Intratec Industry Economics Worldwide User Guide

Introduction

Intratec Industry Economics Worldwide delivers essential data for evaluating and monitoring manufacturing competitiveness in strategic countries. Subscribers gain access to critical data influencing commodity manufacturing costs at a country level, including Plant Construction Cost Indexes, Plant Location Factors, and Industrial Utilities Prices & Costs.

Plant Construction Cost Indexes (IC Indexes) are multipliers that adjust the construction cost of industrial plants over time. In other words, the IC Indexes provide a monthly series that measures changes in the capital expenditure (capex) required for building industrial plants.

Plant Location Factors (IL Factors) are multipliers that convert industrial plant construction costs from one country to another. In other words, an IL Factor allows to estimate the capex for a plant in Country A using the plant capex from Country B.

Industrial Utilities Prices & Costs deliver trustworthy and independent cost data of 10 industrial utilities in strategic countries worldwide. The costs presented include historical data and short-term forecasts of cash costs and contract prices of key utilities, displayed in a user-friendly tool.

Further details about Intratec Industry Economics Worldwide and its methodology can be found at https://intrat.ec/iie-methodology.

Illustrative Cases – Plant Construction Cost Indexes

Intratec Plant Construction Cost Indexes usage is straightforward. To update the plant cost from date A to date B, date A's cost should be multiplied 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])*

There are two specific examples on how to correctly use the IC Indexes below.

Case 1

A company subscribed to Intratec Industry Economics Worldwide in Finland 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. The company must access the IC Index in Finland and choose the correct Time Span.

2. As the cost is not in the local currency (EUR), it is necessary to use the index based on USD. Under the option "Currency," it is necessary to choose "USD."

3. To update the plant cost from January 2016 to April 2017, the plant cost should be multiplied by the ratio of IC Index in April 2017 (156) over the IC Index in January 2016 (151).

By applying the calculation, the plant cost in April 2017 would be approximately USD 516.6 million.

Case 2

A consulting company subscribed to Intratec Industry Economics Worldwide in Finland was hired to evaluate the performance of a construction project of a fertilizer plant in 2017 in Finland. After a survey, the consultants discovered that the cost of a similar plant was EUR 450 million in 2016 in the same country.

1. The consulting company must access the IC Index in Finland and choose the correct Time Span.

2. As the cost reference was estimated for a whole year, it is necessary to change the index frequency. In the "Frequency" option, selecting "Yearly" will accomplish this adjustment.

3. To update the plant cost from 2016 to 2017, the plant cost should be multiplied by the ratio of IC index in 2017 (157.4) over the IC index in 2016 (150.4).

By applying the calculation, the fertilizer plant construction cost in 2017 would be approximately EUR 471 million.

Illustrative Cases – Plant Location Factors

Intratec Plant Location Factors usage is straightforward. To get the plant cost in a country B, the known plant cost in the country A must be multiplied by the B-A factor in the specific period.

*Plant Cost in Country B = Plant Cost in the country A * B-A IL Factor*

There are two specific examples on how to correctly use the IL Factors below.

Case 3

A research group subscribed to Intratec Industry Economics Worldwide in Finland would like to assess the construction cost of a chlor-alkali plant in April 2017 in this country. A similar study was already made in the United States in the same period, and the plant cost was estimated at USD 100 million.

1. The research group must access Intratec Plant Location Factor and select "Historical" in "View" option, "Finland" in "Country" option, and "United States" in the "Reference Country" option.

2. To convert plant cost estimates from the USA to Finland, the plant cost in April 2017 in the USA (USD 100 million) should be multiplied by the FI-US IL Factor at April 2017 (1.15), as expressed in the equation below:

*Plant Cost in Finland[Apr 2017] = Plant Cost in the USA[Apr 2017] * FI-US IL Factor[Apr 2017]*

3. By applying this calculation, the plant cost in Finland in April 2017 would be approximately USD 115 million.

Case 4

A company subscribed to Intratec Industry Economics Worldwide in Finland would like to check the feasibility of a project to construct a polypropylene plant and needs the cost of the plant in January 2016 in Brazil. In a newspaper, the cost of building a similar plant in Finland was estimated at USD 500 million in the same month.

1. The research group must access Intratec Plant Location Factor and select "Historical" in "View" option, "Finland" in "Country" option, and "Brazil" in the "Reference Country" option.

2. Because the company needs to convert from the country it is subscribed to (Finland) to the reference country (Brazil) and not the other way around, the plant cost in January 2016 in Finland should be divided by the FI-BR IL Factor in January 2016 (1.26), as expressed in the equation below:

Plant Cost in Brazil[Jan 2016] = Plant Cost in Finland[Jan 2016] / FI-BR IL Factor [Jan 2016]

3. The project would cost around USD 397 million in Brazil.

Using Plant Construction Cost Indexes with Plant Location Factors

As shown in the examples above, Intratec Plant Construction Cost Indexes only adjust construction costs over time, while Intratec Plant Location Factors only adjust construction costs between countries. However, if it is necessary to convert plant capital costs over time between countries, IC Indexes can be used in combination with IL Factors.

In the two cases below, it is explained how both products are used to convert a plant construction cost over time and between countries.

