Intratec Plant Construction Indexes User Guide

Introduction

Intratec Plant Construction Indexes (IC Indexes) are multipliers for instantaneously adjusting construction costs over time. Unlike other indexes, useful only for plants located in the USA, Intratec indexes allow users to update local construction costs in up to 36 countries and are suitable for industrial processing plants from several sectors. Further details about IC Indexes and their methodology can be found at https://intrat.ec/ipci-methodology.

Illustrative Cases

Intratec Plant Construction Indexes usage is straightforward. To update the plant cost from date A to date B, multiply date A's cost by the ratio of date B's index over date A's index.

*Plant Cost[date B] = Plant Cost[date A] * (IC Index[date B] / IC Index[date A])*

You can find below some specific examples on how to correctly use the IC Indexes.

Case 1

A research group would like to examine the construction cost trend of a chlor-alkali plant in April 2017 in the United States. In a paper, the cost of a similar plant was estimated at USD 100 million in January 2020 in the same country.

To update the plant cost from January 2016 to April 2017, just multiply the plant cost by the ratio of IC Index at April 2017 (145.1) over the IC index in January 2016 (136.7), as expressed in the equation below:

*Plant Cost[Apr 2017] = Plant Cost[Jan 2016] * (IC Index[Apr 2017] / IC Index[Jan 2016])*

By applying this calculation, the plant cost in April 2017 would be approximately USD 106.1 million.

Case 2

A company would like to check the feasibility of a project to construct a polypropylene plant and needs the cost of the plant in April 2017 in Finland. In a newspaper, the cost of building a similar plant was estimated at USD 500 million in January 2016 in the same country.

1. As the cost is not in the local currency (EUR) it Is necessary to use the index based on USD. Under the option "Currency", choose "USD" (available in 'Pro' and 'Business' Plans).

2. To update the plant cost from January 2016 to April 2017, just multiply the plant cost by the ratio of IC index in April 2017 (156.2) over the IC index in January 2016 (150.7), like the equation above.

By applying the calculation, the plant cost in April 2017 would be approximately USD 518.2 million.

Case 3

A consulting company was hired to evaluate the performance of a construction project of a fertilizer plant in 2017 in Turkey. After a survey the consultants discovered that a similar plant cost TRY 1.5 billion in 2016 in the same country.

1. As the cost reference was estimated for a whole, it is necessary to change the index frequency. Under the option "Frequency", choose "Annual" (available in 'Pro' and 'Business' Plans).

2. To update the plant cost from 2016 to 2017, just multiply the plant cost by the ratio of IC index in 2017 (911.09) over the IC index in January 2016 (747.9), like the equation above.

By applying the calculation, the fertilizer plant construction cost in 2017 would be approximately TRY 1.83 billion.

Application with Plant Location Factors

As shown in the examples above, Intratec Plant Construction Indexes only adjusts construction costs over time. If you also need to convert plant capital costs between countries, you can use Intratec Plant Location Factors (IL Factors) in combination with IC Indexes.

IL Factors are multipliers for instantaneously converting construction costs between key countries. More information on this product is available here.

In the two cases below, you can see how both products are used to convert a plant construction cost over time and between countries.

Case 4

An industry would like to estimate the cost of a new refinery in April 2017 in Saudi Arabia. Its first plant cost USD 5 billion in January 2016 in the United States.

1. Initially, the location factor must be used to convert the cost from the United States to Saudi Arabia.

To convert plant cost estimates from the USA to Saudi Arabia, you have to multiply the plant cost in January 2016 in the US by the IL Factor Saudi Arabia in January 2016 (1.13), as expressed in the equation below:

*Plant Cost in Saudi Arabia[Jan 2016] = Plant Cost in the USA[Jan 2016] * IL Factor Saudi Arabia[Jan 2016]*

By applying this calculation, the plant cost in Saudi Arabia in January 2016 would be approximately USD 5.8 billion.

2. Finally, to update the plant cost estimate in Saudi Arabia from January 2016 to April 2017, just multiply the plant cost by the ratio (in USD) of IC index in April 2017 (167.2) over the IC index in January 2016 (156.3).

The plant cost in Saudi Arabia in April 2017 would be approximately USD 6.2 billion.

Case 5

A company wants to develop a budget for an ongoing construction project of an oxygen plant in April 2017 in Finland. A consulting firm hired estimated that a similar plant in China cost CNY 40 million in January 2016.

1. Since the IL Factors take a United States-based plant as the reference location, it is necessary to first convert the cost from the China to the United States.

To update the plant cost from China to United States, divide the plant cost in January 2016 in China by the Il Factor China in January 2016 (0.76), as expressed in the equation below:

Plant Cost in United States[Jan 2016] = Plant Cost in China[Jan 2016] / IL Factor China[Jan 2016])

By applying the calculation, the plant cost in the United States in 2017 is estimated to be approximately CNY 52.6 million.

2. To convert plant cost estimates from the United States to Finland, you just have to multiply the plant cost in the USA by the IL Factor Finland in January 2016 (1.18).

By applying this calculation, the plant cost in Finland in January 2016 would be approximately CNY 62.1 million.

3. To update the plant cost estimate in Finland from January 2016 to April 2017, just multiply the plant cost by the ratio (in CNY) of IC index in April 2017 (129.9) over the IC index in January 2016 (119.6).

The budget of the plant cost in Finland in April 2017 would be approximately CNY 67.5 million.

4. Dividing the budget by the exchange rate (6.89 CNY/USD) at the time, it is possible to convert this value into dollars. The estimated project budget would be USD 9.79 million.

Important Assumptions

Intratec Plant Construction Indexes track changes in plant construction costs. Nevertheless, it cannot be applied unthinkingly; there are some considerations and limitations to its use, which were assumed in the 5 cases.

o The IC Indexes vary according to the base currency.
o The cost must be relative to a plant in the same country and with same capacity. To convert plant cost estimates between countries, the Location Factors must be used.
o The accuracy of the plant construction index is in line to the inherent error in conceptual studies.
o IC Indexes are based on average values. Specific cases may be different from the average.
o The application of these indexes should be limited over a 5-year period. For time intervals over 5 years, they should be used for order-of-magnitude estimates only.
o Intratec Plant Construction Indexes are only suitable for processing plants, such as oil refineries, chemical plants, food processing plants, and steel mills.