

Research On The Plastic Dryer Machine And The Scope Of Plastic Industries

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Abstract— World produces tons of plastic waste on daily basis. Recycling industry recycles this plastic for further use. It is thoroughly crushed and then it is washed to remove any dirt present. Then it is heated and melted and finally it is given required shape with the help of mould and in this broad way plastic is recycled. The idea is to minimize the time taken for drying process with the help of modified plastic dryer machine and to reduce human efforts.

Keywords—Circuit Breaker, Monitoring, Parameter extraction, Signal processing, Switching time.

I. INTRODUCTION

With increasing quantity of plastic waste earth suffer from various problem of plastic material. It is non-decomposable material and it take long time to decompose, it is polluting earth soil and water. It produces harmful gases after burning. The quantity increase that much in the earth. It was in the 1970s that the now developed world struggled with its massive waste problem. But then cities cleaned up litter. There is no plastic waste on the streets or in the rivers. The problem of garbage has been managed. It is today perhaps the most ubiquitous and necessary material that “humankind” has created. The biggest increase in the use of plastic has come in the packaging industry—from water bottles to plastic layers in tea bags to plastic straws, glasses, plates and just about all that we package for our consumption. But we also wear it; we sleep on it; we build our homes with it and we pipe our water and oil in it.

The first shock has come from studies that show that plastic generated on land is filling up and polluting our oceans. Plastic recycling is important is because it can put to good use rather than unnecessarily ending up in landfill. Recycled plastic can be used to create items such as shampoo bottles, oil funnels, floor tiles and traffic cones among many other products. Moreover, there are many innovative ways to use recycled plastic. For example, recycled plastic can be used for creating construction decks, sports clothing, vehicle interiors and other products.

Plastic dryer machine play an important role in plastic recycling industry. It help to continue the recycling process without any seasonal gap or any environmental issue. The plastic dryer machine dry only wet plastic. Plastic getting wet during cleaning process. The process help to increase the quality of recycled plastic. In old and traditional type of plastic drying process take time of 24 hr and days because they dry

with help of solar ray. The modified machine minimize the time require to dry the plastic scrap. The dyer machine operating temperature is 105° C and it can be change as requirement. Mainly the plastic use have different density material such as polyethylene of high, medium and low density material when it pass through 30 m long steel pipe with the velocity of 4m/s and hot air up to 105°C with plastic scrap so the wet plastic dry up 90 to 95% it store in the storage room.

II. WORKING OF PLASTIC DRYING MACHINE

The thermal dryer is an excellent way to remove moisture through dehydration. Specially designed for our PE and PET washing lines, this continues drying apparatus is strategically placed after the dewatering machine. The thermal dryer attached with a cyclone separator is an essential final step in reducing moisture levels to below 3%.



Thermal dryers use hot air to dry the plastic material, much like a hair dryer. After dewatering, the plastic material is vacuumed out by a transport blower and mixed with hot air traveling through a long set of stainless steel tubing that winds back and forth. As the plastic material mixes and spins around within this lengthy transport tunnel, moisture is effectively dehydrated. Ending with a cyclone separation apparatus, where cool air is mixed in, residual moisture is further reduced. The cyclone separator is the last stand against any dust and fines within the material stream.

Depending on the capacity of your washing line, the use of one thermal heater is usually enough. However, to ensure the lowest possible moisture levels, some washing plants may

request the use of two or even three thermal heaters that are positioned in a row.

III. PLASTIC AND ITS TYPE USE IN RECYCLING

A plastic is a type of synthetic or man-made polymer; similar in many ways to natural resins found in trees and other plants. Webster's Dictionary defines polymers as: any of various complex organic compounds produced by polymerization, capable of being molded, extruded, cast into various shapes and films, or drawn into filaments and then used as textile fibers.

Many common plastics are made from hydrocarbon monomers. These plastics are made by linking many monomers together into long chains to form a polymer backbone. Polyethylene, polypropylene and polystyrene are the most common examples of these. Below is a diagram of polyethylene, the simplest plastic structure.

Even though the basic makeup of many plastics is carbon and hydrogen, other elements can also be involved. Oxygen, chlorine, fluorine and nitrogen are also found in the molecular makeup of many plastics. Polyvinyl chloride (PVC) contains chlorine. Nylon contains nitrogen. Teflon contains fluorine. Polyester and polycarbonates contain oxygen.

IV. CHARACTERISTIC OF PLASTIC

Plastics are divided into two distinct groups: thermoplastics and thermosets. The majority of plastics are thermoplastic, meaning that once the plastic is formed it can be heated and reformed repeatedly. Celluloid is a thermoplastic. This property allows for easy processing and facilitates recycling. The other group, the thermosets, cannot be melted again. Once these plastics are formed, reheating will cause the material to decompose rather than melt. Bakelite, poly phenol formaldehyde, is a thermoset.

Each plastic has very distinct characteristics, but most plastics have the following general attributes.

