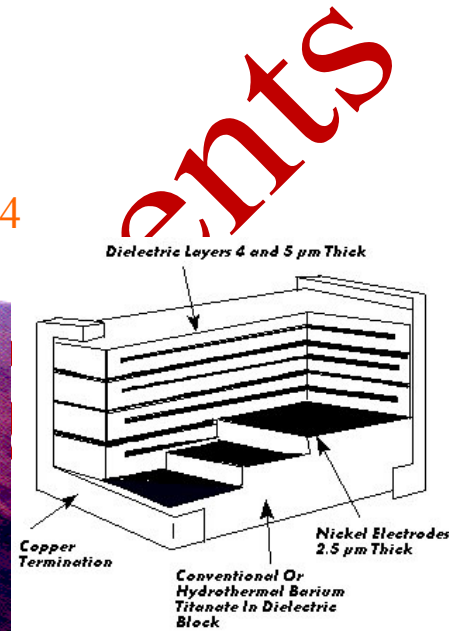


CAPACITORS

World Markets, Technologies & Opportunities: 2019-2024



PAUMANOK WORLD CAP REPORT 2019 WITH 2020, 2021, 2022, 2023, 2024 FORECASTS

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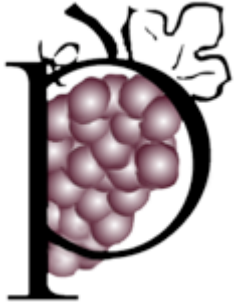
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1.0 Introduction

About this report

1.1 About this report

This document addresses the global market for Capacitors their technologies and related opportunities

When Science Meets Money

The critical scientific principal surrounding Capacitor technology is that capacitance is equivalent to the physical size, or available surface area of the finished capacitor. This in turn makes the raw materials consumed in the production of Capacitors the most expensive portion of “Cost of Goods Sold,” and the area where the application of best practices can have the greatest impact on decreasing the cost of goods sold and increasing operating margins.

1.1 Focus of This Specific Report

Capacitors, including ceramic, tantalum, aluminum, plastic and carbon.

1.2 Research Methodology Employed:

The methodology employed to do this study combines secondary and primary data sources, including government data; company financial data and primary human intelligence resources to draw conclusions. This is called a “legacy” of data that is designed to make sure that all pieces of the market “puzzle” fit together. Also we have the unique capability to benchmark the markets we study with previous studies under the same title produced in the past two decades. This enables us to establish the “Delphi -Method” which suggests that the trend of sales over time will support a similar rate of growth in the future. We caveat this approach by also employing “Box-

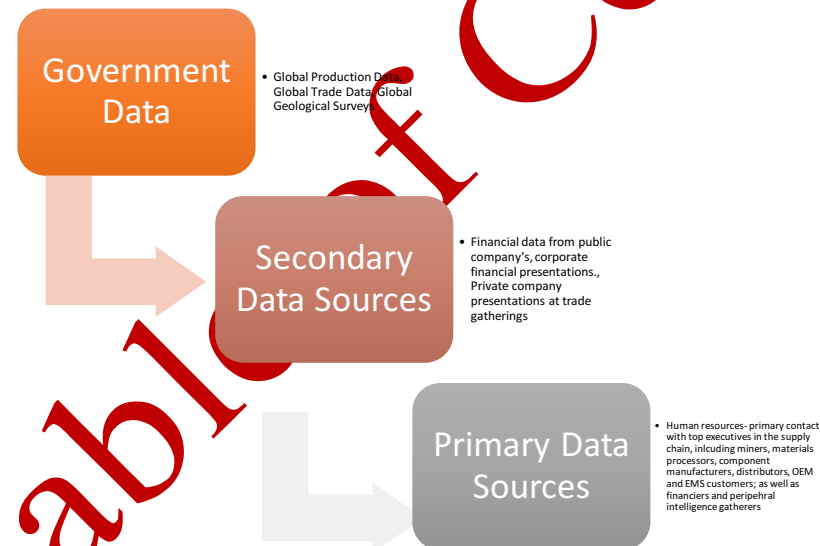


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Jenkins' methods of market research which adjust forecasts based upon our knowledge of current events and their impact. Remember, Paumanok provides a unique market view based upon input from multiple resources in the supply chain, including dielectric materials, ores and concentrate resources; electrodes, terminations; equipment, stacking, winding; firing/furnaces; drying, wire winding; pressed pill, porous anode, polymer cathode resources both primary and secondary that give us a unique perspective. Paumanok views finance and component distribution as separate markets that create "value-added" from the process of supply and demand. Government is involved as well in the form of regulations, especially environmental, ITAR, mining and conflict minerals. Capacitors may in fact be already a form of economic rendering that poses unexpected risk to many brands in the global supply chain.

1.3 The Paumanok Research Methodology: 30 Years Studying Passive Capacitor Markets

Figure 1: Paumanok Research Methodology



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1.3.1 Government Data Collection and Resources:

There are many government resources that we apply to research on the electronic capacitors industry. Our primary use of government data is to establish capacitor production in specific countries, as well as imports and exports by country of destination and country of origin respectively. Government data can also be used to establish OEM pricing because of the availability in some instances of both value and volume data, which can be divided to learn OEM pricing data. We also will employ government statistics as they relate to the geology of countries to establish links to raw material trade.

1.3.2 Secondary Published Sources:

We employ many secondary resources in our market research, including financial data from public companies; especially 10-K and annual, as well as quarterly financial reports and technical data from both public and private companies that is found in trade journals and from conference proceedings. We also employ analyst data from financial institutions as well as a variety of paid intelligence subscriptions.

1.3.3 Primary Intelligence Gathering:

Paumanok maintains a database of 14,000 subscribers that can provide intelligence on a variety of subjects related to passive electronic capacitors. These contacts are global in nature, but are largely centered in Japan, China, Korea, USA, Germany, France, UK, Italy, Czech Republic, Brazil, Canada, Mexico and Australia.

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