



CHAMPLAIN

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> Internship Applicant's Cover Letter: (back to top)

Date

Mr. Charles Norris ABC Consulting I East Salad Street Springfield, MA 08777

Dear Mr. Norris:

My neighbor, Kathy Smith, a software consultant for ABC Consulting, recently told me about your opening for the Junior Software Engineering Internship. As a rising senior at Champlain College, I am very interested in this opportunity. I believe my training in C++, C#, SQL, Visual Basic 6.0, Java, VB.NET, JavaScript, VBScript, HTML, and Microsoft XNA make me an excellent candidate for this position.

I am enclosing a copy of my resume, which outlines my academic achievements and experience providing technical support while working at the College's Help Desk. The current semester ends in April, so I would be available to relocate for the summer and join your team immediately.

I would welcome the opportunity to talk with you about this exciting opportunity. May I call your office next week to further discuss this opportunity? In the meantime, please feel free to contact me if you require additional information.

I look forward to speaking with you soon.

Sincerely,

Nicole Polizzi

Enclosure

EXAMPLE 1: Entry-Level BS Chemist

JOHN T. LEIBOWITZ

- 217-555-1212 (home) 217-555-1212 (cell) Present: 2334 S. Austin Rd, Apt. B, Champaign, IL 30301 Permanent: 1835 Eisenhower Circle, Appleton, WI 12360 322-112-4928 johnl@gmail.com EDUCATION BS, Chemistry, with Honors; minor concentration: Russian University of Illinois, Urbana-Champaign, IL, Expected 2014 Honors thesis: "Synthesis of bis-dipyridyl complexes of divalent transition metals" Advisor: Professor Nina R. Young GPA 3.55/4.00 EXPERIENCE Research Assistant, Professor Nina R. Young University of Illinois, Urbana-Champaign, IL, 2012-Present Synthesized organic ligands and inorganic compounds, on large and small scales, using an aerobic techniques Produced complexes of divalent first-row transition metals; studied their interaction with dioxygen Characterized products with 1 H NMR, UV-vis, and IR spectroscopy as well as Xray crystallography and magnetic susceptibility Teaching Assistant, Undergraduate Inorganic Chemistry University of Illinois, Urbana-Champaign, IL, Fall 2012 Planned and led help sessions and recitations
 - Coordinated materials, conducted lab sessions, and graded lab reports
- COMPUTER Navigate Mac OS, DOS, MS Windows, X windows, and UNIX
 - Proficient in MathCAD, Excel, MS Word, AmiProd, MS PowerPoint
 - Acquainted with Cambridge Structural Database and Inorganic Crystal Structure

 - Database Able to learn new software quickly
- COURSEWORK Completed, in addition to required courses, graduate-level biochemistry (4 hours), instrumental analysis (2 hours), bioanalysis lab (2 hours), and computational chemistry lab (2 hours)
 - Attended workshop/conference on bioinorganic chemistry
- AWARDS Dean's List, Fall 2010-January 2014
 - · Grant recipient from the General Electric Foundation, Summer 2011
- ACTIVITIES Private music tutor (cello), 2010-Present
 - Member, Alpha Delta Chi honor society, 2010-present
 - Intern, Urbana Food Bank, Fall 2011



EXPERIENCE

PETER SMITH

470 Felicity Lane, Bethany, CT 06524 (203) 621-8147 penelope.pomona@gmail.com

EDUCATION

BACHELOR OF ARTS, BIOLOGY, GPA 4.0

Pomona College, Claremont, CA

Senior Thesis: "Citizen Science: A Valuable Tool for Urban Biodiversity Research"

RESEARCH AND LEADERSHIP EXPERIENCE

RESEARCH ASSESTANT	May - July 2015
Pomona College Department of Biology	Costa Rica

 Collected specimens and ran female mate choice experiments with Agalychnis callidryas, red-eyed. tree frogs, in order to research differences in mating behavior by population

RESEARCH ASSESTANT

May	2013	- May 2015
	Cla	remont, CA

May 2015

- Robert J. Bernard Biological Field Station Howard Hughes Medical Institute summer research grant recipient for 2015, hired thereafter
 - Studied the effects of urbanization and wildfires on the arthropod community of the endangered
 - coastal sage scrub ecosystem of Southern California.Specialized in the identification of spiders

RESEARCH ASSISTANT

Pomona College Department of Biology

Jan 2014 - May 2015 Claremont, CA

Apr 2015 - May 2015

Claremont, CA

- · Researched the effects of urbanization on the distribution of Southern California reptile and amphibian communities, and the utility of citizen science for collecting visble distributional data
- Captured live lizards for measurement and blood collection
- Dissected preserved lizard specimens and collected gut content for identification •
- Cared for White's Tree Frogs in the Pomona College Department of Biology vivarium

STUDENT FARM LEADER and ACADEMIC COORDINATOR

Pomona College Organic Farm

- Organized and ran workshops and events about organic farming practices
- Arranged and led Farm tours for elementary school, high school and college student groups Scheduled use of the Farm for academic purposes with Pomona College professors ۰.
- Managed Farm affairs, \$2000 annual budget, planting and maintenance with other Farm Leaders

TEACHING ASSISTANT

Sept 2014 - May 2015 Claremont, CA

June - Aug 2014

Crested Butte, CO

Pomona College Department of Biology

- · Tutored students of Introductory Ecology and Evolutionary Biology at weekly mentor sessions
- Aided students during the laboratory section of Introductory Ecology and Evolutionary Biology
- Ran mentor sessions to assist students with problem sets for Introductory Genetics •

NSF REU INDEPENDENT RESEARCH

- Rocky Mountain Biological Laboratory
 - Conducted independent research investigating the effect of pollen type on parasitism, development, and survival rates of parasitic wasps in the genus Sapyys
 - Administered independent research investigating the effect of floral orientation in Mertensia cilists on fruiting success, seed set and pollinator visitation behavior

ORIENTATION ADVENTURE LEADER

Pomona College Outdoor Education Center

Aug 2014 Claremont, CA

- Led 11 first-year students on four-day orientation trip to Yosemite National Park with co-leader
- Mediated conflicts and facilitated team-building activities

POMONA COLLEGE SPONSOR Fomona College Office of Campus Life

Sept 2013 - May 2014 Claremont, CA

- · Lived with 14 first-year students throughout the year to help with personal and academic problems
- Planned social and educational group activities along with a co-sponsor

Process engineer cover letter sample 1

Dear Mr Jackson

Your listing on www.jobserve.com looking for an exceptional Process Engineer caught my attention and interest, as I am just this person to fill this role. As you have requested, I have included a current copy of my resume.

