



Opportunities for Plastic Pipes in Middle East

PRESENTED TO:

Saudi Plastic Petrochem Print and Pack 2015

PRESENTED BY / DATE

Laith Alshebel / March 2, 2014

Market Intelligence + Growth Consulting + Opportunity Screening + M&A Due Diligence + Benchmarking = **Your Company's Growth.**

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Executive Summary

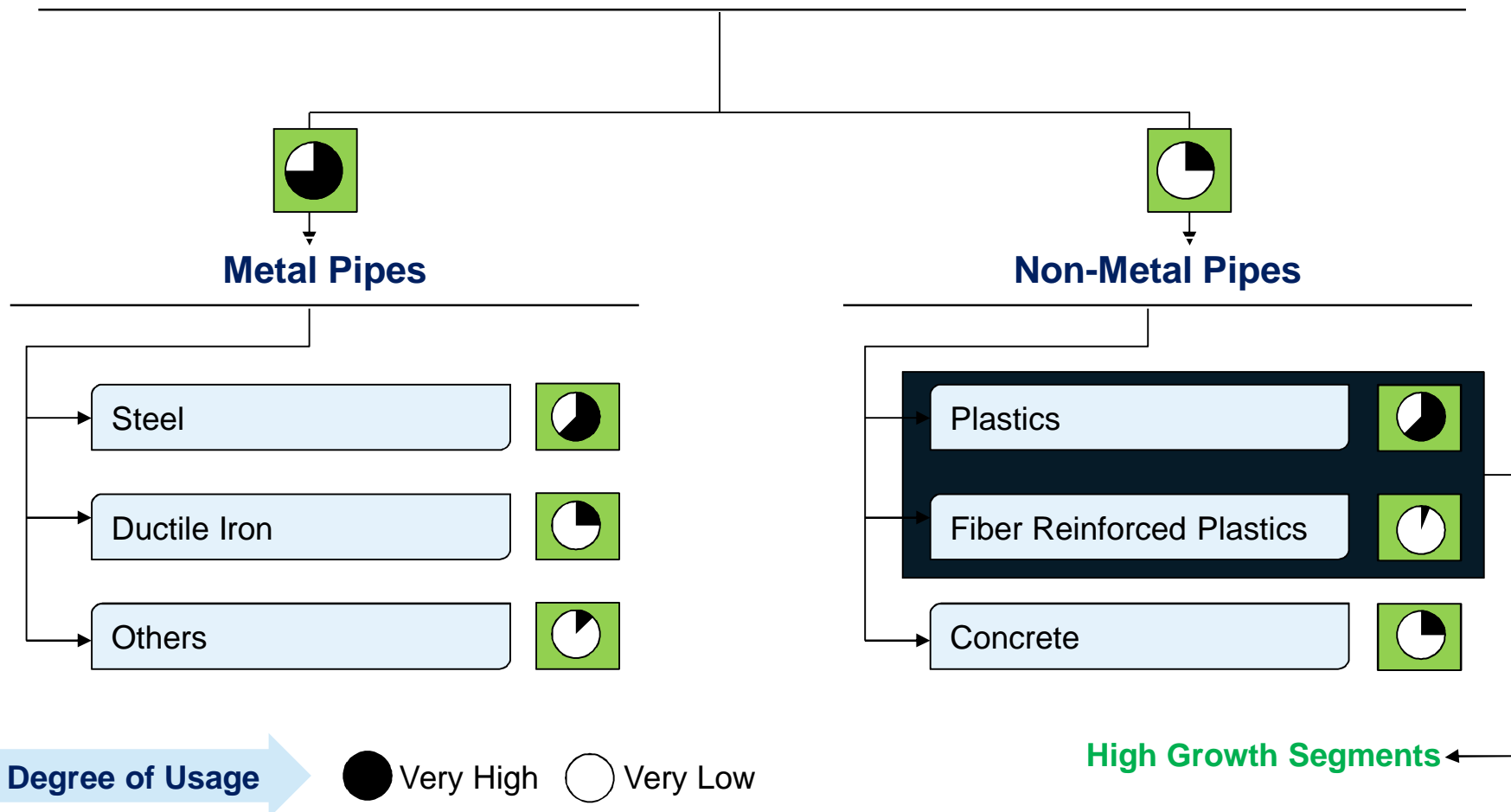
- **Middle east plastic pipe market was estimated at 1.1 Mn tons in 2014 and is expected to grow with a CAGR of 6% in the next five years to reach 1.6 Mn tons in 2020**
 - Middle east plastic pipe market account for 6% of the total plastic pipe market in 2014 and is the second fastest growing region in the next five years after Asia-Pacific
 - Continuous investment in water infrastructure, building & construction, and oil & gas industry are the growth drivers for plastic pipe market in Middle East
 - High corrosion and chemical resistance, lightweight, low installation time, ease of installation, durability are the major advantages of plastic pipe over metal and concrete pipes
- **PVC pipes alone accounts for more than 50% share in Middle East plastic pipe market in 2014, followed by Polyethylene (PE), and others (FRP, PP, etc.)**
- **Water supply and sewage (drainage) are the major applications of plastic pipes, constitute together more than 50% share of the Middle East plastic pipe market**
- **PE pipes and glass reinforced plastic pipes are likely to experience higher growth among all plastic pipes in the next five years in Middle East**
- **Thermoplastic pipes such as PVC and PE are manufactured through extrusion process whereas FRP pipe is manufactured through filament winding process**
- **The cost of extrusion and filament winding process ranges from \$0.2 to \$5 million depending upon the plant capacity and equipment type**

