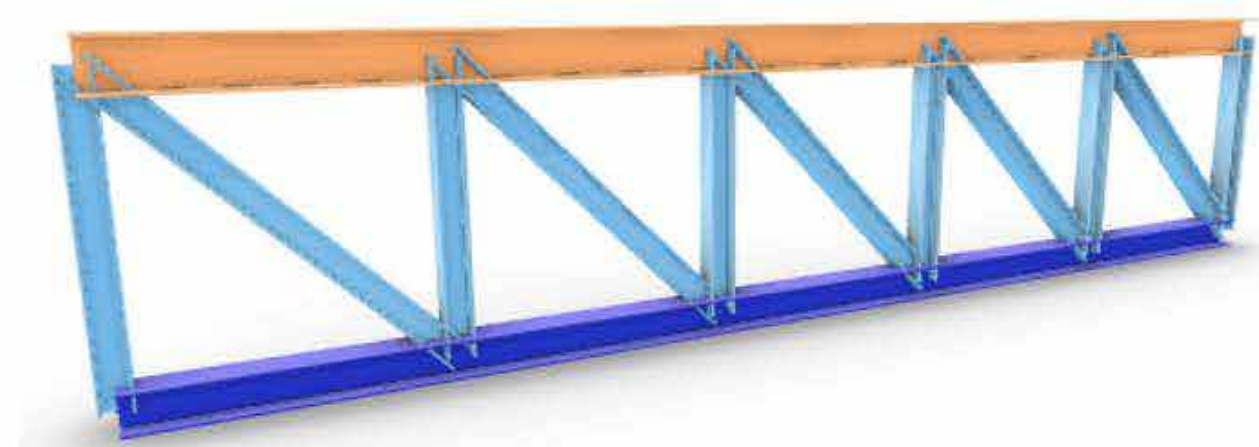
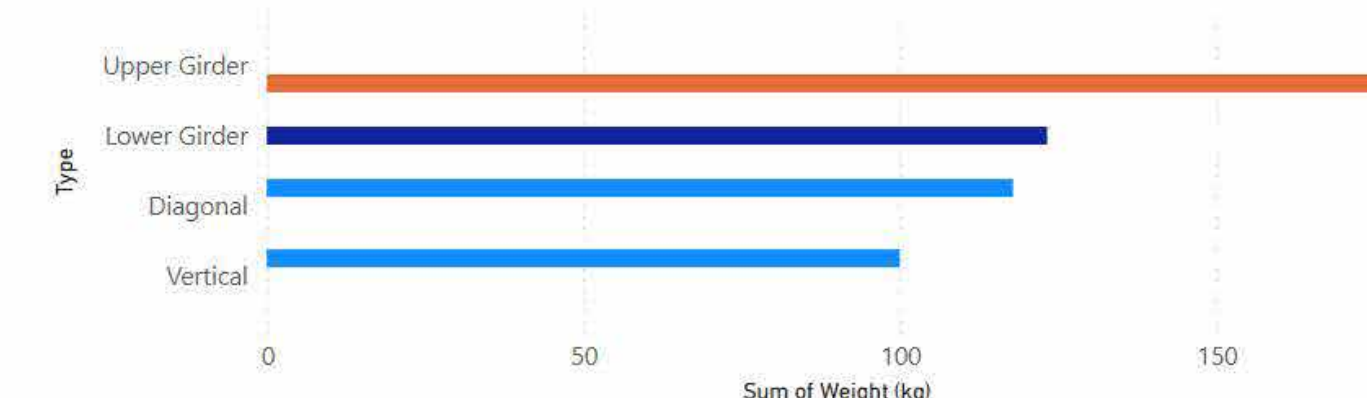




| ID            | Weight (kg)   | My (kN/m) | Nx (kN) |
|---------------|---------------|-----------|---------|
| Diagonal10    | 23,58         | 0,00      | -265,84 |
| Diagonal11    | 23,58         | 0,00      | -253,61 |
| Diagonal12    | 23,58         | 0,00      | 152,12  |
| Diagonal13    | 23,58         | 0,00      | 183,50  |
| Diagonal14    | 23,58         | 0,00      | 170,68  |
| Lower Girder5 | 24,66         | -6,55     | -5,78   |
| Lower Girder6 | 24,66         | -1,79     | 182,94  |
| Lower Girder7 | 24,66         | 1,41      | 75,57   |
| Lower Girder8 | 24,66         | 0,90      | -61,98  |
| Lower Girder9 | 24,66         | -3,22     | -190,75 |
| <b>Total</b>  | <b>518,82</b> |           |         |