As an overview, I have a degree in Engineering from Bemidji State University; and over five years as a Process Engineer at Emergent BioSolutions. In my current position, I have worked in ensuring the utmost in process quality for optimum quality manufacturing product. I apply my extremely excellent technical skills, my engineering knowledge, and my creativity to achieve the best in process products every day. I work well with team of engineers, as well as in a lead position.

If you are interested in hearing more about my career qualifications, I ask that you contact me at (333)-642-8019 as soon as possible. Thanks so much for your time.

Yours sincerely Mark Dixon

Cover letter sample

The flow of the feed is controlled by LCV-9.11. It can be extracted from the ashes of many plants. It has highly qualified and trained teachers. The key process of electrolysis is the interchange of atoms and ions by the removal or addition of electrons from the external circuit. The plant is designed in such a way to ensure villagers safety if any mishap occurs. Internship Report Sitara Chemical Engineering (Polymer) Reg# 2012-PE-12 Department of Polymer and Process Engineering University of Engineering and Technology, Lahore 2. SCIL is a socially responsible organization. The industry has a big mosque. BMR- M II (208 M. The cations are replaced by H+ which is afterwards regenerated by using hydrochloric acid. There are six leaf filters F5070A-F operating in parallel, five normally in operation and one in standby. Not only that the company also ensures the safety of surrounding people of villages and city. The overflow is transferred to pre filtered storage tanks D-5060-A/B. When most of the Na+ has been exchanged with Ca++ &Mg++, the bed is exhausted and needs to be regenerated. Employee's development & grooming become more critical & essential for which importance of training & development cannot be denied, as it is a proactive process leading towards building the competencies and capabilities of employees. Web. ton/day capacity) 2. The company practices strong safety rules as well as high level of discipline in plant. The religious rituals are performed as first priority. The gas is entered from the bottom of the absorber and left from the top. United States: N. 4. The ground water is first filtered by a sand filer and then its pH is maintained by the dosing of HCl. It's also treated by RO treat and biocide which serve as antiscalant and anti bacterial respectively. The tank is vented to chlorine sniff line. At time, SCIL has three caustic manufacturing plants in working, named as BMR, M-I, M-II and M-III.. The caustic is fed to the first evaporator EV-201 by a pump P- 2000A/B installed at the discharge of caustic buffer tank D-2000. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 18 vapors produced in the final concentrator for heating in this equipment. Its specialty chemicals and export division in 2003. They value their workforce as the most integral part of the organization. There are temperature and pressure gauges to indicate the feed temperature and pressure gauges temperature and pres happen. . Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 12 FLOW SHEETS OF DIFFERENT SECTIONS OF PRIMARY BRINE 19. To achieve this potential of Technical & Managerial skills as a key contributor to socio-economic and educational development, Hence Sitara Group of Industries has established its own institute, which would not only take hold requirement of industries in Faisalabad but will contribute in other nation building projects as well. They hold different awards in plants safety as well as in management. It reacts with sodium sulphate. pump P-5020A/B. Casing of the filters is made of HRLS (hard rubber lined steel) and filtering cloth is of PP (Polypropylene). The collecting channel is provided with conic baffle which separate vapors and molten caustic side. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 11 2.5.8.2 Leaf Filters: From second settler brine overflows to the Pre-filtered storage tanks (D-5060 A/B). The company also holds various free medical camps in surrounding villages and financial and social support to its workers. While in theory, evaporators may be built with an arbitrarily large number of stages, evaporators with more than four stages are rarely practical except in systems where the liquor is the desired product such as in chemical recovery systems where up to seven effects are used. The vapor produced in the course of the concentrated caustic side. There are also no quick exit signs to help guide others to exit in emergency situations and also no emergency mask holders if any gas leakage occurs. 1.5.4Aziz Fatimah Girls High School SCIL has also established a girl's school for quality education. PH of membrane is 4.1-4.4 if leakage happens then PH can goes up to 5. Table of Contents Chapter 1 Company Profile 1.1 Introduction.1 1.2 Company's2 1.4.1 Environmental Policy.... ...1 1.4 Safety & Environment Management.....2 1.5 Corporate Social Responsibilities (CSR) Mission Statement ..1 1.3 Company's Vision... ..2 1.5.1 Human Development Center. ...3 1.5.2 Aziz Fatimah Hospital. ...3 Chapter 2 Caustic Soda Plant 2.1 Basic ...5 2.4Preparation of Caustic Soda... .5 2.5 Primary Raw Materials of Chlor-Alkali Electrolysis... ...4 2.2 Secondary Raw Materials... ...5 2.5.2 Settling pits. ..6 2.5.3 Calcium Chloride Pits .. .5 2.5.1 Saturation. .6 2.5.5 Reactor Brine ..6 2.5.4 Common Pits.7 2.5.6.1 Sodium Carbonate (Na2CO3)..... ...7 2.5.6 Additives. the reactor, which is a function of residence time and rate of reaction. Special thanks to Mr. Ijaz Hussain (Director HR) for his kindhearted behavior and guidance for attachment of internees with Sitara chemicals atmosphere. In this process the calcium chloride reacts with sulfates in the brine and produces calcium sulfate which precipitates out. Since, our internship program was conducted at BMR; therefore in the following lines we will have detailed discussion of all unit operations and unit processes taking place in the cycle of production of Caustic Soda. ton/day capacity) 3. The reactor A is a CSTR reactor. