

# EXECUTIVE SUMMARY

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TEAM 3 - APS 1012 FALL 2016

## INNOVATION IN CHEMICAL INDUSTRIES

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Chemical industries is an interdisciplinary field that applies physical sciences, life sciences, technology, applied mathematics and economics to produce, transform, transport, and properly use chemicals, materials and energy to produce industrial chemicals. Over 70,000 different products are converted from raw materials such as oil, natural gas, air, water, metals, and minerals. The industrial perspective on the critical role of innovation aligns with Peter Drucker's statement:

*“Innovation is the fuel of corporate longevity. It endows resources with a new capacity to create wealth.”*

Innovation in the chemicals sector not only provides with raw materials and consumer products, it also leads to the development of advanced materials, and advanced process technologies that enable more flexible production with more efficient use of energy, feedstock and water. Furthermore, it contributes to improving recyclability and increases the use of renewable feedstock.

The chemical industry consisting of a wide range of products, had its world sales to be \$3500 billion in 2011.

### Objectives of the project:

The objective is to understand how the industry maximize operational efficiency, when there is high capital costs and increasing expenditures? How does innovation play a role in the productivity of a company in the industry?

### Issues addressed

1. Biggest challenges the chemical industry faces along with remedies/suggestions to the problems.
2. Comparing the innovation strategies of Top 2 companies in the chemical industry.

### Techniques Employed for the project:

The major source of data collection include review of company's portfolio's, articles from experts on related topics and research on innovative strategies that are effective to improve efficiency. Our study principle was to learn from the leader so we focused on practices followed by leading companies.

### Findings

- BASF is the leading patent holder in the industry
- Dow Chemical has the most employees designated to research and development
- These companies have similar goals : meeting customer goals, fast reactive time with flexible business models and portfolio consolidation
- Changes in internal organization and new forms of cooperation between companies that include new partnerships, collaborations, joint ventures.

### Conclusions And Recommendations

The business models of top chemical leading firms are diverse and complex; however the goals seem to align with each other. Thus each company need to identify and tackle issues that leads a continuous innovation through problem solving technique. Companies need to identify industries/regions where chemicals are not used heavily and exploit those opportunities. Implementing the use of renewable energies in production processes is crucial and significant. Minimizing time from research to production while managing the risks associated would result in more revenue. Each company should make sure that their products and their workspace are safe and environmental regulations are strictly maintained in leading firms.