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**ASSET APPRAISAL  
AND  
VALUATION SERVICES**

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**APPRAISAL AND VALUATION  
SERVICES**

Company Profile



## OUR APPRAISAL AND VALUATION SERVICES

**CTG Power Systems Intentional Inc.** is an experienced and full service energy valuation and appraisal firm specializing in the comprehensive assessment of power generation equipment values. After twenty successful years, CTG has proudly cultivated a reputation as the preeminent authority in the valuation of secondary market surplus heavy new, used and refurbished electrical power generation equipment. Our range of services includes: field appraisals, desktop opinions, collateral evaluations, and inspections related to transfers of ownership, re-siting of the assets, finance & leasing, insurance, liquidation, arbitration and ad valorem (property tax).



CTG also provides specialized consulting services tailored to investment bankers, investors, corporate accounting and taxation departments, and the leasing industry including: residual matrices, industry studies, maintenance & return, and end of lease negotiations. CTG's equipment experience is dedicated solely to power generation assets typically found in power generation facilities and the oil and gas markets such as assets which may be scheduled for decommissioning, that are damaged, in need of repair, upgrading, replacement or for purposes of financing or sale.

Whatever your need concerning appraisal and valuation, CTG will work closely with you to provide the most professional and cost effective method to evaluate the real or fair market value of your idle, underperforming or decommissioned power generation assets. Our services are available to clients domestically as well as internationally.

## WHY CHOOSE OUR FIRM

CTG Power Systems International, Inc. (CTG) ([www.CTGPowerSystems.com](http://www.CTGPowerSystems.com)) having several affiliate energy services companies under its umbrella. We offer a diversity of in house experience and a technical expertise not typically found at other companies. CTG is a privately held and internationally recognized energy and power generation equipment company offering a host of diversified services such as engineering, procurement and project management services (EPCM) company.



CTG was founded in 1996 in Atlanta, Georgia with its corporate headquarters now located in Tampa Florida. CTG's mission, first and foremost, is to provide buyers and sellers a dynamic repository of high quality, new, refurbished and decommissioned high grade electrical generating equipment. CTG is the leading power generation surplus authority where buyers can easily source major utility components and ancillary equipment at below market prices.

Sellers of non-performing or decommissioned surplus assets are afforded equal maximum global marketing exposure of their equipment along with a comprehensive menu of turnkey professional services directed at the quick and efficient disposition of those assets. CTG provides technical resources and engineering sales assistance for hard-to-find, quality electrical components and power generation systems such as heavy gas turbine and diesel generator sets, as well as complete power plants. Buyers are matched with Sellers according to design, project application and price.

## SCOPE OF SERVICES

CTG commands a notable presence in the international power generation community through its integrated network of both on and offline partnerships driven by transparent methods for conducting business and the overall industry reputation cultivated through delivery of its professional energy support services of which appraisal and valuation remain a very integral facet of its primary operation. Power generation equipment is presented and marketed in a neutral forum through a variety strategic marketing initiatives, including sophisticated e-Commerce and social media technologies, coupled with traditional bricks-and-mortar stratagems where prospective buyers and sellers actively converge to determine their technical requirements, application, negotiate best pricing and availability.

In most circumstances, CTG will canvas for a credit worthy buyer, purchase the seller's equipment and then remarket and re-sell to the buyer with a margin added. There is also a great deal of due diligence involved in such a transaction in order to qualify the integrity of the equipment. This may also involve evaluation for potential uprating and refurbishment of the equipment as part of the closing requirements.



Over the last two decades, the CTG team has learned a great deal about the operational characteristics and valuation of equipment having purchased as a company more than \$500MM of new and used heavy power generation equipment .



## **STRATEGIC INITIATIVES:**

As we endeavor to find more creative ways to offer clients an alternative approach to traditional major acquisition methods (i.e. new factory purchase), we concluded early on that CTG could play a pivotal role in augmenting the procurement process. The secondary or “gray iron” market is challenging and idiosyncratic. Unless one deals daily in this marketplace and keeps pace with its changes, it is difficult to gauge its price structures and understand its complexities. The market is often too broad and time-consuming to source, and when equipment is identified as “surplus”, it is equally difficult to ascertain the veracity of the various offerings with the requisite re-siting characteristics.

The most difficult challenge of sourcing on the secondary market is the timing between availability and actual project needs. A paradox exists for buyers, wherein, equipment is identified well before having the necessary environmental permits, power purchase agreements (PPAs) and funding in place. Generally, equipment brokers or agents in this marketplace do a disservice to prospective buyers by employing the “shotgun” marketing approach, and more often than not they are prone to convey hastily prepared information thereby creating unnecessary anxieties within the purchasing community.