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 5 Calcium Chloride 5-Activated carbon Sodium Carbonate 6-Nalco(Flocculating agent) Barium Carbonate 7-Sodium hydroxide (NaOH) Chlorine Gas (H2) 2.4Preparation of Caustic Soda: The preparation unit of caustic soda has been into the following sections Primary brine Secondary brine Cell room Dechlorination unit Evaporation unit 2.5 Primary Brine: Sitara Chemical Industry is purchasing rocks of salt from Khewra Mines which they use in primary brine production. Furnaces 2. The plant's capacity was gradually increased over years to current level of 545 metric tons per day. Two by products Hydrogen and Chlorine are formed along with caustic soda. @article{osti_1371635, title = {Internship Report.}, author = {Griggs, Rachel Michelle}, abstractNote = {Abstract not provided.}, doi = {10.2172/1371635}, url = {, journal = {}, number = , volume = , place = {United States}, year = {Sat Jul 01 00:00:00 EDT 2017}, month = {Sat Jul 01 00:00:00 EDT 2017} } Similar records in OSTI.GOV collections: 1. Flocculation, in the field of chemistry, is a process wherein colloids come out of suspension in the form of flock or flakes by the addition of a clarifying agent. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 9 2.5.7 Reactions in reactor A Na2SO4 + BaCO3 BaSO4 + Na2CO3 CaCl2 + Na2CO3 CaCO3 + 2NaCl MgCl2 + Na2CO3 MgCO3 + 2NaCl Calcium carbonate and barium sulfate coagulate with Nalco and settler A settler A is transferred to the settler A settler A settler A with the addition of Nalco. This school is situated in Gulshan-e-Iqbal to provide quality education at doorstep to the girls residing in this area. I offer thanks to Mr. Saeed (Manager ISO) and Mr. Abdul Khaliq (AM ISO) for their kindness and help in study of international safety standards. Sodium sulphite solution is prepared in the tank D-5250B by absorbing of SO2 in sodium carbonate solution and sent in D-5300 by means of pump P-5250A/B. The required products of electrolysis are in some different physical state from the electrolyte and can be removed by some physical processes. The condensate of the pre-concentrator also goes into condensate tank by gravity, was no doubt very well. absorber by a suction fan. 27. The plant is very vast and there should be these fire extinguisher units. We strive to develop and employ innovative technological solutions to add value to business with progressive and proactive approach. Its usage is in; 1. The training equips the students with skill, knowledge and professional values sufficient for building professionalism in them. Utilities are asset to process, steam, electric supply, process air etc. The communication system is still old speakers. 4.1.4 Drift Loss..... ..20 4.2 RO ...21 4.5 Nitrogen. ..21 Chapter 5 Industrial practices and decisions 5.1 Industrial ..20 4.3 Demineralization Unit. ...21 4.4 Steam and Nitrogen Circuits.. Plant.22 5.3 Main plant operation practices.....22 5.4 Industry Social Activities..... ...23 7. There are two tanks. 9. Eating food, taking pictures and 5.2 Overall management and safety levels in industry...... practices and decisions without permission entry is prohibited in plants. It flows evenly with the inner wall of the tubes from top to bottom. The solution prepared in the tank has concentration of about 1-2 ppm. The high level of mutual understanding among the employees and administration has paved way to success in Pakistan industrial sector despite their financial crunch. The scraper's blades are provided with baffles. ton/day capacity) 4. These vapors leave the separator from the top and are used to heat the pre concentrator. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 7 Common Pits 5620-A/B Volume = 138m3, Length = 11.5m, Width = 6m, Depth = 2 m M.O.C. = Concrete 2.5.5 Reactor A: The brine from the common pit contains calcium and magnesium impurities are removed to ppm level. The company ensures that it follows the basic principles of Islam. The product achieved is stored in tanks. To maintain company status among social communities they follow major social activities in industry. This evaporated water causes the remaining bulk of water to cool down. Tank D-515 Volume = 15 m3 Radius = 2.0m Depth = 4.5m M.O.C. = Rubber Lined Steel 2.5.8 Reactor B: The overflow from the tank 515 is transferred to the reactor B where the magnesium is precipitated as magnesium hydroxide. The phenomenon behind the equipment is simple evaporation. The end of the filter reaches the maximum operating pressure, the filter must be cleaned. Ion exchangers can be unselective or have binding preferences for certain ions or classes of ions, depending on their chemical structure. United States. The over flow from the calcium sulfate and overflow less than 2 and chlorine less than 50ppm. It is situated at 32 km, sheikhupura road, Faisalabad. The purpose of sodium carbonate is to precipitate calcium as calcium carbonate. The cylinder is cooled to 60-55 o C by showering cooling water on its inner walls thus a thin film of caustic melt is formed over the drum surface which is scrapped by a sharp blade/scrapper. This industry is well acknowledged for its contribution to socio-economic uplift of the region and strengthening social safety nets. The plant has some places where brine Cl2 and NaOH leaks occur Above the tubes there are vertical slits through which caustic soda feed flows evenly into the tubes and form an unbroken film along the inner wall of the tube. Overall Process till 50% NaOH Product 2.9 De-Chlorination Section: Depleted brine from electrolyzer usually contains 0.3 g/lit as available. chlorine in the form of hypochlorite ions. From storage tanks, brine is pumped to Secondary Brine section after raising its temperature to 55 C by using a plate type Heat Exchanger 18. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 10 M.O.C. = Rubber Lined Steel 2.5.8.1 Additives 1- Sodium Carbonate (Na2CO3) 2- Sodium Hydroxide(NaOH) 3- Nalco Reactions in reactor B CaCl2 + Na2CO3 CaCO3 + 2NaCl MgCl2 + 2NaOH Mg (OH) 2 + 2NaCl Settler B: The overflow from reactor B is transferred to settler B participated in lots of other social places Like the Sitara Institute of Management & Technology and the hospital Aziz Fatima Hospital. The process of removal of chlorine from the depleted brine is termed as "Dechlorination" 23. The agitator revolves at 40 rpm. Tank D-5210-A/B Volume = 10 m3 Radius = 2.0 m Depth = 3.0 m M.O.C. = Fiber Reinforced Plastic 15. Since this saturated brine solution contains impurities which can scale within pipelines and other equipment and also damage the electrolyzer membrane, therefore various techniques are employed to filter and purify this brine solution. Reactor B R-5020-B Volume = 50 m3 Radius = 1.9 m Depth = 4.4 m 16. These guard filters and other equipment and also damage the electrolyzer membrane, therefore various techniques are employed to filter and purify this brine solution. are of basket type with a total filtering of 2.78 m2 for each filter. 