**Stahl Table for IPE - HEA - HEB steel beams.**

The optimal method for determining and selecting the technical specifications and dimensions of a steel beam is to utilize Stahl Table. This table holds significant importance for engineers and structural designers due to the fact that steel beams are one of the essential and practical steel products used in construction. In this article, we aim to introduce Stahl Table for IPE - HEA - HEB steel beams.

**A guide to the letters used in Stahl table**

Stahl Table, along with providing dimensional and engineering specifications, particularly bending moments around the x and y axes, assists the structural engineer in offering the most cost-effective and durable option to the client for the procurement of raw materials. Because one of the most critical factors in decision-making for steel structure construction is the use of products and raw materials with the minimum cost and the best quality. Considering that weight is the determining factor in the pricing of various types of steel beams, it is crucial to take this into consideration when making a purchase decision for this product.

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| Flange Width | The height of the web of a steel beam= h |
| Internal radius of curvature to the inner face of the flange | Web thickness |
| Web height – thickness of the two flanges | Flange thickness + internal bending |
| Weight per meter. | The perimeter of the cross-sectional area |
| Section modulus about the x-axis. | Moment of inertia about the x-axis. |
| Moment of inertia about the y-axis | Radius of gyration about the x-axis |
| Radius of gyration about the y-axis | Section modulus about the y-axis. |
| Radial Stress | The surface area of a cross-section. |

To achieve this, calculations need to be performed on the geometric and mechanical specifications to determine the durability of the raw materials, particularly steel beams, which are the primary material used in steel structure construction. These calculations help us determine how to procure a suitable

steel beam for the designed structure at the minimum cost, while ensuring the desired end result meets the standard strength requirements. To make a desirable selection, one can utilize the Stahl table, considering important dimensions such as the height of the web (h), flange width (b), flange thickness (t), and web thickness (s) as the primary parameters to initiate calculation. This can be achieved by comparing and calculating the dimensional parameters in terms of flexural behavior with the final weight during the calculation of the steel beam's final weight using the specific weight (G) obtained from the Stahl table.

⁂Moment of inertia is essentially the measure of a body's resistance to rotation from its natural position about a specific axis.

⁂The radius of gyration is a distance from a reference axis. If the entire area is concentrated at this distance, the moment of inertia about the coordinate axis would be equal to the moment of inertia of the original area. In selecting the desired size, the four aforementioned factors are the determinants of the mechanical specifications and behaviors of the beam against applied forces including flexural behavior (moment of inertia) and tension (T) in two significant axes: horizontal (X) and vertical (Y) . You can examine and analyze these factors within the table to select the economical option with the best technical performance.