Sellers often are easily persuaded to list their equipment without the full benefit of a professionally developed prospectus incorporating the correct purchase terms, which leads to confusion and uneasiness among buyers. Often disreputable brokers and agents are clamoring over each other by disseminating ambiguous and misleading information which only confuses prospective buyers. Another problem exists in valuing non-performing or decommissioned assets against supply and demand. Merchant operators, cooperatives, power developers and contractors can capitalize on low prices and become more bid competitive by seeking out surplus equipment through a company like CTG.

CTG aggregates surplus power generation equipment daily and matches equipment to the client’s specific project requirements. Along the way we have developed a very accurate database of historical pricing and a basis for valuing equipment with a realistic price point, whether it is operating or decommissioned. In comparison with our nearest competitor, we endeavor to be much more analytical and research oriented in our methods to arrive at the most credible valuation opinion possible.

To be effective, it is imperative that CTG has a full and complete understanding of the seller’s or owner’s equipment profile and the terms upon which the owner or seller will enter due diligence with a prospective buyer. When appraising equipment, we must consider these same principles in arriving at the most reasonable valuation. On the marketing side, Sellers receive the same benefit coupled with a quicker disposition of the asset based on a comprehensive and professional offering or term sheet. CTG’s greatest asset is its ability to assemble and convey accurate detailed information. History has taught use well.



For nearly 30 years, CTG has built a reputation for assessing the various technical and design characteristics of heavy power generation equipment rendering its assistance to buyers to help them understand the intricacies of entering certain assets into power projects. We are highly respected and relied upon to render valuation and appraisal services in order to maximize the best return for owners of new or secondary market surplus equipment. CTG is driven by information technology, historical operating characteristics, comparative analysis and factual assessment to arrive at realistic and supportable fair market valuations. During this process, we are able to gauge the market and determine appropriate valuations for our client looking to recover as much asset value as possible.

Marketing as well as acquisition strategies will generally highlight and disseminate manufacturing detail, engineering specifications and site characteristics. The re-siting of equipment and the required evaluative process is a critical and highly important feature of CTG's services. CTG's value is in the identification of viable projects either in the planning, or early stages of construction. CTG is continually updating its database of such projects around the globe and keeps current on prices for new versus used equipment.

## **DEFINITIONS OF EQUIPMENT AND COMPLETE PLANTS**

### **Used (or "second-user"):**

Suggests equipment which has at one time been supplied, installed and used at least once. This may mean it is anything from one month to 80 years old.

### **Unused Surplus:**

Has never been fully commissioned, for whatever reason and may be still in the OEM's factory, delivered to site or long term storage location, installed or partly installed but never commissioned, or fully installed and pre-commissioned but never put to use. Some residual warranty or performance guarantee may be available.

### **New (or "As New") Surplus:**

May be still in the factory, crated in storage, or installed but unused as above. Implies that the equipment is probably still under warranty, although the 'transferability' of such warranty may be disputed by the OEM or owner.

### **Cancelled-order Surplus:**

Most likely to be still in the factory (or OEM's storage location), at an advanced stage of manufacture, or even completed and crated, ready for delivery, with the possible exception of certain ancillary items (e.g. fuel forwarding or gas receiving skids, NOx injection system, switch-gear, etc.). Usually with "as-new" warranty and performance guarantee by negotiation, depending on site ambient conditions and fuel specifications.



**"Advance" or "Advanced-order":**

May be at any stage in the manufacturing process, or even almost ready for delivery with final BOP (balance of plant) items such as fuel system, gearbox (which would be modified/bought-in to suit the desired frequency - e.g. FT8 Twin Pac or GE Frame 6 packaged units typically utilize a TEWAC alternator which can be run at 50 or 60 Hz).

**Refurbished / Overhauled:**

Usually with such work undertaken by an OEM-owned or OEM-approved workshop or similar/competing facility with recognized/accredited procedures. Limited warranty may be available on labor or parts replaced.

**"Zero-Houred" / "Zero timed":**

Fully refurbished by an OEM-approved or similar workshop to "as-new" condition, with a revised warranty on the overhaul work performed. Performance guarantees may also be available or negotiated, which would then be applicable to the new site.

**"As-Is" or "As-Is/Where-Is":**

Usually no refurbishment or overhaul has been performed and the equipment is bought entirely at the purchaser's risk, with no guarantees, warranties (available or implied), "merchantability" or "fitness for purpose". It is also implied that any dismantling, disposal of unwanted auxiliaries, site clearance, etc. is solely at the purchaser's expense.