10. Brine filters are required to remove the suspended solids overflowing with the brine from the settler TH-5010B. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 6 Saturator tank DS-5010-A/B Volume = 312 m3, Length = 6 m, Width = 8 m, Depth = 2 m M.O.C. = Concrete 2.5.2 Settling pits: There are two settling pits. Also the industry did not provide us with safety helmets as the engineers were wearing. The hospital was established in 1979 by the group elders and was inaugurated by, the then, president of Pakistan General Muhammad Zia-ul-Hag. Chlorine must be removed as it produces otherwise it will damage and dissolve more impurities. This also guides the students to flourish in their career by imparting the ability of unending learning process. 50% NaOH is concentrated up to 60% N metric tons per day. A CSTR often refers to a model used to estimate the key unit operation variables when using a continuous agitated-tank reactor to reach a specified output. Frequency of the fan is 47 hertz. In most cases the term is used to denote the processes of purification, separation, and decontamination of aqueous and other ion-containing. solutions with solid polymeric or mineral 'ion exchangers'. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 2 1.4.1 Environmental Policy: Sitara Chemical Industries Ltd. In losses of evaporation, drift as well as blow-down. Then it is sent to the cell room after controlling its temperature through two Heat Exchangers. These gaseous products bubble from the electrolyte and are collected. The unit consists of six vessels containing semi permeable membranes. Impurities especially calcium and magnesium more than 50-100 ppb can damage membrane or decrease current or voltage efficiency. The pressure across the filter should not exceed 3 bars. 3. Normally one is in operation while other undergoes cleaning process. The brine flows down by gravity in the dechlorinated brine tank D- 5020. 5.3 Main plant operation practices: Sitara chemicals are the lead producers of caustic soda. 4.4 Steam and Nitrogen Circuits: Steam is produced in boiler which is used in various sections in the plant including Evaporators Chiller Heat Exchangers 4.5 Nitrogen: Nitrogen is stored in a storage vessel in liquefied form. 2.5.8.3 Guard Filters: Filtered brine comes out of each filter at a flow rate of 18-20 m3 /hr and is fed to two Guard Filters (F-5080 A/B) which stops the Arbocel fibers eventually released by pressure leaf filters. Usually water is cooled by exposing its surface to air. Vapors condensed in the condensate tank. School has just started its first educational year. In this regard I have been given an opportunity to experience four weeks internship at SITARA CHEMICAL INDUSTRIES LIMITED. Brine from tank D-5060 A/B is pumped and distributed to each filter through individual manual valves, before preceding to the filtration the filters must be pre-coated. This process is called blow down. Na SO4 + Cl 2 NaCl + SO4 2- 2.9.3 Activated Carbon: Adsorption of Chlorine by carbon occurs here. The settler is provided with scraper which completes one revolution in forty minutes. The CO2 and other harmful emissions are also reduced. If the residence time is 5-10 times the mixing time, this approximation is valid for engineering purposes. As indication of moisture content is its wet bulb temperature. The plant has full team of chemicals as well as mechanical, electrical and environmental engineers. Internship Report.. Depleted brine also carries 2000-2500 ppm of free chlorine. This condensate is also used for sugar solution preparation and for heating the seal of 60% caustic pump A/B.60% caustic soda obtained from pre concentrator is pumped via P8.11A/B to feed it into final concentrator. All calculations performed with CISTRs assume perfect mixing. To achieve our cell room requirement we therefore use ion exchange of ions between an electrolytes or between an electrolytes or between two electrolytes assume perfect mixing. liquids, gases, and slurries. But their main product is Caustic Soda (NaOH) chemically known as Sodium Hydroxide. A two stage ejector, 14 bar steam, is used for this purpose. Sodium carbonate acts as nucleating agent for magnesium hydroxide. A two stage ejector, 14 bar steam, is used for this purpose. brine now are not dangerous for the membrane used in the electrolysis process. all is available to the plant if plant is working properly. The spargers are fitted on this plate. 1.2 Company's Mission Statement:- "We believe in stimulating and challenging team oriented work environment that encourages, develops and rewards excellence and diligently serve communities, maintaining high standards of moral and ethical values. This vacuum is created in the system by steam ejector. Thus Cl2 leakages cause breathing problems but there were no safety masks despite these leaks. 5.4 Industry Social Activities: Sitara chemicals are the leaders of chemical manufacturing in Pakistan. The brine passing out of the tower is made alkaline by the addition of dilute caustic effluent from tank D-5150B. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 16 2.8.1 Multiple effect evaporator, as defined in chemical engineering, is an apparatus for efficiently using the heat from steam to evaporate water. To remove these types of impurities we have to use secondary raw materials. When the solution is ready it is transferred in tank 5250A. Membrane-III(200 M. The shell of the EV-201 collected in the same tank. I m doing internship in an oil refinary (heavy crude unit) and i have to submit a report at the end so any ideas how to make report look more promising.. To further enhance the concentration of caustic soda up to 50%, evaporation is carried out. The action differs from precipitation in that, prior to flocculation, colloids are merely suspended in a solution. The impurities formecand and not actually dissolved in a solution. in reactor A are kept in suspended form by agitator A which are transferred to settler A which now settle down by the scraper which completes one revolution in forty minutes. 