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Global Pipe Market is Highly Dominated by Metal Pipes

Types of Raw Materials Used in the Pipe Application



Plastic Pipe Market: Overview

Key Insights



- Plastic pipes are mostly used for carrying and transporting water, sewage, gas, and chemicals from one place to another
- Plastic pipes are replacing steel pipes in most of the applications, mainly due to better corrosion and chemical resistance, lightweight and durability
- Asia-Pacific is the largest market for plastic pipes, followed by North America, Europe, Middle East and Rest of the world
- PVC is the most widely used material in manufacturing plastic pipes. About 40% of the total global PVC is used for manufacturing pipes and fittings
- PE pipes and fiber reinforced pipes (FRP) pipes are likely to register higher growth in the next five years

Major Pipe Manufacturers	Major Materials	Major Applications	Key Advantages
<ul style="list-style-type: none"> • <i>Lesso Group</i> • <i>Advanced Drainage Systems</i> • <i>North American Pipe Corp</i> • <i>JM Eagle Co.</i> • <i>Future Pipe</i> 	<ul style="list-style-type: none"> • <i>PVC</i> • <i>PE (including HDPE)</i> • <i>PP</i> • <i>Fiber Reinforced Pipes</i> 	<ul style="list-style-type: none"> • <i>Water Supply</i> • <i>Agriculture</i> • <i>Sewage</i> • <i>Cable Protection</i> • <i>Oil & Gas</i> • <i>Others</i> 	<ul style="list-style-type: none"> • <i>Chemical Resistance</i> • <i>Corrosion Resistance</i> • <i>Lightweight</i> • <i>Low cost (except FRP)</i>

Plastic Pipe: Key Applications

Water Supply



Sewage



Agriculture



Industrial



Oil & Gas

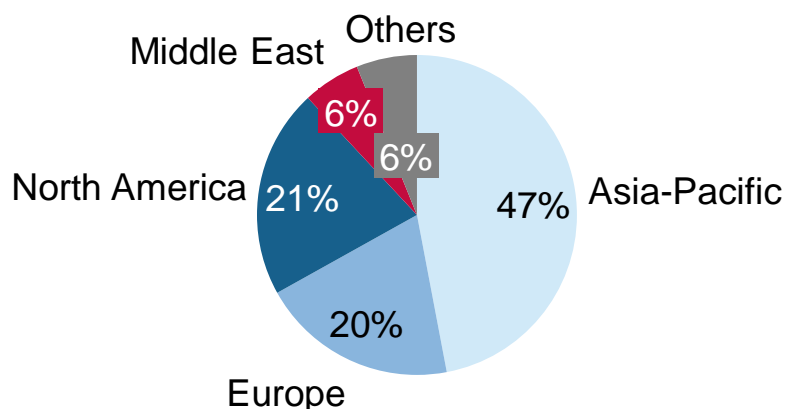


Cable Protection

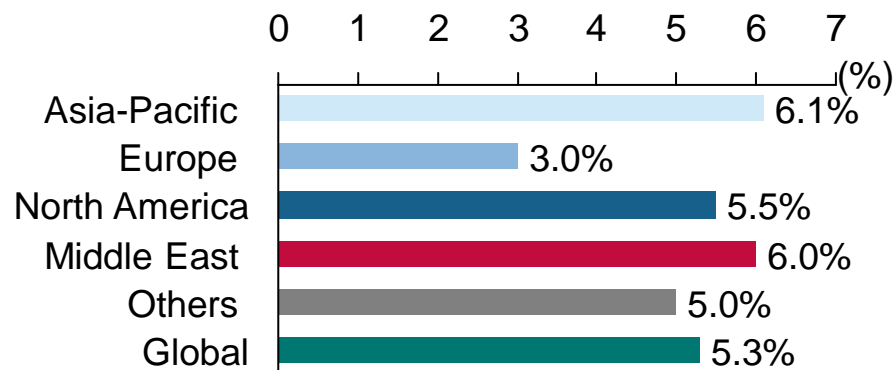


Asia-Pacific Accounts for about Half of the Global Plastic Pipe Market in 2014

Regional Breakdown of Global Plastic Pipe Market in 2014: ~19 Million Metric Tons