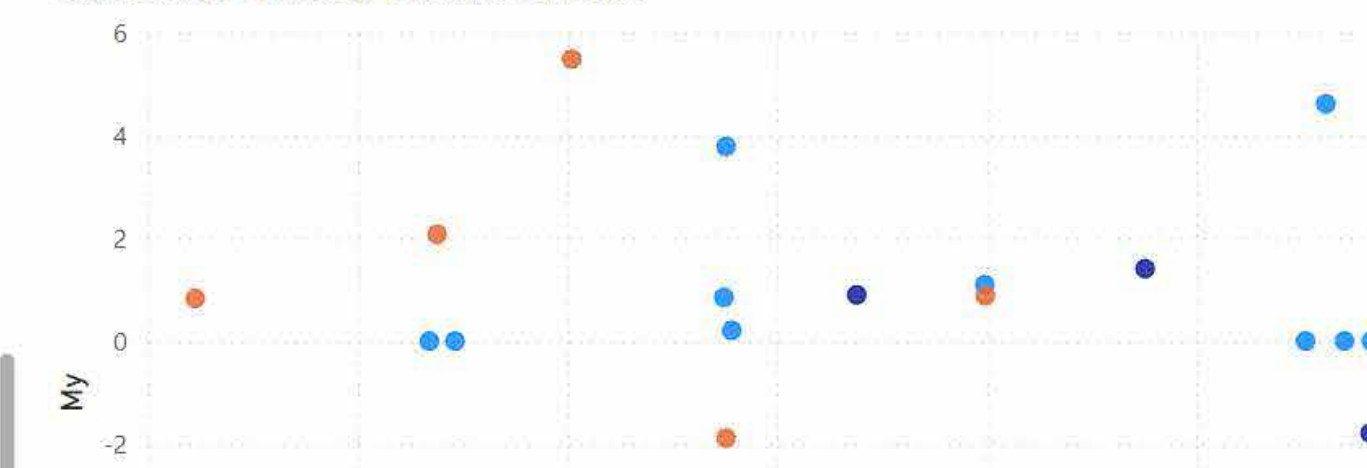
Sum of Weight (kg) by Type and Cross Section

Cross Section ● HEA100 ● HEA140 ● HEA180



Nx (kN) and My by ID and Cross Section

Cross Section ● HEA100 ● HEA140 ● HEA180



# WSO2

## Parametric Engineering: Collaborate and interact with structural data on the cloud

Karamba3D allows for quick, accurate, and parametric finite element calculation. Geometries can be quickly optimized and iterated through parametric processes. Leveraging the Speckle platform, collaboration has been made easier, where structural models can be sent and received from the cloud. The workshop will also explore interactive dashboards in PowerBI where one can access the data from the structural calculation and optimization results from Karamba3D to have a holistic understanding of the models.

The workshop will be taught in a seminar-style format, where the tutors will guide the participants through live demos, and the participants will have the opportunity to experiment with the prepared material.

Tutors · Clemens Preisinger, Matthew Tam and Georg Lobe |  
**University of Applied Arts Vienna, Karamba3D, Bollinger+Grohmann**

Requirements · **Participants should bring their own laptops (windows is preferred) previous knowledge in Rhino/Grasshopper/Karamba3D/Speckle/PowerBI would be greatly beneficial**

Capacity · **25 Participants**



October 26 | 9 – 18h  
Centro de Ingeniería Avanzada  
CU UNAM