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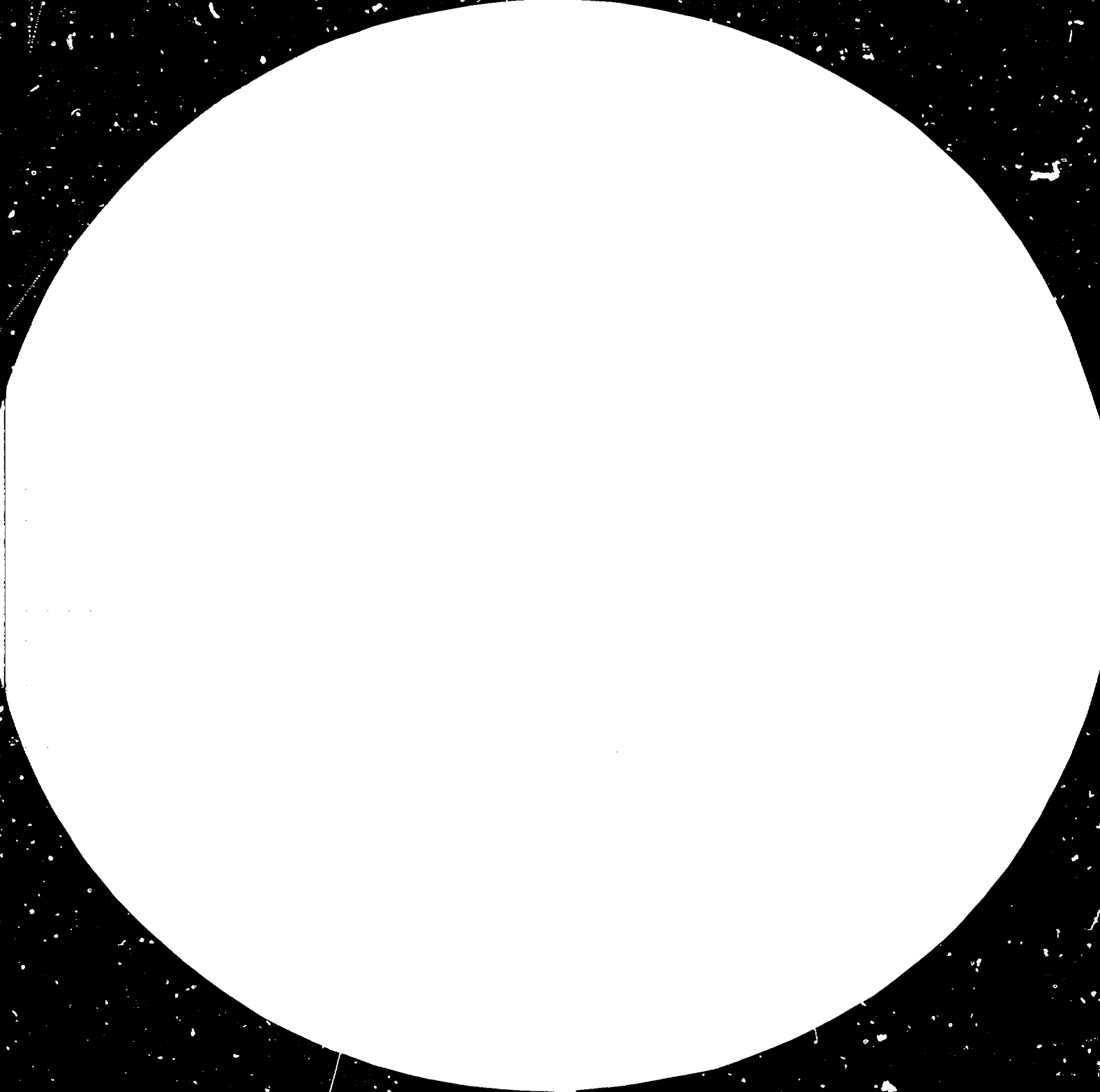
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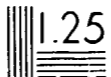
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THE PETROCHEMICAL AND POLYMER INDUSTRIES IN PERU*

by

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BRIEF DESCRIPTION OF THE PRESENT SITUATION OF THE PETROCHEMICAL
AND POLYMER INDUSTRIES

The reserve of oil in the country is around 75 million hectares; actually 11 million hectares are under operation by Petroperú and 61.5 million hectares are available for future operation.