Growth Rate of Plastic Pipe Market By Region (CAGR 2015-20)

































Key Insights

- Global plastic pipe market was estimated at 19 Mn metric tons in 2014 and is expected to experience 5.3% CAGR in the next five years to reach 25.9 Mn MT in 2020
- Asia-pacific is the largest market of plastic pipes and is expected to experience greatest growth in the next five years
- Global plastic pipe market is mainly driven by high investment in infrastructure projects, increasing urbanization, and high industrial output and increasing oil & gas production
- Middle east accounts for about 6% of the global plastic pipe market in 2014

Source: Lucintel

Plastic Pipe Market Presence by Resin Type

Plastic Pipe Application Segments	Plastic Pipe Market Distribution	PVC Pipes	PE Pipes	PP Pipes	Other Pipes
Water Supply					
Sewage					
Agriculture					
Cable Protection					
Oil & Gas					
Others					

Degree
of Usage

● Very High

○ Very Low

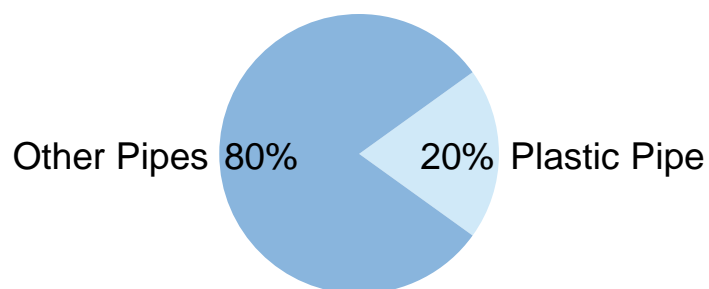
- Water supply and sewage applications together account for more than 50% of the global plastic pipe market
- PVC pipes and PE pipes together account for more than 80% of the global plastic pipe market

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Plastic Pipe Constitutes ~20% of the Middle East Pipe Market

Total Pipe Market in Middle East in 2014:
~5.7 Million Tons





Materials Dominance in the Middle East Pipe Market

Materials Type	Market Share	Future Growth
Steel		
Ductile Iron		
Plastic		
Concrete		

Key Insights

- Total Middle east pipe market was estimated at 5.7 million metric tons in 2014 in which plastic pipes has about 20% share
- Plastic pipe market is expected to experience highest growth among all type of pipes in the next five years
 - HDPE and FRP pipes are the fastest growing plastic pipe type in middle east region mainly driven by water supply, oil & gas and industrial markets
- Construction, sewage, oil & gas and industrial are the major application segments for plastic pipes in middle east region

Degree of Usage

 Very High
  Very Low

Future Growth

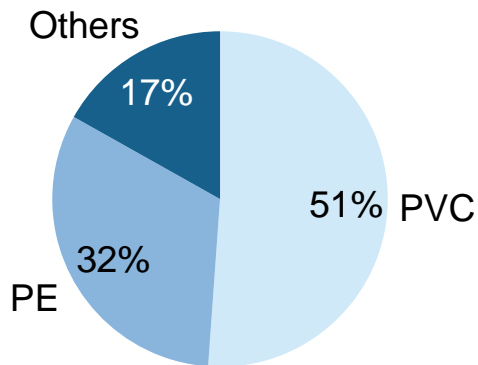
 High
  Moderate
  Low

Source: Lucintel

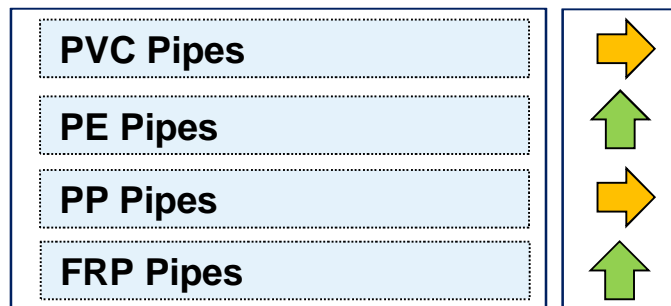
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PVC Alone Accounts for More than Half of the Total Plastic Pipe Market in Middle East in 2014

Middle East Plastic Pipe Market by Materials in 2014: 1.1 Million Metric Ton



Future Growth of Major Plastic Types (2015-20)