2.10.1 Sections of CSP 1- Pre concentrator 2- Final Concentrator 2- Final Concentrator 2- Final Concentrator 3- Flaker drum 50% caustic soda stored in caustic buffer tank is pumped via PBT-1&2 to feed into preconcentrator. During this time I have visited different sections and departments of the industry and I have been guided properly and I am very glad to compile what I have learnt in this report. The resin being used TP-260 has Na ions as mobile ions and exchange with Ca++ & Mg++ present in the brine. Internship Report of SCIL By Muhammad Saiid U.E.T Lahore Page 4 Chapter 2 Caustic Soda Plant: Although SCIL is manufacturing many important chemicals such as Ammonium Chloride (Fe2(SO4)3) etc. Sequence is so that one filters in process and one is at standby. 1.4 Safety & Environment Management:- SCIL is a very much responsible organization. The flakes thus formed are directly made to fall into the duct which conveys them to the filling hopper where it is provided with an automated weighing and then filling in PPW bags lined with polyethylene bags which is tied with cable ties and then stacked inserting tag cards in the stitching 3 Overall flow Process in form of flow chart 26. The company is famous for its focus on religious rituals and their implementation in the industry. The heat transfer medium moves counter currently from bottom to top inside the heating jackets surrounding the concentrator tubes. invariably twinned together in groups of three, giving rise to pseudo- hexagonal forms somewhat resembling bipyramidal crystals of quartz, the faces are usually rough and striated horizontally. Barium carbonate is made commercially from barium sulfide either by treatment with sodium carbonate at 60 to 70 °C (soda ash method) or by passing carbon dioxide at 40 to 90 °C.In the soda ash process, solid or dissolved sodium carbonate is added to barium sulfide solution, and the barium carbonate is added to barium sulfide solution, and the barium carbonate is added to barium sulfide solution. one of the welfare projects. SCIL has following certifications in QMS and EMS from SGS under the authority of UKAS Quality Management Certified ISO-9001: 2008 Certified EN14001:2004 1.5 Corporate Social Responsibilities (CSR):- For Professional & Industrial growth, training plays an imperative & optimistic role in today's competitive and rapidly changing work environment. The condensate may be overflow into the drain. 28. After treatment with sodium sulphite, brine is passed through an activated carbon bed in tower C-5020. Filters contain 17 leaves each and total filtering surface of each filter is 38.2 m². Academic & on job training (OJT) of plant operators and supervisors is being conducted by Senior Manager Training of the company. There are various types of evaporator (natural/forced circulation evaporator) which can be used to remove water. 2.1 Basic Raw Materials of Chlor-Alkali Electrolysis: 1. My university (University of Engineering and Technology, Lahore) has therefore been seized with the need of developing practical guideline which would help in providing experience to students to meet the future needs of the industry. But we didn't see small fire extinguisher units for quick rapid response. 1. Approximate 80% of this heat transfer is due to latent heat and 20% from sensible heat. Primary brine is produced by hot flowing water on this rock salt. The plants have special system of handling waste products and their proper disposal. From D-5160 brine is pumped to Brine Head Tank (06D-001). Vacuum Stripping (free chlorine) 2. On average 4 chlorine atoms absorbed per carbon atom. Nucleation is the extremely localized budding of a distinct thermodynamic phase. Membrane-I (67 M. Not only tha the company also ensures the safe handling of waste solid products and their proper disposal is ensured. As well as work hard for continuing growth and diversification for bottom line results with progressive and their proper disposal is ensured. As well as work hard for continuing growth and diversification for bottom line results with risks well contained" 1.3 Company's Vision Strive to develop and employ innovative technological solutions to add value to business with progressive and proactive approach. The overflow from the settling pits is transferred to common pits. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 1 Chapter 1 Company Profile 1.1 Introduction:- Sitara Group of Industries is one of the renowned industries is one of the renowned industrial groups of Pakistan. This group started its industrial activity with textile weaving sector in 1956. Preface The requirement of practical knowledge by internship is met by professional training and ability of correlating theoretical knowledge to practical exercises under the proper guideline of the related engineers and other professional staff. By Muhammad Sajid U.E.T Lahore Page 13 2.6 Secondary Brine: Primary brine purification removes the impurities up to ppm. These involves Making of Saturated solution 30. For pre-coating, the pre-coat slurry is prepared in the tank D- 5100. Settling Pits 5610-A/B Volume = 280 m3 Depth = 2 m M.O.C. = Concrete Width = 20m Length = 7m 2.5.3 Calcium Chloride Pits: There are three calcium chloride pits. Then the solution of sodium carbonate is 14. The molten caustic soda leaves the separator through its lower part and is directed by the distributing device. From tanks D-5060 A/B, brine solution is fed to six Pressure Leaf Filters (F-5070 A-F) in parallel manner. They are investing in healthcare and skills development of the brains. It is synthetically produced in large quantities from salt (sodium chloride) and limestone in a process known as the Solvay process. 4.1.1Cooling Tower: Cooling tower is equipment that is used to cool the hot water from the process or from coolant streams. Authors: Griggs, Rachel Michelle Publication Date: Sat Jul 01 00:00:00 EDT 2017 Research Org.: Sandia National Lab. Since concentration is low so again send it back to saturator. SCIL is selling caustic Soda in three forms: (1) 33% liquid Caustic Soda, (2) 50 % liquid Caustic Soda and (3) 98.5 % caustic flakes. In the flocculated system, there is no formation of a cake, since all the flocks are in the suspension Nalco solution is prepared in 5210 tanks. Barium carbonate solution is prepared in D 5310 tanks. rate is controlled by the flow indicator controller. The converging bottom of settler is equipped with screw pump and makeup water line to transfer the slurry to drain line. Loading PreviewSorry, preview is currently unavailable. The feed rate is controlled by FIC-9.09. The caustic soda feed is evaporated in the falling film concentrator at atmospheric pressure by means of heat applied 25. (SNL-NM), Albuquerque, NM (United States) Sponsoring Org.: USDOE Office of Sciences (BES) OSTI Identifier: 1371635 Report Number(s): SAND2017-7111R 655086 DOE Contract Number: AC04-94AL85000 Resource Type: Technical Report Country of Publication: United States Language: English Griggs, Rachel Michelle. 