1. Plastics can be very resistant to chemicals. Consider all the cleaning fluids in your home that are packaged in plastic. The warning labels describing what happens when the chemical comes into contact with skin or eyes or is ingested, emphasizes the chemical resistance of these materials. While solvents easily dissolve some plastics, other plastics provide safe, non-breakable packages for aggressive solvents.

2. Plastics can be both thermal and electrical insulators. A walk through your house will reinforce this concept. Consider all the electrical appliances, cords, outlets and wiring that are made or covered with plastics. Thermal resistance is evident in the kitchen with plastic pot and pan handles, coffee pot handles, the foam core of refrigerators and freezers, insulated cups, coolers and microwave cookware. The thermal underwear that many skiers wear is made of polypropylene and the fiberfill in many winter jackets is acrylic or polyester.

3. Generally, plastics are very light in weight with varying degrees of strength. Consider the range of applications, from toys to the frame structure of space stations, or from delicate nylon fiber in pantyhose to Kevlar, which is used in bulletproof vests. Some polymers float in water while others sink. But, compared to the density of stone, concrete, steel, copper, or aluminum, all plastics are lightweight materials.

4. Plastics can be processed in various ways to produce thin fibers or very intricate parts. Plastics can be molded into bottles or components of cars, such as dashboards and fenders. Some plastics stretch and are very flexible. Other plastics, such as polyethylene, polystyrene and polyurethane, can be foamed. Plastics can be molded into drums or be mixed with solvents to become adhesives or paints. Elastomers and some plastics stretch and are very flexible.

5. Polymers are materials with a seemingly limitless range of characteristics and colors. Polymers have many inherent properties that can be further enhanced by a wide range of additives to broaden their uses and applications. Polymers can be made to mimic cotton, silk, and wool fibers; porcelain and marble; and aluminum and zinc. Polymers can also make possible products that do not readily come from the natural world, such as clear sheets, foamed insulation board, and flexible films. Plastics may be molded or formed to produce many kinds of products with application in many major markets.

6. Polymers are usually made of petroleum, but not always. Many polymers are made of repeat units derived from natural gas or coal or crude oil. But building block repeat units can sometimes be made from renewable materials such as polylactic acid from corn or cellulosic from cotton linters. Some plastics have always been made from renewable materials such as cellulose acetate used for screwdriver handles and gift ribbon. When the building blocks can be made more economically from renewable materials than from fossil fuels, either old plastics find new raw materials or new plastics are introduced.

V. SCOPE OF PLASTIC INDUSTRIES

Toward a new manufacturing landscape for the plastics industry

A reuse level of this kind would also profoundly affect new plastics production. By 2030, up to almost one-third of plastics demand could be covered by production based on previously used plastics rather than from "virgin" oil and gas feedstocks. This estimate is based on a high-adoption scenario, comprising a massive increase in mechanical recycling volumes, a take-off in pyrolysis, and oil prices at around \$75 per barrel.

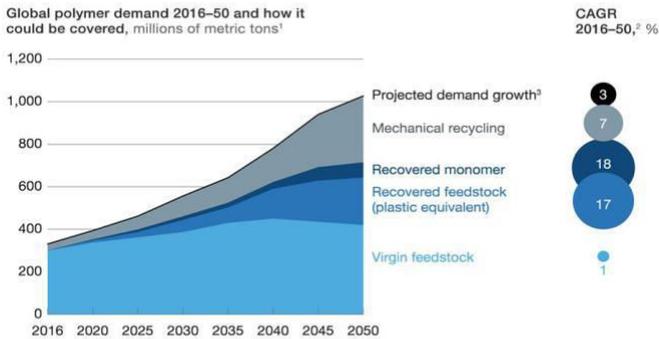
Sidebar

A new relationship to oil?

Projecting to 2050 suggests that nearly 60 percent of plastics demand could be covered by production based on previously used plastics (Exhibit 4). This will substantially reduce the amount of oil required to cover global plastics demand, with projections suggesting oil demand running 30 percent lower

than a business-as-usual scenario. This outcome would require revisions of recently published forecasts that show petrochemicals making the largest contribution to oil demand growth over the next two decades (see sidebar “A new relationship to oil?”).

By 2050, nearly 60 percent of plastics production could be based on plastics reuse and recycling.



¹Scenario based on a multi-stakeholder push to boost recycling, regulatory measures to encourage recycling, consistent progress on technologies, and \$75-per-barrel oil price.
²Compound annual growth rate. Mechanical recycling limited by downcycling and applicable materials, monomerization limited by applicability to condensation polymers only, pyrolysis limited by likely rise in input costs.
³After demand reduction, assuming annual global GDP growth of 3.1%.

VI. CONCLUSION

The plastic dryer machine and plastic recycling industry Is described in paper is state that the plastic dryer is beneficial than the sun drying techniques, solar dryer do have shortcoming. They are little use in cloudy weather and useless in rainy season as well the plastic recycling industry get maximum benefit from plastic dryer and in the future plastic dryer demand will increase as varying plastic wastage. It ecofriendly in use and it also are faster safer and more efficient than traditional sun drying techniques.

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