

Technical Due Diligence (TDD)

Accurate technical evaluation of risks and chances

TDD in a new energy market environment

The world's energy markets are currently more interesting to investors than ever before. Strong worldwide competitions and changing market environments that are often unpredictable and sustainable redefine the challenges for power generating companies.

Forecasts deviate quickly from original assumptions and agreements with fuel supplying and electricity consuming authorities need to be analyzed specifically and very accurately to ensure attractive, profitable rates of return for years. Same as fast changing regulations of operation regimes and process degradation influences.

Proven innovative and adaptive technologies in asset management, operation and maintenance are existing and can open new recoverable opportunities. Investors are therefore increasingly investing in energy generating facilities.

In this highly competitive market, buyers and sellers must identify and reduce any relevant risks as much as possible before an acquisition. But, how do you receive decision-relevant information and clear analysis about power plants in various regions of the world? On what basis do you decide whether to buy, sell, or hold a power plant?

A professionally conducted Technical Due Diligence (TDD), carried out by Siemens's Technical Consultancy Services (TCS) team, makes technical assets transparent and helps identify risks and chances to enable better evaluation. The TDD is also a tool that enable buyer or seller to carefully negotiate and make sustainable decisions.

The Siemens Technical Consulting Services accompany and assess the complete purchasing and sales processes in all technical aspects.

The aim of the Technical Due Diligence (TDD) is to provide a comprehensive understanding of the power plants condition or its development and to facilitate precise capital management.

Decision support for Technical Due Diligence

| | | |
|---|---|---|
| Identification of opportunities and risks | Support preparation of the purchase contract design | Providing a reliable level of protection for investors regarding tangible and intangible assets |
| Identification of strengths and weaknesses | Targets of Technical Due Diligence | Assistance with the purchase price determination |
| Increase the transparency of existing technical information | Disclosure and documentation | In depth information about the investment object and its relevant environment |

Why Technical Due Diligence from Siemens?

With more than 20 years of experience Siemens provides a comprehensive and substantial Operation & Maintenance knowledge basis from our global fleet. Over 70 O&M contracts signed over the years with an installed capacity of 60 GW in all regions around the globe represent a reliable result of our engagement.

With this fleet experience and knowledge gained from long-time partnerships in the global energy markets, we can evaluate and analyze power generating facilities of all sizes and uses regarding their tangible (physical) and intangible (management, maintenance and operation routine) assets.

Qualified technical consultants, supported by expert engineers, lead the Technical Due Diligence process from the initial proposal to the final report. The Technical Due Diligence refers to our internal "standard of care philosophy" and it contains the same quality requirements that we apply on our own processes and targets.

Examination scope and flexibility of our assessments

Investment decisions are made rapidly, therefore we offer you a global team of flexible and experienced experts that quickly work out results. Lead Siemens consultants can provide Technical Due Diligence for all kinds of power generation plants and their associated auxiliary systems of all sizes and uses, built in all regions across the globe.

The structured 3 key phases of a Technical Due Diligence are conjoint services of carefully selected consultants to meet the specific project requirements and comprises a comprehensive technical preparation (1), an on-site visit (2)

and an evaluation phase (3). Technical Due Diligence can be carried out on plants that are in erection phase, in operation, or have been closed.

The final report of a Technical Due Diligence includes a detailed analysis about a power plant configuration, the scope of the technical process and its methodology, an operational review with focus on performance and efficiency, as well as the maintenance history and the future and the technical condition of all related components. (Table 1)

| | Inspection areas, fields and processes which are in focus during the TDD assessment | | 1 PHASE | 2 PHASE | 3 PHASE |
|-------------------------|---|--|------------|------------|------------|
| General | <ul style="list-style-type: none"> • General configuration of the power plant • Scope of work and methodology • Process overview (incl. schemes) | <ul style="list-style-type: none"> • Structure of employees/ organization of responsibilities and associated dept. structures • Review of ISO standards | ✓ | | |
| Contractual | <ul style="list-style-type: none"> • Fuel supply contract review • Power outlet to grid review • Contractual obligations | | ✓ | | |
| Condition and operation | <ul style="list-style-type: none"> • Units total starts and fired hours • Operating data of the past years • Gross and net generated power • Stability analysis of power and steam generation • Power outlet and grid connection (failure analysis) • Power and steam production of the past years • Overall maintenance program | <ul style="list-style-type: none"> • Performed maintenances during the past years • Future maintenance program • History of planned and unplanned outages • Steam supply review • Assessment of the existing power plant condition • Assessment of power generation cost aspects • TDD checklist interviews | | ✓ | |
| Performance | <ul style="list-style-type: none"> • Power output • Heat rate and efficiency • Fuels (specifications and consumption) | <ul style="list-style-type: none"> • Operating modes • Emissions • Potential analysis of possible modifications and upgrades | | ✓ | |
| EHS | <ul style="list-style-type: none"> • Environmental regulations with valid and future legislation • Assessment of plant environmental data and safety aspects / compliance • Plant safety aspects (safety first, reported incidents, emergency concepts) | | | ✓ | |
| Final reporting | <ul style="list-style-type: none"> • Evaluation of collected data, documents & interview side notes, MoM's • CAPEX conclusions | | | | ✓ |

Table 1: Scope of a Technical Due Diligence Assessment

Timeline of a Technical Due Diligence Assessment



A certain lead time is required to ensure that all necessary preparatory steps are completed, on-site field surveys proceed as smoothly as possible, and the TDD produces the required outputs on time. Picture 1 shows a representation timeline which Siemens recommends, based on our project experiences.

The planning should start as soon as the objectives have been defined. The schedule, prepared at this stage, will have to be reviewed, and may need to be revised, once the data collection and further methods are defined.

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Power Generation Services Division
Freyeslebenstrasse 1
91058 Erlangen, Germany

For more information, please contact our Customer Support Center.
Phone: +49 180/524 70 00
(Charges depending on provider)
Email: support.energy@siemens.com

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