## **THE VALUATION APPROACHES**

The valuation of an operating electrical plant or specific items of the equipment comprising the plant assumes the transfer of ownership as of a particular date. The transfer price is based on the concept of a willing seller and a willing buyer, neither being forced to participate in the transfer and, also, both being reasonably knowledgeable of the relevant facts associated with the operations and the business.

To determine the transfer price or value of the plant, three primary approaches to value are available to review and consider:

- Sales or Fair market Value Comparison Approach (based on sales of similar equipment or the complete plant)
- Income Approach (based on projected cash flows)
- Cost Approach (based on the cost of construction less depreciation).



## **THE SALES OR FAIR MARKET VALUE (FMAV) COMPARISON APPROACH**

This approach is also known as the "Comparison Sales Approach" ("CSA") or Fair Market Asset Value ("FMAV) Comparison approach as it is often called is one of three most reliable and recognized approaches utilized in power plant asset appraisal analysis. It involves the aggregation of historical and comparative market data specifically pertaining to the subject assets being appraised.”). As noted earlier, the impetus of this market approach is to determine the desirability of the assets and recent sales or offerings of similar assets, currently on the market or predicted in the future, in order to arrive at an indicative “most probable” selling price for the assets being appraised.

This approach further assumes certain economic adjustments and variables that must be considered in order to bring the values in line as closely possible with the subject assets. In the sales comparison approach, historical transactions in the marketplace are used as the basis to derive a value for the specific item of equipment or for the complete plant based on the actions of buyers and sellers. Actual sales are analyzed and adjusted to the subject item of equipment or the entire plant assets.

Adjustments to consider include (a) size - the generation capability of the generators; (b) production expenses - compare the cost to produce electricity per kW between the plants; (c) time - adjust for the economics between the appraisal date and the date when the sale took place; (d) age - compare the age and level of technology; and (e) location - adjust for different economics between the subject’s location and that of the sale; in other words, is the subject in a better or worse location when considering its ability to receive fuel and transmit power to the grid at a profit. Several other adjustments can be made depending on the circumstances. When taking into account the purpose of the valuation, any fuel inventories, intangible assets, power purchase agreements (“PPAs”), transmission assets, or other assets are removed, as necessary, from the transaction price to result in only the fair market value price of the tangible plant asset (s) under review.

## **THE INCOME APPROACH**

The next indicator of value based on future income realizations is developed using the income approach. This method is used most frequently by buyers and sellers in the marketplace. However, forecasting the future is difficult because power plants are income-producing assets. Buyers and sellers often use a matrix of income approaches to test their forecasts in as many different ways as possible, thus developing a range of values for use in negotiating sessions. Buyers and sellers also are knowledgeable of plant sales (they often participate in the bidding process for plants) and the cost of new construction and the basic concepts of physical deterioration and obsolescence.



Items to be forecast in the income approach include capacity factor (electricity production), prices of electricity and fuel (energy costs), operating expenses, emission credits, future capital expenditures and sustaining capital requirements, additions to the decommissioning trust fund (for a nuclear plant), and the capitalization or discount rate. Forecasts for prices of electricity are frequently available from various published sources or consulting firms specializing in economic forecasts.

Peaking plants tend to operate when the price of electricity is highest. The least efficient plants will operate for a very short period of time, while more efficient plants will operate longer, but still during the peak period price hours of the day. New modern peaking plants, typically combustion turbines, can start up and reach maximum production in about 30 minutes; hence, they can “cherry pick” when they operate. Older, less efficient peaking plants, typically old steam plants, must start up earlier because their ramp-up times are usually several hours. Thus, to take advantage of the peak prices, these plants must operate earlier in the day and also later in the day when the price of electricity will not cover their short-run marginal cost.

Additionally, the valuator must consider they actually are not profitable for much of the time when they are running. Sometimes the ISO will compensate the less efficient plants during these time periods with additional sources of revenue. Also, plants may be compensated every time they start up. Electricity production and capacity factors can be forecast by reviewing past performance and the future budgets for the plant. Operating expenses can be projected by reviewing operations over the last three to five years. Future capital expenditures are commonly budgeted by plant management for three-, five-, or ten-year periods. Beyond the budget time period, 2% to 3% of the reproduction cost is necessary for sustaining capital, which is needed to keep the plant in safe operating condition.