20. The plant is constantly monitored by the team of highly trained engineers. On product side the first evaporator is operated under a vacuum. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 23 Overall management and safety levels in industry Main plant operation practices Industry social activities 5.2 Overall management and safety levels in industry: Sitara chemical is famous among industrial sector due to their high level of safety and management. The tank is placed to avoid the pulsating flow in tank B. As the towers are connected in series, so the brine is fed in the first tower in the series and ultra purified brine is collected from the discharge of the third tower and collected in Ultra Pure Brine Tank (D-5160). Primary brine purification involves chemical treatment which can only reduce impurities up to ppm. The company also celebrates social events among its workers in full enthusiasm. Membrane-II (135 M. "Internship Report.". They can also control the electricity consumption as per requirement. The membrane technology consists of four membrane plants as follow:- 1. The 300-310 gram/liter saturated solution is produced for contact time of 4-5 hours and the salt starts automatically mixing into the hot water which is at 60-70°C temperature. Concentration here goes from 33% to 50% of NaOH. The rock salt is charged from the top. Normally one is in operation, one is in preparation process and one undergoes cleaning. From condensate tank it may transfer in M-II plant under level control where it is stored it the D-5150B. There are four baffles in the tank to create turbulence. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 15 P-70 TK to create turbulence. 2010 2060 2040 EV- 2010 D 2010 Ev- 2020 Ev-2030 2030 2050 2040 2030 2050 2040 2030 2020 2060 50% caustic Production line C.W SteamCooling water in Cooling wate 635. Overall caustic production of SCIL is 610 MTD. Nucleation of crystalline, amorphous and even vacancy clusters solid materials is also important, for example to the semiconductor industry. Its regeneration is done by solution of NaOH. Acknowledgements Gratitude to ALMIGHTY ALLAH for His mercy, countless blessings and providing us with sanity and health. it can be referred as buffer tank. 4.1.4 Drift Loss: Loss of water as droplets that are carried out of the cooling tower is designed to give temperature difference of 4 degree Celsius. Sodium carbonate is domestically well known for its everyday use as a water softener. Final product is the caustic soda. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 14 2.7 Cell Room: The electrolysis of brine is carried out in cell room. For this reason they have adapted almost all national and international quality and environment safety policies. The company shows its first priority as the safety of plant as well as its workers. After necessary preliminary treatments, ultra pure brine solution is sent to the cell room where electrolysis is carried out. of safety and management. Besides manufacturing Caustic Soda and various allied chemicals, the company has been able to set up independent plants of some more gases i.e. Oxygen (O2), Nitrogen (N2), Carbon Dioxide (CO2), Nitrogen (N2), Carbon Dioxide (N2), Carbon D Technology:- SCIL is not only remaining alert and advance as symbol of its products, but is also very much conscious to the rising need of keeping pace with Technology and Management Sciences. My visit to Sitara Chemicals ltd. 2.6.2 Regeneration of Bed: Brine drainage (half empty) Washing with demineralized water Counter washing with demineralized water Drainage Washing with 4% HCl solution Drainage Washing with demineralized water replacement with brine. In addition, various by-product facilities have been added and expanded from timeralized water replacement with brine. to time to cope with growing demand. Sitara Group by now is in textile cloth finishing and processing, textile spinning, chlor alkali industries and power plant. 2.10 Caustic solidification plant (CSP): Caustic solidification plant (CSP): Caustic solidification plant is designed in order to concentrate 50 % caustic sola to 97-98% caustic solidification plant (SP): due to high plant noises. 2NaCl + 2 H2O \rightarrow 2NaOH + H2 + Cl2 General description of Membrane Cell Process is mentioned in table given below: 2.7.1 Electrolysis process Reactions:- Following reactions takes place in the cells Sodium chloride and water are dissociated in the brine solution according to the equations NaCl Na+ + Cl- H2O H+ + OH The principal anode reaction involves the oxidation of the anion Cl- to produce chlorine gas 2Cl- Cl2 + 2e- The primary cathode reaction is the reduction of the cation H+ to produce hydrogen gas 2H+ + 2e- H2 The sodium cation Na+ then combines with the OH- ions to form third overall product NaOH Na+ + OH- NaOH 21. The technology in Sitara chemicals is the membrane technology. is committed to continual improvement of its Environmental Management System (EMS) by adoption of appropriate pollution prevention measures and complying with all relevant training, teamwork and procedures as implemented from time to time. Ion exchangers that exchange positively charged ions (cations) or anion exchange negatively charged ions (anions).. The feed liquor is uniformly distributed to each concentrator element. One is standby and other is in process. The drain water is fully processed and any harmful impurities are removed. The Flaker consists of a rotating drum/cylinder which dips in the vat containing caustic melt. They satisfy not only the demands of Pakistan in chemical sector but also the leading exporters of chemical Industries Limited (SCIL). Almost 0% chlorine concentration remains here. For this purpose a single effete tube bundle falling film evaporator is used as pre-concentrator. Best wishes for Sayed Mughees ur Rahman and Yousaf Riaz and thanks for your awesome company. Vapors are introduced in the tubes. I am highly indebted to Mr. Muhammad Imtiaz (Production Manager) for his guidance, constant supervision and kind concern, providing necessary information regarding the internship. Rock Salt (Sodium Chloride NaCl) 2. . In such condition brine leaving the tower has 20-50ppm of chlorine. The transformation of area 1 to DCS is on its way. