

Technical Due Dilligence, the bigger picture beyond financial performance

The decision to take over an existing business or to start a new company is influenced by several factors.

Independent of the motive, a serious review of the decision and its consequences as well as its technical framework parameters is highly recommended.

Risk Assessment

In their own interest and with regard to their stakeholders, the potential investors will perform a detailed due diligence (dd) as risk assessment. Depending on their focus, the dd will highlight financial, legal or taxation aspects or the technical details described here, usually called technical due diligence (tdd) due to its economic effect.

With regard to the industrial sector, the tdd becomes more relevant when the investor is entering a previously unknown technical field.

The plants, property and technical processes should be reviewed by experienced process technology experts in order to receive a reliable technical picture of the desired result. Depending on new or existing projects, different partial aspects are in the focus.

New Projects

In projects, the tdd usually starts by verifying the fundamental assumptions in the feasibility study and the information about the layout. A purely financial view will prove the mathematical equations that lead to the figures in the business plan. However the technical

basis for the assumptions is not evaluated.

So even today still business plans based on unrealistic yearly working hours can still be found, partially due to the fact that specified technical availability does not incorporate required service times.

Also, the efficiency or conversion rates are often used incorrectly. Taking into account the conversion rate of an individual process step, a deviation of 1-2% is realistic. The use of an individual positive value may therefore be regarded as acceptable by the project developer in his business plan.

When taking into account a process chain which comprises of several plants, this procedure is purely reserved to process experts.

For example, a biogas plant, the sequence of positive values for product moisture, starch content and hectare yield for raw material in combination with positive conversion rates for fermentation, distillation and dehydration, will lead to an unrealistic ethanol yield of the entire project.

But also in other energy projects, too positive assumptions were detected, indicating the projects are rather perpetual mobiles than energy plants. Therefore, the critical review of mass and energy balance are usually amongst the first examinations in a project.

Several projects that appeared attractive at first sight, could be identified as unprofitable. Investments have been prevented, respectively adjustments in the financial model could be made.

Besides that, the tdd also covers the review of the main contracts` regulatory framework. This usually includes all main contracts from EPC (engineering, procurement and construction) agreement or the power purchase or delivery contract. In this case, the ratio between guarantee and penalty is often a key figure. Without sufficient process-technological know-how, the financial effect of a deviation in percentage can hardly be financially evaluated. Good accuracy can be reached by applying a financial rating on individual guarantee figures.

Depending on the contracted scope, the technical due diligence also covers staff requirements and its qualification as well as the degree of process automation. High automation and performance usually require highly qualified staff at high costs in some locations.

The same applies to highly efficient process solutions and the availability of maintenance staff on site. The more remote, the higher the degree of redundancy.

A full tdd usually also covers the supplier evaluation, supervision of construction, acceptance inspection, test procedures and, if requested, disbursement reports to financial institutions and final supervision at the end of the guarantee period.

Existing Projects

In the acquisition of existing projects, many of the construction-related aspects can be neglected. However, the proper fulfilment of originally guaranteed performance parameters and potentially applied penalties is a good indicator for the general process performance.

Depending on the point in time of the tdd (in the project development phase or after years of successful operation), different aspects gain different weight in the evaluation.

However, the expected remaining lifetime will always be in the centre of interest.

Besides that, investment backlog, potential performance optimisations, the adaption of capacity as well as process and product specification to actual market requirements play a major role. Ineffective operation and deterioration of process equipment can be detected at the same time, minimising risk of bad surprises.

But not only the status quo is described. Predictions if these conditions are sustainable for future production, or if the process equipment is still state of the art are possible and statements to expected investments or cost scenarios can be given.

The results of the technical due diligence can either influence the realisation of the project or they can be used for the adoption of the preliminary project price.

Lessons Learned

Considering projects during the last 35 years, the following can be stated:

Besides the financial due diligence, a technical due diligence is extremely valuable to minimise investment risks.

The technical expert for the process should be integrated early: prior to process and supplier selection and final contract negotiation.



Dr. Jürgen Wittig

Senior Expert

Experience:

35 years,
thereof 10
years at
Finadvice

Specialization:

Energy- and process industry,
especially renewables, technical
due diligence, risk assessment,
process optimization

Europe, Asia, China, Africa,
South America