The result of the income analysis is the value of the entire business enterprise associated with the operating plant. To determine the value of the tangible assets alone, a normal level of net working capital is deducted (based on the guideline company analysis, frequently measured as a percent of revenue); in addition, the intangible assets must be valued, and then deducted. Intangible assets include, but are not limited to, the trained and assembled workforce and management team, operating manuals and procedures, licenses and permits, PPAs, emission credits, and software. The resulting income indicator of value for the tangible assets includes the real estate comprising land, buildings, and land improvements; and the personal property, both electrical generation equipment units and support assets.

## **COST APPROACH**

The final method to be considered is the cost approach. It typically applies to the complete power plant as a generating asset. This approach requires a certain level of knowledge about the economics of the industry and the technology utilized in the industry. To apply the cost approach, CTG must calculate the current cost of a plant, the reproduction cost new (an exact replica) and/or a new modern replacement. The difference



between the costs is a form of functional obsolescence (loss of value from within the property) due to excess capital costs.

The cost of replacement (“COR”) represents the cost of the same equipment or a new modern plant with the same capacity and utility of the subject plant. Such a plant represents current technology from a cost and performance perspective. A deduction from the COR for physical deterioration, based on wear and tear experienced by the property, must be made. This can be calculated based on an age-life relationship of the entire plant, of major component parts of the plant weighted based on the current cost investment in each component, observation, or a combination of the analyses.

Economic obsolescence (a loss of value from an external economic force) also must be investigated. This investigation may include a study of spark spreads or gross margins, inutility, supply/demand relationships, competition, and return on capital; economic obsolescence also can be derived from actual market transactions if appropriate data are available.

The next deduction is another form of functional or operating obsolescence caused by changes in technology. New or different technology frequently results in better control systems, which increase yield and reduces labor and energy requirements; as a result, the new modern plant becomes more valuable. The most frequent difference between an older plant and a new modern plant is reduced operating expenses and a lower heat rate (the ability to convert fuel into electricity). To reflect functional obsolescence due to excess operating expenses or operating obsolescence, an adjustment based on the present value of the after-tax operating expense penalty is made in the cost approach.

The last deduction is a form of both functional and economic obsolescence and sometimes is termed a necessary capital expenditure. Such a capital expense is required by a government agency primarily for environmental reasons. In the case of a coal-fired plant, it is the additional environmental equipment the plant must install to remove various types of emissions, or other types of government-required changes to the plant that do not make the plant larger or more efficient. In fact, most government-required changes tend to make the plant more expensive to operate. For nuclear plants, it is primarily the additional contributions to the decommissioning trust fund. Additional costs could be related to cooling-water environmental concerns related to fish and other water life, or sometimes-just temperature changes in the discharge water. Again, based on the capital budget, the present value of these capital costs is deducted.

After all these deductions are made, the value of the land is added after deducting any known and budgeted clean-up costs from the land value as if clean. This typically is not a major deduction but should be investigated. The result is the cost indicator of value.



## CORRELATION

At this point, three indicators of value have been developed for the subject plant. The value indicated by the sales comparison approach can be a very strong indicator of value because it directly reflects the actions of buyers and sellers in the market. Using even one, two, or three sales gives the client a range of value into which the subject property's value should fall. Even in a market where few sales are available, the appraiser cannot ignore the market. Of course, the sales must be investigated to ensure the sales data used reflect an electrical generating plant similar to the subject. The sold equipment or plants do not have to be exactly the same as the subject, as adjustments will be made to the sale prices; however, they should be as similar as possible.

Any other assets, such as PPAs and other non-operating assets, must be deducted from the sales comparison indicator of value. Because sales of operating plants, actually an operating business, can reflect the investment value of the plant to a particular owner, not a true market value, recognition must be given to the fact that sales prices also can include hidden assets, contracts or agreements, and financing arrangements that may not be public information. In addition, plants that have sold for unusually low or high prices may not reflect a true open market transaction; buyers of operating plants sometimes just want to buy into a market, not only to buy the plant operations.

The income approach, as noted above, is the method buyers and sellers rely upon to make a decision. Buyers and sellers make the market; appraisers only reflect that market. In preparation for negotiating a price, participants in the market typically develop several income approaches to develop a range of reasonableness because they cannot forecast the future with any degree of certainty. No one can! Now, appraisers such as CTG use the results of buyers and sellers in the sales comparison approach and try to imitate their actions by developing an income indicator of value based on projections and an industry-based discount rate. Application of the income approach can be very volatile based on minor changes in the forecast. Although the income approach is a useful valuation tool, it should be supported by either the cost or sales comparison approach to value to increase this approach's reliability.