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 17 It consists upon three steps 1. No doubt that the plant has best safety rules. In cooling tower heat transfer process involves Latent heat of vaporization due to change of state of small portion of the water from liquid to vapor. Process is carried out in membrane cells equipped with latest technology. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 24 Formation of NaOH Formation of by-products Evaporation of NaOH solution Both plants follow high level of safety. 2.9.2 Addition of Sodium Sulphate: It dissolves soluble chlorine. The pre-concentrator is designed as tube bundle falling film evaporator. Area 1 2. During the startup and shut down nitrogen is used to create an inert atmosphere and purge the gases like hydrogen which are hazardous and explosives. The first evaporator is heated with vapors formed in the second evaporator EV202. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 20 Chapter 4 4.1 Utilities: Utilities are the most important part of any plant. 2.5.6.3Nalco...... ...8 2.5.8 Reactor B.9 2.5.8.1 Additives... ..10 2.5.8.2 Leaf Filters.11 2.5.8.3 Guard Filters.. Reactions in reactor A ..12 2.6.2 Regeneration of Bed. ..12 2.7 Cell Room. ..13 2.7.1 Electrolysis process...... Brine. .14 2.8.1 Multiple Effect Evaporators..... Used in Sitara Chemical Industry. .14 2.7.3 Membrane Precautions..... .15 2.9 DE-Chlorination Section..... .16 2.10 Caustic Solidification plant. .16 2.10.1 Sections Of CSP. Vacuum Stripping ..15 2.9.2 Addition of Sodium Sulphate.. .16 2.9.3 Activated Carbon.. ...19 4.1.2 Blow Down... 3 Flow Charts 3 Overall flow Process in form of flow charts.....18 Chapter 4 Utilities 4.1 Utilities. ..19 4.1.1 cooling Tower... ..20 4.1.3 Make-Up ...20 6. This can be dependent on the size of the ions, their charge, or their structure. In this perspective, the Senior Executive's lectures and discussion sessions are being arranged for the fresh graduates & middle management employees. aerA 2 Area 1 is the old plant and runs of conventional system. Griggs, Rachel Michelle. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 19 by salt heating medium. Cation exchanger has a fixed group Trim ethyl Ammonium benzyl attached to positively charged H ion. 2.7.3 Membrane Precautions. It cares greatly for the environment as well satisfaction of its customers. Tank D-5200-A/B Volume = 10 m3 Radius = 0.2m Depth = 3.4 m M.O.C. = Fiber Reinforced Plastic 2.5.6.2 Barium Carbonate (BaCO3); Barium Carbonate vapors of EV-201 are condensed in E-201. Addition of Sodium Sulphate 3. Internship Report of SCIL Conclusions and Discussions Without any doubt Sitara Chemicals Ltd is among the top chemical manufacturers in Pakistan. Best wishes for Mr. Muhammad Arif (Trainee Engineer) for their guidance and demonstration on process. Typical ion exchangers are ion exchange resins (functionalized porous or gel polymer), zeolites, montmorillonite, clay, and soil humus. The pre-concentrator works at 0.93 bar vacuum on the product side. The condensed chlorinated steam is sent to reactor R-5050. This brine is charged into saturator and makeup water is provided. The vapors leads to the separator which retains caustic droplets contained in the vapor. We would like to express our deepest gratitude towards our parents for providing us with moral support and concerned authorities at Sitara Chemicals and all the trainee engineers for their kind co-operation, which helped me in the completion of internship. The produces caustic soda in two plants. The response team is also stated next to main processing unit for any mishap. The production of round about 610 MTD of NaOH is really a great challenge that Sitara Chemicals ltd. A brief discussion on different projects of social welfare run by SCIL is given in the following lines 1.5.1 Human Development Center:- In continuation to its existing training & development activities for fresh graduates and plant workforce in order to make them ready to face the challenges of future and for their career growth. The converging bottom of settler is equipped with screw pump and makeup water line to transfer the slurry to drain line. The agitator keeps the precipitates in the suspended form for the over flow Reactor A R-5020 Volume = 50 m3 M.O.C. = Rubber Lined Steel Radius = 1.9m Depth = 4.4 m 2.5.6 Additives: o Sodium Carbonate (Na2CO3) o Barium Carbonate (BaCO3) o Nalco 2.5.6.1Sodium Carbonate (Na2CO3): Sodium carbonate (also known as washing soda or soda ash), Na2CO3 is a sodium salt of carbonic acid. The baffles are present. Tank D-5210-A/B Volume = 20 m3 Depth = 3.2 m Radius = 2.8 m M.O.C. = Fiber Reinforced Plastic 2.5.6.3Nalco: Nalco is the trade name of the flocculating agent used in the reactor A to settle down the impurities. These include 11. The purified brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070 is fed in the tower through P-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine from tank D-5070A/B at a flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine flow rate of 105-110 m3/hr. 2.5.1 Saturation: The depleted brine as pressure decreases, the vapor boiled off in one vessel can be used to heat the next, and only the first vessel (at the highest pressure) requires an external source of heat. The feed line enters into the four vessels and the permeate of these two the remaining two. For example, in the electrolysis of brine to produce hydrogen and chlorine, the products are gaseous. High chlorine contents in brine feeding the tower causes to violent reaction with the carbon, relatively high pH in the feed brine to tower causes carbon degradation in the form of fine particles which can plug the tower. Very first step in the production of caustic is the preparation of brine solution from Rock Salt. Evaporated water is called evaporation loss. Rock salt is obtained from Khushab. The continuous stirred-tank reactor (CSTR), also known as vat- or back mix reactor, is a common ideal reactor type in chemical engineering. The concentration of the sulfates is 14-15 g/l. The area 2 has fully operational DCS system and was built in 1984. The wet chlorine stripped from the brine leaves the tower and is cooled in the shell and tube type heat exchanger E-5010. This vacuum is produced by connecting the condensate lines of EV-201 to TK-201. The overflow lines from the saturator contain strainers which remove the solid and larger impurities and transfer the brine solution to the pits. The sodium carbonate solution is fed from the upper side of the absorber and flows down back to the same tank. The exhausted column is taken out of the stream and the other two are remained in operation. 