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Feasibility Study for Mineral Processing Plants

● Purpose and Tasks of Conducting A Feasibility Study

Feasibility study is an evaluation of the potential of the proposed project on economy and technology. It is based on the project proposal approved by the direct supervisor, and is a very important task in the preliminary design. Feasibility study aims to confirm the integral effect of the proposed project through in-depth technical and economic proof, and to provide reliable basis for correct decision of the project. The feasibility study report provides basis for project construction and preparation of design documents.

The main tasks of feasibility study are to analyze and prove principle issues of the project construction, such as resources, construction scale, principle workflow, main equipment, product solutions, market demand, factory site, external conditions, infrastructure investment, construction progress, economic outcomes, competitive ability, etc., and then draw a conclusion on whether to and how to construct the mineral processing plant.

● Contents of Feasibility Study

1. The basis and scope of feasibility study, background of the project proposed construction, and the necessity and economic implication of the project construction.

2. Conduct research on scale of the project construction, product solutions and plan, then recommend the best solution; and forecast product demand, price, sales and so on.

3. Site selection and site plan comparison (for some large mineral processing plant with complicated site conditions, it should be done separately before feasibility study).

4. Content of the project construction, main design plan and external conditions:
(1) Project constitution;
(2) Resources and conditions of mining and mineral supply;
(3) Comparison and recommendation of technical workflows and selection schemes for main equipment (further explanation for the necessity of introduction of technology or equipment is required, possibility for use of foreign capital and repayment capability; further explanation of the use of the original fixed assets is required for reconstruction and extension);
(4) Proof for external conditions (external transportation, water supply, power supply, availability of fuel and other materials required for production);
(5) Preliminary selection of land structure;
(6) Preliminary selection of infrastructure and in-plant transportation mode;
(7) Preliminary selection of the general layout plan of the whole factory.

5. Image of business organization, staffing and personnel training.

6. Advice on construction period and progress of implementation.

7. Investment estimate and financing.

8. Forecast the impact of construction projects on environment; propose preliminary program for environmental protection and the "three wastes" treatment.

9. Economic outcomes and social benefits analysis. To calculate not only the economic outcomes of the concentrator itself, but also the macro effects for the national economy (under normal circumstances, the mining, selection, and rule of joint enterprise computing to the smelting process).

10. Provide traffic location map, general arrangement, plant layout, process flow diagrams, process building systems, electricity and water supply system figures.

11. Problems and suggestions.

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Processing Profession Work Content in Feasibility Study

1. Sketch the deposits and research on ore type, ore process mineralogy;

2. Sketch mine ore supply conditions;

3. Brief description and evaluation of beneficiation tests;

4. To determine or participate in determining the scale of construction and product programs;

5. According to the beneficiation tests and other information, preliminarily determine the process workflow, indicators, working systems, as well as the specification and quantity for the main beneficiation process equipment by comparing different solutions;

6. Process plant layout and schematic equipment configuration;

7. Preliminarily determine the level of production process mechanization and automation, as well as ancillary facilities (such as test rooms, laboratories, technical inspection station, pharmacy storage and preparation rooms);

8. Present indicators for power and material consumption, estimate investment and labor demand;

9. Draw process flow diagrams and Process architecture system diagrams;

10. Propose problems and suggestions.