The cost approach is especially useful for unique property where sales do not exist, and an income approach is not possible. In this approach, the current cost of the property being valued, less all forms of depreciation and obsolescence, plus land value, is developed. One problem, however, is that the appraiser must be knowledgeable of the industry's economics and technology.

Preparing a complete and detailed cost indicator of value is very time consuming and can be costly to the client, but the cost approach can produce the most subject-specific detail of any of the three indicators of value. Unless they are inserted in the cost indicator of value, working capital and intangible asset values are not included.



When fully developed, the three value approaches reflect all attributes of the market. The most supportable and complete valuation utilizes all three indicators of value. In a perfect world, they all support the same value conclusion, or at least a narrow range. All three indicators reflect the market. The market is defined by the actions of buyers and sellers, projections of electricity, fuel prices, operating expenses, future capital investments, the required returns of equity investors, the cost of debt, an industry capital structure, the cost of new modern construction, all forms of depreciation and obsolescence, and industry economics.

When deriving a conclusion from the investigation and analysis of the market to arrive at the most accurate opinion possible, CTG must use its best judgment, experience and common sense to correlate the final conclusion of value. The conclusion must consider market indicators. Valuators do not make the market, valuers reflect the market, but when the market speaks, we listen.

## **FEES FOR SERVICES RENDERED**

CTG's fee structure is flexible, very competitive and totally dependent upon the size, scope and complexity of each assignment. Before initiating any assignment, a complete disclosure of the total fee plus any relevant travel expenses will be made and agreed upon by both parties. A desktop valuation does not require an onsite inspection and therefore reduces cost. A full proposal outlining the services to be performed and the appropriate time-frame for rendering the final report will be made known to the client.

## **THE APPRAISAL AND VALUATION PROCESS**

Before proceeding with any level of valuation depending on its complexity, we interview each client to determine exactly his or her expectations and the scheduling requirements. We will confirm our full understanding of the assignment in writing. Nothing is left to chance. Lastly, we keep the client well informed during the appraisal process, from start to finish.

## **SERVICE OPTIONS**

**CTG's Valuation and Appraisal Services offer a wide range of options for the client including (Select Items of Equipment Only):**

- **Field Appraisals** - a determination of value based upon a physical inspection of the equipment assets in order to determine operating condition followed by extensive research to determine the current value;



- **Desktop Opinions** - a hypothetical determination of value based solely upon information provided by the client and conducted without benefit of a physical inspection;
- **Collateral Evaluations** - a study to determine the long term value potential of a specific unit of power equipment. The evaluation is usually performed to estimate the residual value for equipment leasing purposes;
- **Equipment Inspections** - an on-site physical examination of designated equipment in order to confirm its specific make, model, serial number, hours and its overall operating condition and maintenance history. Value determination is not part of this process;
- **General Appraisals** - the appraisal of surplus power generation equipment manufactured or acquired for use in now cancelled projects, with eventual resale applicability to other customers. This process requires an on-site inspection of the application of the assets to new projects, evaluation of operational history, review of technical specifications and condition assessment, followed by extensive comparative research to determine the current value;
- **Industry Studies** - a thorough examination of a particular manufacturer or product and its relation to the industry it serves. The study can include the history of the manufacturer, its current financial condition and ranking to its competition, a review of its product line or specific product, the product's market rank and a projection of value retention.

## **SPECIALIZED VALUATION CONSULTING SERVICES**

**Residual Matrix** - an analysis of specified equipment segments such as; machine tools, computers or trucks and trailers. The analysis predicts the long-term value of the equipment usually over 1-5 years and incorporates:

- Fair Market Value
- Orderly Liquidation Value
- Forced Liquidation

**Maintenance & Return Provisions** - stipulated requirements that outline in detail the responsibilities of the Lessee in the event the Lessee elects to return the equipment at lease termination. These provisions usually address use and ownership, maintenance & repair, inspection, deinstallation, storage and insurance. In the event the Lessee elects to purchase the equipment then important issues become relevant such as; the advance notice period, the most suitable definition of Fair Market Value ("FMAV") and a fair and equitable appraisal process to settle any value dispute.



**End of Lease Negotiations** - the appraisal process to determine the Fair Market residual Value of certain equipment as stipulated within the lease documents. With our 20 years of industry specific experience in the electrical power generation industry, we are capable of providing a fair and equitable valuation for both Lessee and Lessor. A few of our satisfied clients are listed below:



THE CHUGOKU ELECTRIC POWER CO., INC.



**EWP Renewable Corporation**