Future Growth



High



Moderate



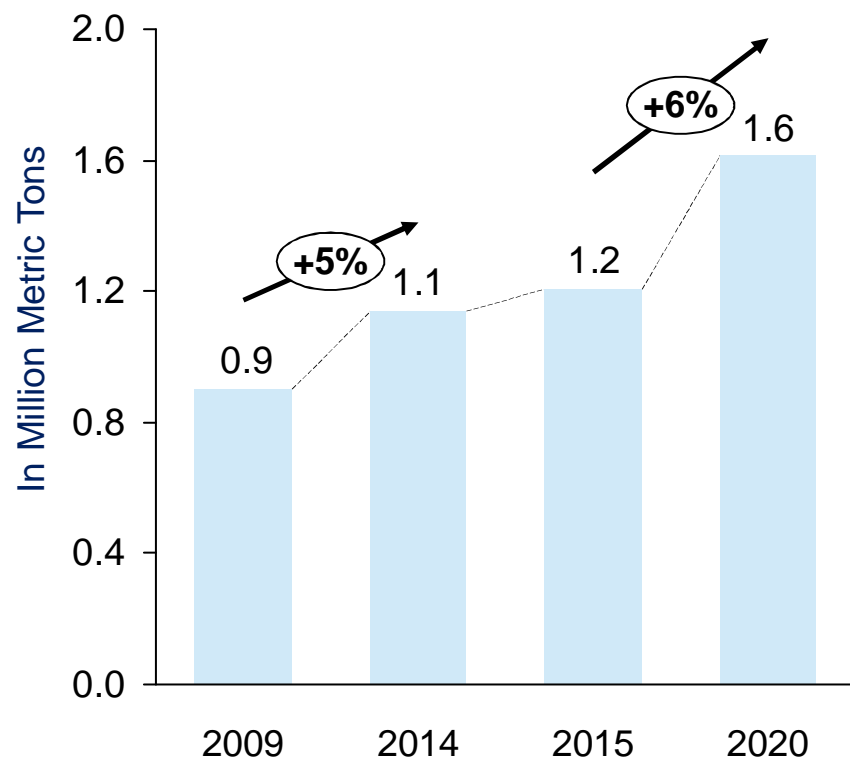
Low

Key Insights

- **PVC is the largest plastic pipe type with more than 50% share in the middle east plastic pipe market**
 - More than 75% of the total PVC pipes goes into the construction industry
- **PE pipes are likely to experience the greatest growth among all types of the pipes in Middle east region**
 - Low cost in terms of installations and production as compared to conventional iron and steel pipes
 - Highly effective for water supply and gas supply. Middle east region has higher water loss due to leakage (about 30% to 50%)
 - Ability to withstand at harsh environment (UV exposure 700kj/square cm/year, water temperature in the pipe upto 50 C, outside temperature ranges from -20 to +55 C and water with high chlorine content)

Middle East Plastic Pipe Market Trend & Forecast (2009-2020)

Middle East Plastic Pipe Market Trend and Forecast : 2009-2020



Key Insights

- Middle east plastic pipe market is likely to grow with a CAGR of 6% in the next five years to reach 1.6 million metric tons in 2020
- Continuous high investment in infrastructure projects and strong economic growth are the major growth engines for the plastic pipe market in Middle East region
- High demand of large diameter pipes for applications, such as desalination plants and cooling lines for power plants

