarcity it necessary to utilize existing water resources by appropriate and efficient way. Major factor for unbalancing of source v/s demand is industrial pollution, climate change, and construction of cities in dry region and evolution of civilization. [3]

Water is widely used in textile industry. The amount of water consumption is depended on type of manufacturing process, equipment used and management practices. [4].

Textile process used extensive amount of water and subsequently produces high discharge rate of effluent with higher pollution load. Textile manufacturing comprising desizing, scouring, bleaching and mercerizing which use aqueous system. Textile industries caused significant environmental issues due to high water demand [5].

Table-1

Water Consumption by Textile Industry in Various Processes

SubstrateWater consumption (kg/kg of fabric)

- Cotton250-350
- Wool200-300
- Nylon125-150
- Rayon125-150
- Polyester100-200
- Acrylic100-200

Cotton industry require highest amount of water compare to other industry.

Table-2

Water Consumption Pattern in Textile Mills

ProcessWater consumption (% of total)

- Bleaching, Finishing38
- Dyeing16
- Printing8
- Boiler House14
- Humidification (spinning)6
- Humidification (weaving)..... 9
- Sanitary, Domestic etc..... 9

Among the all textile process dyeing, bleaching and finishing are highest water consuming processes. Beside textile processing water is also used for steam generation in boiler. Some part of textile industry uses excess water like washing and leakage processes [4].

Textile industry is one of major contributor of water pollution in the globe [6]. Textile processing based on high water and energy demand and textile waste water is characterized by higher dissolved and suspended solids, colour, chemical oxygen demand, nitrogen, phosphorous and heavy metals [7].

Textile effluent is containing not only dyes, it also contain salts, chelating agents, by products and surfactants [8]. Textile treated effluent can be used in many production area of textile industry [9].

According to the literature, sustainable development is “socially responsible economic development” that conducted without effecting the environmental resources for the benefit of future progeny”. However for achieving goal of sustainable development, industrial processes require huge changes. Industrial sector have to adopt cleaner production approach for their economic growth.

Water conservation is significant concern across globe especially for industrial sector. Water conservation approach is now emerged as a zero discharge concept where no water is discharged from any of industrial process. Auditing is analytical and sustainable tool. Control of water losses by water auditing is represent the efforts of increasing potential of water utilities in the operations to decline high water demand. [10].

Audits are carrying out for getting real and valid information as well as we can get detail about internal system control. Water audit is a tool to categorized water usage of a system. Water shortage, pipe leakage, and physical losses problems can be overcome and previous resources can be saved by water audit [3].

Water audit is carrying out periodic exercise that provide guidance of water utility losses and give direction of improvements. it is significant step of water conservation by optimizing operation of distribution system [11].

Water wastage is critical problem in India this enforces necessity of water audit for quantitative study of whole system. Water audit give detail analysis of supply system and users. It is efficient management technique and significant approach for water conservation. It decline usage of nonrevenue water. Water audit also gives necessary measures for future [12].

WATER AUDIT METHODOLOGY:

Water audit is systematic analysis of qualitative as well quantitative water usage to identify reducing, reusing and recycling of water. Water Audit is carrying out according to below cycle.



https://www.google.co.in/search?q=water+audit&source=lnms&tbm=isch&sa=X&ved=0ahUKewiErvr9n5HaAhUKO48KHbyhDCEO_AUICigB&biw=1280&bih=623&dpr=1.5#imgrc=kPiy7dmuXOmnsM:

Water flow diagram are prepared to present types of water used and identify direction of flow in the industrial site. Water balance is major factor for categories and quantify water usage. All the use of water is equal to amount of input water in water balance scheme. Inflow and outflow water in each

component starting from water distribution system to water treatment plan is studied for identify possible sources of unaccountable water and minimizing excess water usage.