The estimate reserve goes up to 586 million barrels and the annual production level of oil represents only twelve per cent (12%) of such reserve.

The actual production of oil is around 200,000 barrels of oil per day and the estimated consumption is 125,000 barrels a day; there is a exportable surplus of 75,000 barrels.

Referring to the natural gas the reserves are estimate in around 32 million of cubic meters (m^3) the annual production represents only four per cent (4%) of such reserve.

Petroleos del Perú is a Government enterprise locating in the "Energy and Mines Sector" dedicated to the production and trade of oils and its derivatives.

In Talara, Departamento de Piura (over the North Coast of Perú), 1185 kilometers away from Lima, there is a small petrochemical complex for the production of carbon black, urea and solvents such as Isopropyl alcohol and acetone.

Carbon Black

Since 1975 Perú has a production plant built according with the technology of Continental Carbon C.A. U.S.A. for the production ^{of} 7,700 tons per year; it has been designed to be expanded up 15,000 metric ton (T.M.)

Uses

The main application for the carbon black are for the production of tyres, rubber commodities, painting industries, ink, plastics, carbon paper, etc.

Plant of Urea

Peru started the production of urea in early 1975; the production is oriented to satisfy the internal demand in the country. The technology applied is from Mitsui Toatsu Chemicals Inc. (Japan). The capacity of the plant is 168,000 tons per year; the approximate demand of urea in the country (fertilizers, resins, etc.) is 74,096 tons per year.

Plant of Solvent

It started operation in August 1979; the technology ^{is} from Lurgi Kholer-Germany and Lurgi U.K. (British branch).

The complex of solvents has a production capacity of 10,650 metric tons per year of isopropanol and 5,000 metric tons of acetone.

The complex utilizes the propylene from the catalytic cracking from Talará Plant. It operates by the indirect process of hydration for the production of isopropyl alcohol and catalytic deshydrogenation for the production of acetone.

The isopropanol is utilized as solvent for resins, lacquers, antifreezer, components of grease removers and for the production of flotation reagents such as isopropyl xanthate.

The demand of acetone comes mainly from the painting industries and thinners. It is used for the production of lacquers, cellulose acetate, adhesive, acetylene, explosives, pharmaceutical industry, for the denature of ethyl alcohol, etc.

Plastic Industry

The country produces resin of formaldehyde urea, alquidic resin and formaldehyde fenol.

Formaldehyde urea resin

Industrias Vencedor S.A. has a production plant ^{of} 4,000 T.M. per year of capacity and produces the formaldehyde urea resin of liquid type 50% of liquid type. The formaldehyde urea resin are mainly applied as an adhesive for wood.

Alquidic resin

The capacity of production for the alquidic resin is of 4,870 M.T.; they are produced by three diferents enterprises:

Industrias Vencedor S.A.

Cogra S.A.

Tecnoquímica S.A.

The alquidic resins are mainly used in the painting industry, lacquers, inks, varnishes and enamels.

In the last two years the acrylic and vinyl resins have become the main competitor of the alquidic resin in the painting industry.

Formaldehyde fenol resin

Perú produces 300 T.M. per year of formaldehyde fenol liquid resin - 50%; the country imports 686 M.T. per year of solid type.

The national production is covered by two enterprises:

Resinas y Latex S.A. - RESILAX

Industrias Vencedor S.A.