Source: Lucintel

Key Drivers for Plastic Pipe Market in Middle East Region

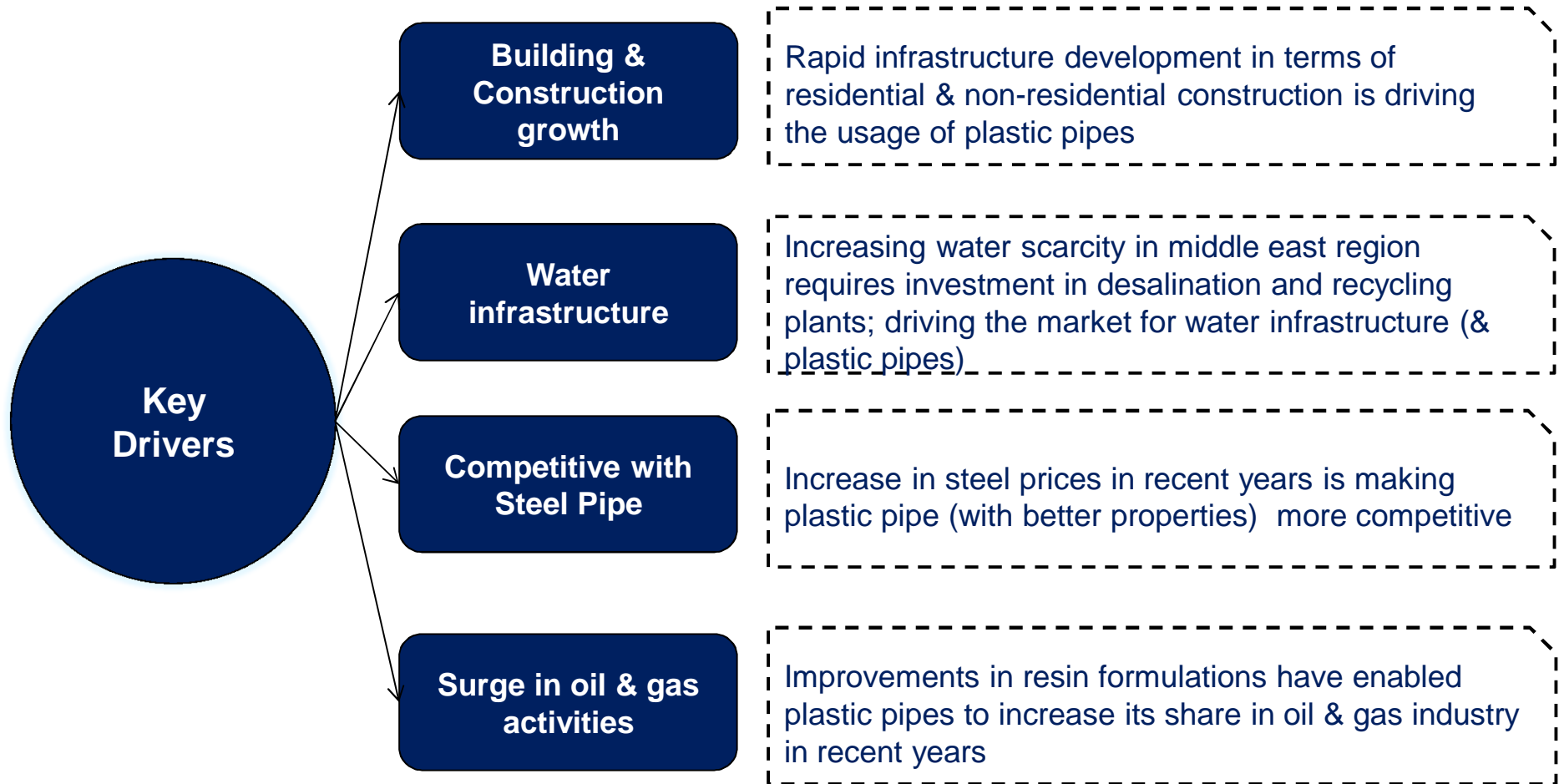


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Product Portfolio of Some of Major Players in Plastic Pipe in Middle East

Company	PVC	HDPE	LDPE	PP	FRP
Almunif Pipe (MMP Group)	✓	✓		✓	✓
Altayar plastic & rubber mfg. co. ltd.	✓				
Al-Koblan				✓	
AL-Wassael		✓	✓		
Al-Watania Plastics	✓				
Amiantit		✓			✓
Cosmoplast Industrial Co.	✓	✓	✓		
Future Pipe					✓
Jubail sanitary pipe factory		✓	✓		
Namat/Neproplast	✓				
Saudi Industries for Pipe Co, Ltd	✓				
Saudi Plastic Products Company Ltd. (SAPPCO)	✓	✓			

Market Presence of Some of Major Players in Plastic Pipe in Middle East

Company	Water Supply	Sewage	Cable Protection	Agriculture	Oil & Gas	Others
Almunif Pipe (MMP group)	✓	✓		✓		✓
Altayar plastic & rubber mfg. co. ltd.	✓					✓
Al-Koblan					✓	
AL-Wassael	✓			✓		
Al-Watania Plastics	✓	✓				
Amiantit	✓	✓	✓	✓	✓	✓
Cosmoplast Industrial Co.	✓		✓	✓		
Future Pipe	✓	✓		✓	✓	✓
Jubail sanitary pipe factory	✓	✓	✓	✓		
Namat/Neproplast	✓	✓	✓			
Saudi Industries for Pipe Co, Ltd	✓					
Saudi Plastic Products Company Ltd. (SAPPCO)	✓	✓	✓			

Property Comparison of Different Types of Pipes

Property	Stainless Steel	Ductile Iron	PVC	HDPE	Concrete	FRP
Corrosion Resistance						
Thermal Resistance						
Weight						
Strength to weight ratio						
Product Life						
Cost						
Maintenance Cost						