First step of methodology is source evolution for determining system inputs. Second step is calculation of authorized consumptions by calculating revenue water which is made of metered and non- metered consumption. Nonrevenue water is due to inaccurate metering and unauthorized use. Third step is evaluate apparent and real losses. Apparent loss occurs due to inaccurate flow measurement, water accounting error and unauthorized usage while real losses are physical escape of water from the distribution channels like leakage and overflow. The amount of water that is pumped in the system is addition of authorized use plus water losses. Huge amount of water loss occur due to real losses. Reducing real water losses create additional water resources which reduces operating cost which reduction in apparent losses increase revenue but not create additional water resources. Survey of Leak detection is based on system maps, pipe inventory and repair history. Final step of audit is performance measurement in which collected data are interpreted. Metering statistics and metering accuracy, operation efficiency data play vital role in water audit accountancy [13]. Goal and progress made by audit system can be understand by this method.

AWWA Water Balance

		Billed Authorized Consumption	Billed Metered Authorized Consumption Billed Unmetered Authorized Consumption	REVENUE WATER
SYSTEM INPUT VOLUME	Authorized Consumption	Unbilled Authorized Consumption	Unbilled Metered Authorized Consumption Unbilled Unmetered Authorized Consumption	NON REVENUE WATER
	Water Losses	Apparent Losses	Consumption metering errors Unauthorized consumption	
		Real Losses	Leakage/overflow at service reservoirs Leakage from trunk mains Leakage from distribution mains Leakage from service connections	

REAL LOSS REDUCTION

([https://www.google.co.in/search?biw=1280&bih=623&ibm=isch&sa=1&ei=hbe8WdXNInbvASgyLXYAw&q=water+audit+methodology&og=water+audit+methodo&gs_l=psy-ab.3.0.0i24k1.20639.23358.0.25451.10.6.0.4.4.0.279.695.2-3.3.0...0...1c.1.64.psvab...3.7.853...0j0i30k1j0i5i30k1.0.1726HL490pA#imgrc=F3qW4WwKT32n7M:\)](https://www.google.co.in/search?biw=1280&bih=623&ibm=isch&sa=1&ei=hbe8WdXNInbvASgyLXYAw&q=water+audit+methodology&og=water+audit+methodo&gs_l=psy-ab.3.0.0i24k1.20639.23358.0.25451.10.6.0.4.4.0.279.695.2-3.3.0...0...1c.1.64.psvab...3.7.853...0j0i30k1j0i5i30k1.0.1726HL490pA#imgrc=F3qW4WwKT32n7M:)))

WATER AUDIT AS A CONSERVING TOOL:

Water audit is type of water conservation technique. For conservation of water-recycling of water as well as waste water, water leakage removal and reduction of water losses carried out.

Water Audit is detail study of layout of water sources, distribution channels and delivery networks with flow measurement device of user site and return flow of effluent. Water sources and consumption pattern are useful tool for deciding present scenario of water usage, leak assessment and projecting future extension, renovation and motorization of system. Regular monitoring of systems are useful to find out possible contaminants in supply, reduces pollution load of waste water treatment plant and also useful for economic development. Water audit often give corrective actions with short payback period that is beneficial for saving of ongoing utility. Water Audit leading to close water cycling concept in which instead of discharge, water is reused and recycled wherever possible and minimum use of input water [10].

The Following are the benefits of industrial water audit:

- Reduction in waste water volume
- Process improvement

- Improvement in water quality by appropriate treatment
- Reduction in unnecessary steps in textile like continuous washing
- Steam utilization
- Recycling and reuse of water wherever possible
- Development of good housekeeping practices
- Reduction in Overflow and leakage points
- Improve financial performance
- Efficient use of existing supply
- Reduce legal liability
- Reduce disruption
- Helpful in development of Zero liquid discharge concept
- Awareness creating approach among public
- Effective measures for future and performance improvement target

ROLE OF GOVERNMENT FOR CARRYING OUT WATER AUDIT:

In 2003 prime minister of India declared water conservation as a national mission and suggested for conducting water audit for all sector of water used.

Government has set up norms for pollution, environmental standards law but no regulation for water usage which can turn in to effluent. Government should rule out rationing of use of water in the industry.

CONCLUSIONS:

Water audit is systematic, sustainable and economic tool for women entrepreneur. It shows effective management procedure for development of green approach in industry. Knowledge and training given to female students studying textile to identify opportunities, develop business plan, financial support and encouragement can turn idea in to entrepreneurship for women and commercial business in the textile sector.

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