Case 5

An industry subscribed to Intratec Industry Economics Worldwide in Finland would like to estimate the cost of a new refinery in April 2017 in this country. The cost of a similar plant was estimated at 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 Finland as in Case 3.

To convert plant cost estimates from the USA to Finland, the plant cost in January 2016 in the USA should be multiplied by the FI-US IL Factor in January 2016 (1.18).

By applying this calculation, the plant cost in Finland in January 2016 would be approximately USD 5.9 billion.

2. Finally, to update the plant cost estimate in Finland from January 2016 to April 2017, the plant cost should be multiplied by the ratio (in USD) of IC index in Finland in April 2017 (156) over the IC Index in January 2016 (151), similarly to Case 1.

3. The plant cost in Finland in April 2017 would be approximately USD 6.1 billion.

Case 6

A company subscribed to Intratec Industry Economics Worldwide in Finland wanted to develop a budget for an ongoing construction project of an oxygen plant in April 2017 in China. A consulting firm hired estimated that the cost of a similar plant in Finland was CNY 60 million in January 2016.

1. Firstly, similarly to Case 1, to update the plant cost estimate in Finland from January 2016 to April 2017, the plant cost should be multiplied by the ratio (in CNY) of IC Index in April 2017 (131) over the IC index in January 2016 (121).

The budget of the plant cost in Finland in April 2017 would be approximately CNY 65.0 million.

2. Then, the location factor must be used to convert the cost from Finland to China, as in Case 4.

To update the plant cost from Finland to China, the plant cost in April 2017 in Finland should be divided by the FI-CN IL Factor in April 2017 (1.53).

By applying the calculation, the plant cost in China in 2017 would be estimated at approximately CNY 42.5 million.

3. 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 6.17 million.

Illustrative Cases – Industrial Utilities Prices & Costs

Intratec Industrial Utilities Prices & Costs usage is straightforward. Costs and prices of utilities (historical data and forecasts) are presented in a handy tool through which users can easily compare trends, download price data and customize views.

There are some specific examples on how to correctly use the utility costs below.

Case 7

In February 2017, a Brazilian company was studying the design of a steam-intensive plant and would like to have an estimate of the cost of medium-pressure steam (MP) in USD per kilograms at that time. Since the installation of a boiler was planned, the steam cash cost should be used.

Since the steam will be generated on the site of the plant itself and, despite being steam-intensive, it does not correspond to a sufficiently large steam generation unit that would export it to other plants, the on-site cash cost must be assumed.

1. The company must access Intratec Industrial Utilities Prices & Costs – Steam in Brazil.

2. Under the option "Unit" of the chart, it is possible to select "kg" to access cash cost data per kilograms.

3. So, the cash cost on-site of steam (MP) in Brazil would be estimated at 0.021 USD/kg in February 2017.

Case 8

An EPC firm was working on a plant construction project within a petrochemical complex in China in December 2017. On site, there were already cooling towers, from which the new plant could purchase cooling water. To set up the project, the company would like to have an estimate of the contract price of cooling water in yuan.

1. The EPC firm must access Intratec Industrial Utilities Prices & Costs – Cooling Water in China.

2. Under the option "Currency" of the chart, it is possible to select "CNY" to access contract price data in yuans.

3. The contract price of cooling water in China would be estimated at 0.25 CNY/m3 in December 2017.

Important Assumptions

Intratec Industry Economics Worldwide is an easy-to-use solution. Nevertheless, it cannot be applied unthinkingly; there are some considerations and limitations to its use, which were assumed in the cases above.

Plant Construction Cost Indexes and Plant Location Factors

- Plant Construction Cost Indexes vary according to the base currency.
- The application of Plant Construction Cost 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.

- To use Plant Construction Cost Indexes, the cost must be relative to a plant in the same country and with the same capacity. To convert plant cost estimates between countries, Plant Location Factors must be used.
- Plant Location Factors only take into account the relative cost of replicating an industrial plant in another location. They do not consider additional costs caused by unique site conditions.
- To use Plant Location Factors, the cost must be relative to a plant in the same time period and with the same capacity. To convert plant cost estimates over time, Plant Construction Cost Indexes must be used.
- The accuracy of Plant Location Factors and Plant Construction Cost Indexes are in line to the inherent error in conceptual studies.
- Plant Location Factors and Plant Construction Cost Indexes are based on average values. Specific cases may be different from the average.
- Plant Location Factors and Plant Construction Cost Indexes are only suitable for processing plants, such as oil refineries, chemical plants, food processing plants, and steel mills.

Industrial Utilities Prices & Costs

Industrial Utilities Prices & Costs also have some considerations and limitations to their use, which were assumed in all the illustrative cases.

- The values presented in this product are estimates and do not necessarily characterize particular contract prices, spot transactions, or spot bids in the locations specified.
- The estimates provided are based on certain assumptions (provided in the methodology) and may vary from the estimates due to several factors.
- The estimates are provided for informational purposes only and do not constitute professional or investment advice.
- If the subscriber already had a cost reference of the utility in the past, Intratec Industrial Utilities Prices & Costs can be used as indicators to convert this cost over time. In this case, the cost reference to be corrected must have the same currency of Intratec cost data.