Indicators



Very High



Very Low

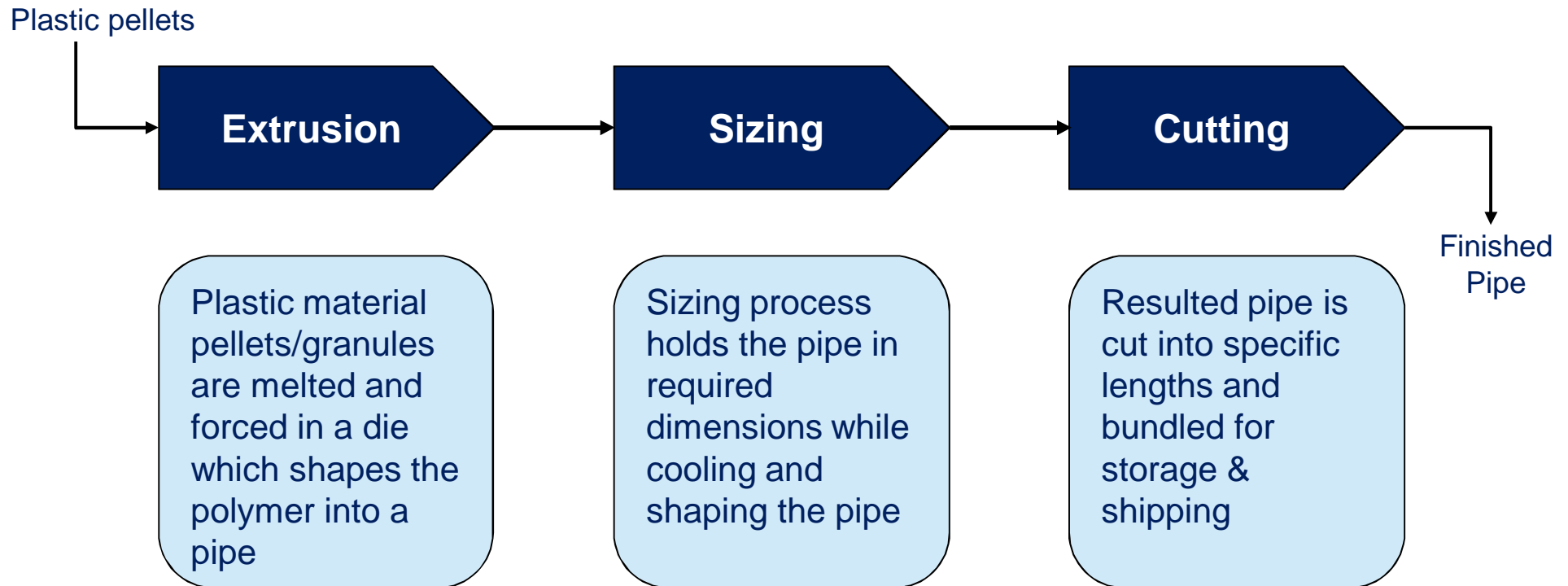
Major Pipes: Advantages, Disadvantages and Applications

Type of Pipe	Advantages	Disadvantages	Applications
Ductile Iron Pipe	Durable and suitable for high pressure applications	Corrosive, Heavy	High strength and high pressure applications that require a robust pipe
Stainless Steel Pipe	Durable and ideal for high pressure applications	Corrosive, Expensive	Water and waste water transmission, oil & gas transmission
PVC Pipe	Light weight and easy to handle, Non-corrosive	Small life, Low strength	Buried water, buried sanitary sewer, agriculture, cables
HDPE Pipe	Non-corrosive, lighter than steel, relatively lower cost	Limited pressure rating	All underground utilities where abrasion, corrosion and chemical resistance is critical
Concrete Pipe	High strength and pressure rating, Long life	Very heavy	Jacking and micro-tunneling applications
FRP Pipe	Non-corrosive, Lightweight, Long life, Strength to weight ratio	Expensive initially	For lightweight and anti-corrosive applications such as oil & gas, chemical, industrial etc.

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Thermoplastic Pipe Manufacturing Steps



Plastic Pipe Plant: Equipment Cost, Raw Materials and Other Details

Plant: Investment and Other Details

Plant Capacity (In Tons)	1,500
Plant Area (Square Meter)	2,000
Building Area (Square Meter)	1,000
Manpower (No. of Employees)	25
Shifts (8 Hours Per Day)	3 Shifts
Power Requirement (HP)	110
Water Requirement (KL/ Year)	1,000
Investment in Machines (\$M)	\$0.1 - \$0.2

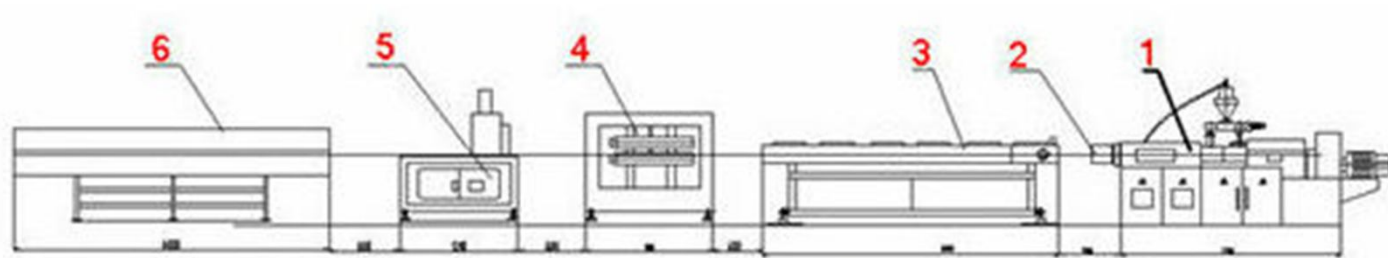
List of Raw Materials

Resins (PVC, PE, etc)	Fillers
Stabilizers	Colorants
Lubricants	

List of Equipment

High Speed Mixers	Haul Off
Twin Screw Extruder	Cutting Machine
Vacuum Spray Bath	Stacker