The formaldehyde phenol liquid resins are mainly used as adhesive, lining, laminate-decorative, print circuit for electronic. The solid resin is used in powder for casting in the production of household, electric appliances, automobile industry, etc.

Vinyl polychloride

Sociedad Paramonga Ltda. S.A. has the only plant in Perú for the production of vinyl chloride plastic (PVC); it utilizes non petrochemical raw material. Its capacity of production is 7,200 metric tons per year.

Ethyl alcohol from the molasse (sugar cane) is the main raw material for the production of PVC, the ethyl alcohol is obtained by the fermentation process and distillation. The ethyl alcohol is used for the production of ethylene.

Paramonga has four process plants for the production of PVC:

a) Ethylene plant; b) DCE plant (dichloro ethane); c) Monomer plant; and d) Polymer plant in suspension.

The enterprise has a plant for the production of different pellets from PVC. It uses 16.77% of the production of PVC resin.

Paramonga has a Pilot plant installed for the research and the development of different types of polymers; also, there is a control laboratory where analyses for raw materials, in process and finished product are tested in order to maintain high quality product.

There are 56 enterprises (see annex) devoted to the industry of transformation of plastics in operation such as extrusion, laminate, injection-moulding and foaming. Some enterprises utilize local raw materials, others import polymers such as polyvinyl chloride in emulsions; polyethylene, polystyrene, polymethylmethacrylate; solid phenolic resins; melamine formaldehyde resins; polyester resins and epoxy resins, etc.

The plastic industry in Perú is well balanced in regard to the size of the enterprises; some of them are buying modern equipment with major yielding and capacity; its production is directed in 75% to produce articles for technical use and 20% to produce to utilitarian articles. We observe that this sector incentives in great scale the industrialization of this country.

The consumption of plastics is approximately one kilogram per capita. This is considered low in comparison with other Latin American countries. It is advisable ^{to promote} the development of the actual enterprises and the creation of processing plant with modern techniques for the manufacture of articles not yet produced in the country.

Synthetic fiber production

A great percentage of the synthetic textile fibers produced in this country are made from imported polymers (chips): the polyamide nylon 6 and 66, polyester and polypropylene.

Rayon y Celanese Peruana S.A. manufactures the polyester fibers; it is composed mainly ^{of} polyethylene terephthalate (polyester chips). For producing this fiber the acid terephthalic and ethylene glycol are imported.

Bayer Industrial S.A. produced acrylic fibers; the main raw material for this product is the polyacrylic nitrile. The enterprise imports the monomer - acrylic nitrile.

Comments

The perspective for the petrochemical industry can be oriented towards the production of ethylene for manufacture of polyvinylchloride in emulsion and also in suspension, polyethylene of low and high density. The production of propylene for the manufacture of polypropylene and acrylic nitrile; the

production of synthetic rubber (styrenebutadiene rubber-SBR) utilizing imported styrene for the manufacture of polystyrene.

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INSTALLED CAPACITY FOR SYNTETIC FIBER IN PERU

(metric tons per year)

	<u>RAY-CEL</u>	<u>BAYER</u>	<u>MAN. S.A.</u>	<u>MANSUR</u>	<u>FIL-IND.</u>	<u>BALVEL</u>	<u>RETEX</u>	<u>TOTAL</u>
Polyester short fiber	6000	-	(3000)	-	-	-	-	6000
Polyester filament	1000	-	1200	1000	1800	-	-	5000
Pol. Industrial fil.	(250)	-	-	-	-	-	-	-
Nylon filament	-	-	3000	1500	-	-	-	4500
Nylon Industrial fil.	(500)	-	-	-	-	-	1200	1200
Nylon short fiber	(500)	-	-	-	-	-	-	-
Acrylic short fiber	-	18000	-	-	-	-	-	18000
Polypropilen short fiber	-	-	-	-	-	600	-	600
TOTAL	7000	18000	4200	2500	1800	600	1200	35300
Per centage	20%	50%	12%	7%	5%	2%	4%	

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