2017. Most nucleation processes are physical, rather than chemical, but a few exceptions do exist. Some examples of phases that may form by way of nucleation in liquids are gaseous bubbles, crystals or glassy regions. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 8 transferred to reactor 13. Drift droplets have the same concentration of impurities as the water entering the tower. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 3 1.5.2Aziz Fatimah Hospital:- Aziz Fatimah Hospital:- Aziz Fatimah Hospital is the brain child of SCIL and is a welfare wing of Sitara group for the people of Faisalabad. Settler TH-5010/A Volume = 1800 m3 M.O.C. = Rubber Lined Steel Radius = 22.0m Depth = 4.5 m Tank D-515: The overflow from settler A is transferred to tank D-515. The concentration of the sulfates reduces from 14-15g/l to 3-4g/l. 4.1.2 Blow Down: Concentrated water form cooling tower and replacing it with less concentrated water (H2 O) 2.2 Secondary Raw Materials: Water and sodium hydroxide contain many impurities which can be hazardous for plant. Settler TH-5010/B Volume = 2630 m3 Radius = 26.0m Depth = 4.5 M.O.C. = Rubber Lined Steel 17. has fulfilled. Sitara Chemical Industries is manufacturing caustic soda (NaOH) by electrolysis of brine solution. The agitator in reactor B revolves at 40 rpm and keeps the precipitates in suspended form. Creation of liquid droplets in saturated vapor is also characterized by nucleation (see Cloud condensation nuclei). The hot water comes from the plant, in cooling tower it is being contacted by air and air takes the high energy particles along. 4.2 Ro Plant: The purpose of RO plant is basically to remove the impurities from water and to lower its TDS to desirable value. Theoretical heat removed from the open recirculating cooling water system is by evaporation of water. The production manager office is also in plant processing area. The Nalco solution is pumped and added to the overflow from settler A. The final concentrator is basically consisting of 6 individual concentrator is basically consisting of 6 individual concentrator is basically consisting of 6 individual concentrator tubes and the vapor settler meter. Internship Report of SCIL By Muhammad Sajid U.E.T Lahore Page 22 4.3 Demineralization Unit: Demineralization is a process of removing the cations and anions by passing through a resin bed which consists of a fixed and a mobile group. Sitara Chemicals Ltd has changed their technology from mercury cell to membrane technology. The precoat material Arbocel is thoroughly dispersed in the filtered brine. Cell room The basic purpose to use Nitrogen is to purge the undesirable gases in furnaces and cells. Activated Carbon 2.9.1 Vacuum Stripping: Brine containing absorbed chlorine enters from the upper part of the packed tower C- 5010 where vacuum is generated by means of steam ejector J-5600. In the final concentration is improved up to 97-98% using outside heating media. The caustic leaves the first evaporator effect Ev-201 at a concentration of 36-37%. The majority of product is produced in area 1 which is bigger than area 2. The behavior of a CSTR is often approximated or modeled by that of a Continuous Ideally Stirred-Tank Reactor (CISTR). Multiple effect evaporators are used for this purpose 22. In a multiple-effect evaporator, water is boiled in a sequence of vessels, each held at a lower pressure than the last. Sensible heat transfer due to the difference in temperature of water and air. The brine solution is pumped by centrifugal pump to tank B. The condensate is collected in the tank TK- 201. The vacuum in E-201 is produced through steam ejectors. Griggs, Rachel Michelle. In actual words, SCIL has well as Environmental Management Systems as well as Environmental Management Systems. There are also religious seminars for the workers. You can download the paper by clicking the button above. A bundle of thanks for Mr. Naseer Ahmad (Senior Manager HSE/Training) for awarding his precious time to give lectures to internees for the development of their professional and theoretical knowledge. The plant was operating on mercury cell technology before that. Cooling water requirements are accomplished by an Induced draft cooling tower consisting of four fans made up of FRP which are driven by high pressure centrifugal pumps. Casings of all filters are made HRLS (hard rubber lined steel) and filtering cloth is of FRP (fiber reinforced plastic). Both plants have full one month of raw material stock piles next to plant. Pre-concentrator is heated with vapors formed in final concentrator. It gives them full information of brine solution is entering in electrolysis chamber to the production of Caustic Soda. Cooling towers RO plant Demineralization unit Nitrogen and Steam circuits Air Chiller. One line is given to calcium chloride pit and the other line goes to settling pits 12. Ideally then the wet bulb temperature is the lowest. 31. Reverse Osmosis is process in which the solvent is made to move from a region of higher concentration by the application of salts to a lower concentration by the application. The cooling water is fed in the shell and the vapors are condensed in the tubes. It most commonly occurs as a crystalline hepta hydrate, which readily effloresces to form a white powder, the monohydrate. The industrial practices includes following parts:- 29. p., 2017. The mobile groups replace the ions in the water hence giving demineralized water. TP-260 has weak acidic chelating amino methyl phosphoric acid groups which form stable complexes with a number of transition metals and main group elements.

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