

Reduce Construction Cost and Risk by Modularisation of Ammonia / Urea Plants

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Construction cost is a major part of the overall project cost for new built fertiliser plants. It strongly varies from region to region, depending on the local cost of labour.

Modularisation and assembly of modules away from the plant site can be a means to reduce the labour costs, but there can be other advantages as well:

- Construction time can be shortened when climatic conditions (like extreme winter or monsoon period) would lead to long construction periods on site.
- Pre-commissioning time can be shortened if quality and cleanliness of pre-fabricated modules is higher compared to systems erected in the field.
- Worker productivity can be higher in a dedicated module construction yard.

Even if there is a project to which these points are not applicable, modularisation can still remove uncertainties from its execution plan and can lower the risk of project delay and cost overrun.

However, in order to fully take advantage of the benefits of modularisation, the layout of the plant must be changed in order to create transportable systems of defined dimensions. Despite aiming at total cost reduction, modularisation can even increase the amount of piping and structures because the modules must be robust for transportation.

In case studies the paper shows:

- the impact of a modularized design on the layout and plot plan of a world-scale ammonia / urea plant;
- the impact of the plant location and accessibility on the degree of modularisation and module size.