Thermoplastic Pipe Plant Setup: Extrusion Process



1. Conical twin screw extruder

2. Mould

3. Vacuum water trough

4. Haul off machine

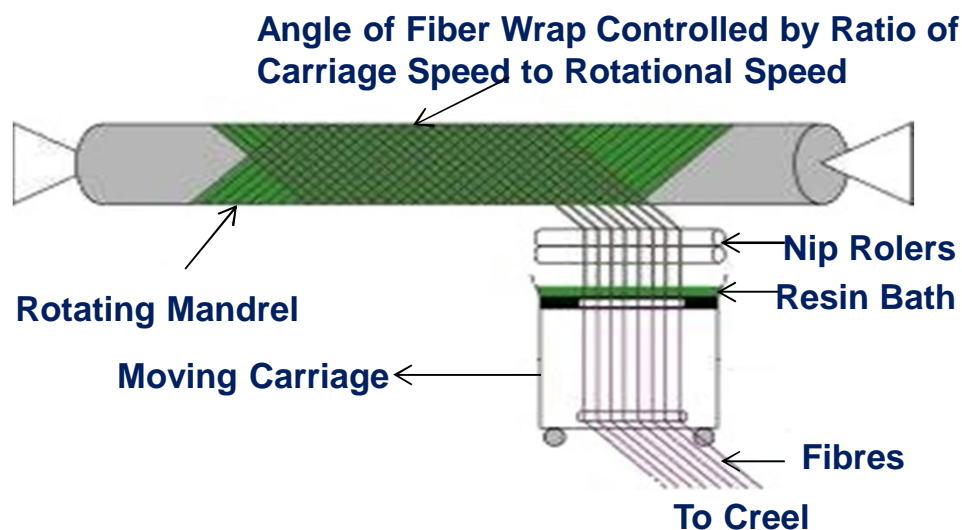
5. Cutting machine

6. Stacker



FRP Pipe: Filament Winding Process Overview

Filament Winding Process Diagram



Insights

- **Materials:** Glass roving, epoxy, polyester, vinyl ester
- **Equipment:** Filament winding
- **Major Applications:** Pipes , tanks, pressure vessels, industrial roller, utility poles

Key Equipment

Filament Winding



Key Industries

Pipes & Tanks



Industrial



Construction



Filament Winding: Types

Helical or Discontinuous Process



Description

- **Mandrel Diameter Capacity :**25– 1,600 millimeter
- **Pipe Length:** upto 12 meters
- **Resin System:** Epoxy Resin
- **End Applications:** High temperature applications oil and gas, chemical, etc.
- **Pressure:** upto 240 bar
- **Cycle Time:** Comparatively High
- **Machine Cost:** \$100,000-\$500,000

Continuous Process



Description

- **Mandrel Diameter Capacity:** 300 – 4,000 millimeter
- **Pipe Length:** upto 20 meters
- **Resin System:** Polyester, Vinyl Ester
- **End Applications:** Low temperature applications Sewage, Cooling Water, Industrial Waste Water, etc.
- **Pressure:** upto 25 bar
- **Cycle Time:** Low
- **Machine Cost:** \$3 – \$5 Million

Investment Analysis

Pipes by Resin Type	Key Manufacturing Process	Equipment Cost (\$M)	Remarks
PVC Pipe	Extrusion	\$0.2 to \$5	Depending on the plant capacity
PE Pipe	Extrusion	\$0.2 to \$5	Depending on the plant capacity
PP Pipe	Extrusion	\$0.2 to \$5	Depending on the plant capacity
FRP Pipe	Filament Winding	\$0.5 to \$5	Depending on the type of filament winding and plant production Capacity

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About Lucintel

Vision

- To provide accurate data, insights, strategy and innovation which empowers companies to make better informed decisions

History

- Founded in 1998.
- Team of over 120 analysts / consultants

Industry Leadership

- Over 1000 clients from 70 countries – Fortune 500 companies
- 15 years of proven management consulting & market research experience
- Panelists and key note speakers at leading conferences

Published Market Reports

- Over 500 published market reports

Consulting Services

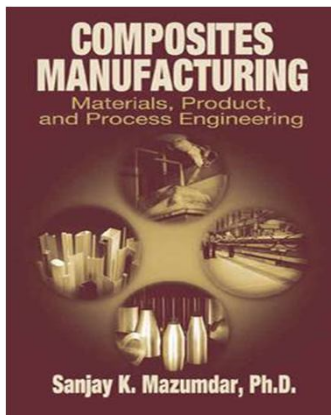
- Market entry strategy, Opportunity screening, Competitive assessment, Strategic consulting, M & A services, Due diligence, Growth finance

Lucintel Management Team



Sanjay Mazumdar, PhD. (CEO, Author, Thought Leader & Strategist)

- With a global consulting experience spanning over 14 years, Dr. Sanjay Mazumdar has been leading Lucintel since 1998 on projects as diverse as growth consulting, due diligence, value chain assessments and opportunity analysis providing actionable and cost-effective market intelligence, consulting and insights, to over 700 global customers. Some highlights:
 - Provided advisory services (M & A, market entry) to hundreds of clients.
 - Subject matter expert in chemical & advanced materials & authored a book titled "Composites Manufacturing: Materials, Product & Process Engineering".
 - Panelist at conferences with industry leaders such as Airbus, B/E Aerospace, Boeing, Core Molding, Ershigs, Owens Corning, and more.
 - Speaker at various conferences & published more than 25 papers.
 - Worked for General Motors in ultra-lightweight product development project and received 2 Record of Inventions.
 - Two Society of Plastics Engineers Awards and one DuPont Plunkett Award.
 - Ph.D. in Mechanical Engineering from Concordia University, Montreal and has additional training in Strategic Management from MIT, Boston.
 - Thought leadership on nature inspired innovations and launched video describing 5 innovation mega trends. [Click](#) to benefit from innovation ideas.



Lucintel Management Team Continues...



Laith Alshebel, Vice President, Business Development, Middle East

Laith Alshebel is the VP of Business Development for Lucintel's Middle East and North African region. He provides market entry strategies, feasibility studies, M & A support, opportunity screenings and market research services to companies in these areas. Mr. Alshebel has 20 years of experience in sales, business development, marketing, and strategic planning. He is a petrochemical and polymer expert and has worked for SABIC, Aramco and the National Industrial Clusters Program in various capacities, from sales director to VP

His career started as a Banker with SAMBA and then he joined SABIC Marketing in 1990. In 1994, he was appointed as Sales Director based in Hong Kong. In 2000, he joined the Saudi Aramco Crude Oil Sales & Marketing Department. In 2008, he was appointed as the VP of Plastic Processing Cluster within NICDP and in 2011, he joined Zamil ChemPlast as VP of Business Development.

Laith Alshebel has a BSc degree in Industrial Management from King Fahad University for Petroleum and Minerals (1986).

Lucintel Ensures Strategic Insights for the Right Market Entry

“Lucintel has its finger on the pulse of the market and drives deep Strategic Insight”

- Andy Schmidt, MacQuarie Partners, Managing Partner

- Lucintel has performed hundreds of consulting projects in the area of M & A, market entry strategy, opportunity screening, competitive benchmarking, value chain analysis, unmet needs analysis and others in a variety of markets for last 14 years.
- Lucintel with its profound business success knowledge, has driven strategic success across the value chain from material suppliers to component makers to OEM's to Investors seeking sustainable winning strategies.
- Access to vital, hard to find insights through detailed primary and secondary research and analysis. Incomparable data accuracy and integrity
- Lucintel has over 30,000 contacts in its database for conducting primary research
- Lucintel has +500 market reports on various market segments:
 - No Learning Curve - Deep industry knowledge and insight. Quality, Accuracy & Depth

1000+ Clients in 70 Countries Value Our Service



Lucintel has Published +500 Market Reports & Conducted Hundreds of Consulting Projects Across Multiple Markets

Market Reports



Aerospace



Transportation



Marine



Construction



Renewable Energy



Recreational



Composite Materials

Consulting



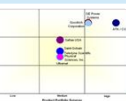
Strategic Growth Consulting



Benchmarking



Opportunity Screening



Partner Search and Evaluation



Due Diligence and M&A



Market Entry Strategy

Lucintel's Experiences in Market & Strategic Analysis

- Lucintel has over thousand customers in 70 countries. It has worked with a variety of global companies, including (but not limited to) 3M, Audi, Carlyle, Credit Swiss, Cytec, DSM, Eastman, GE, Gurit, Sverica International, Sumitomo, etc. and has good experience in dealing with due diligence, M & A, market entry strategy, target screening and strategic growth consulting.
- Lucintel has done many research and published market research report and briefings in the areas of Composites and its markets and has deep material, technology, and market expertise. No learning curve for Lucintel in this market.
- Lucintel provides accurate data since we triangulate data using various means. During this project, Lucintel will talk to suppliers, buyers and users to drive insights about this project. We have more than 30,000 contacts from more than 70 countries across the different industry.
- Lucintel has performed a significant number of projects in market assessment, M & A, due diligence, investment thesis and winning strategy formulation. Below are comments from our satisfied clients in the area of M & A, market assessment, and Due Diligence, demonstrating our capabilities in management consulting and timely delivery.
 - “I was very happy with Lucintel’s work. It helped us in making a confident investment decision. They delivered the project in a timely manner. – Dave Finley, Managing Director, Sverica International.
 - “Lucintel has its finger on the pulse of the market and drives deep strategic insights.”
Andy Schmidt, Managing Partner, MacQuarie Partners

Laith Alshebel

Vice President, Business Development, Middle East

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Thank You!