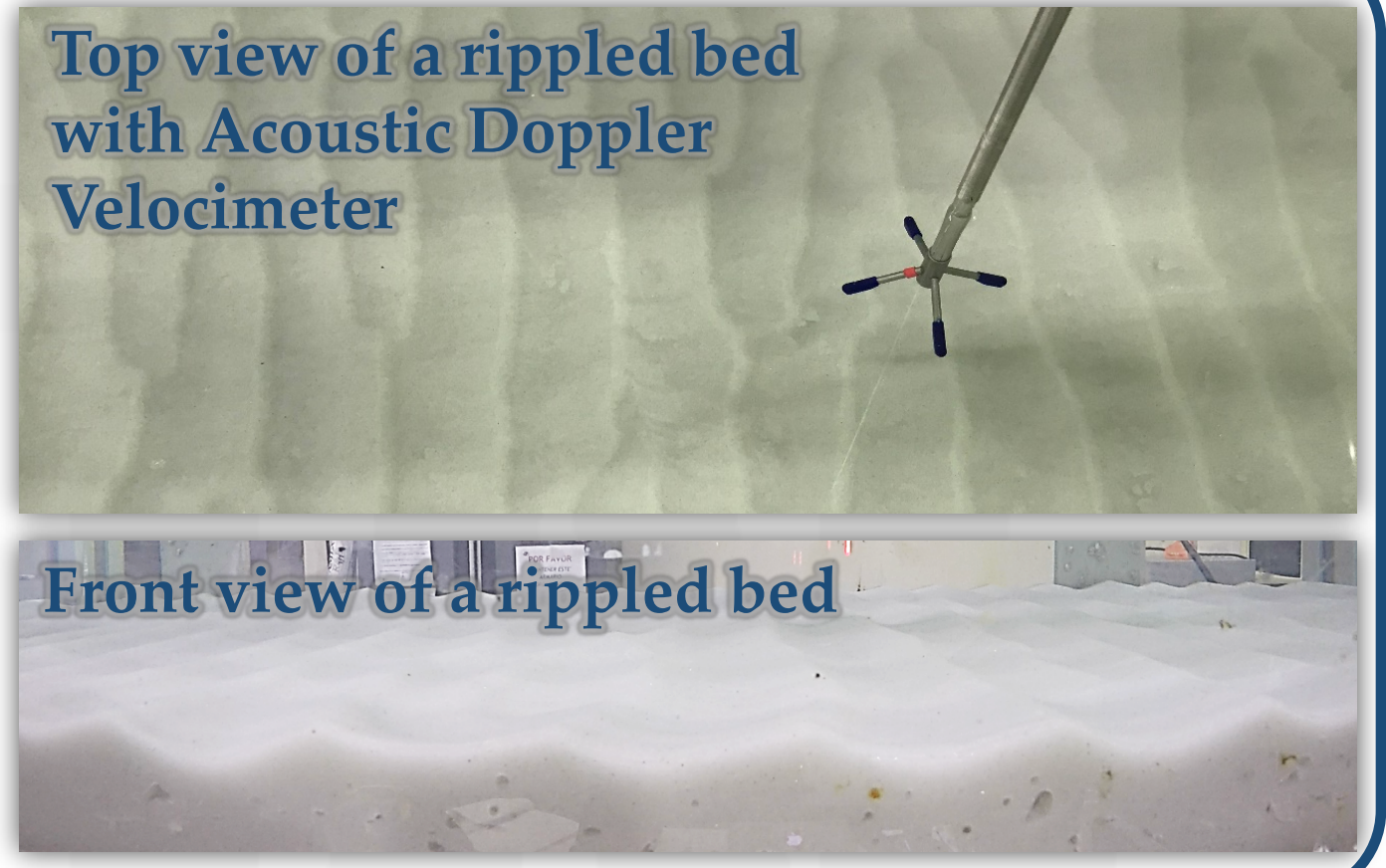


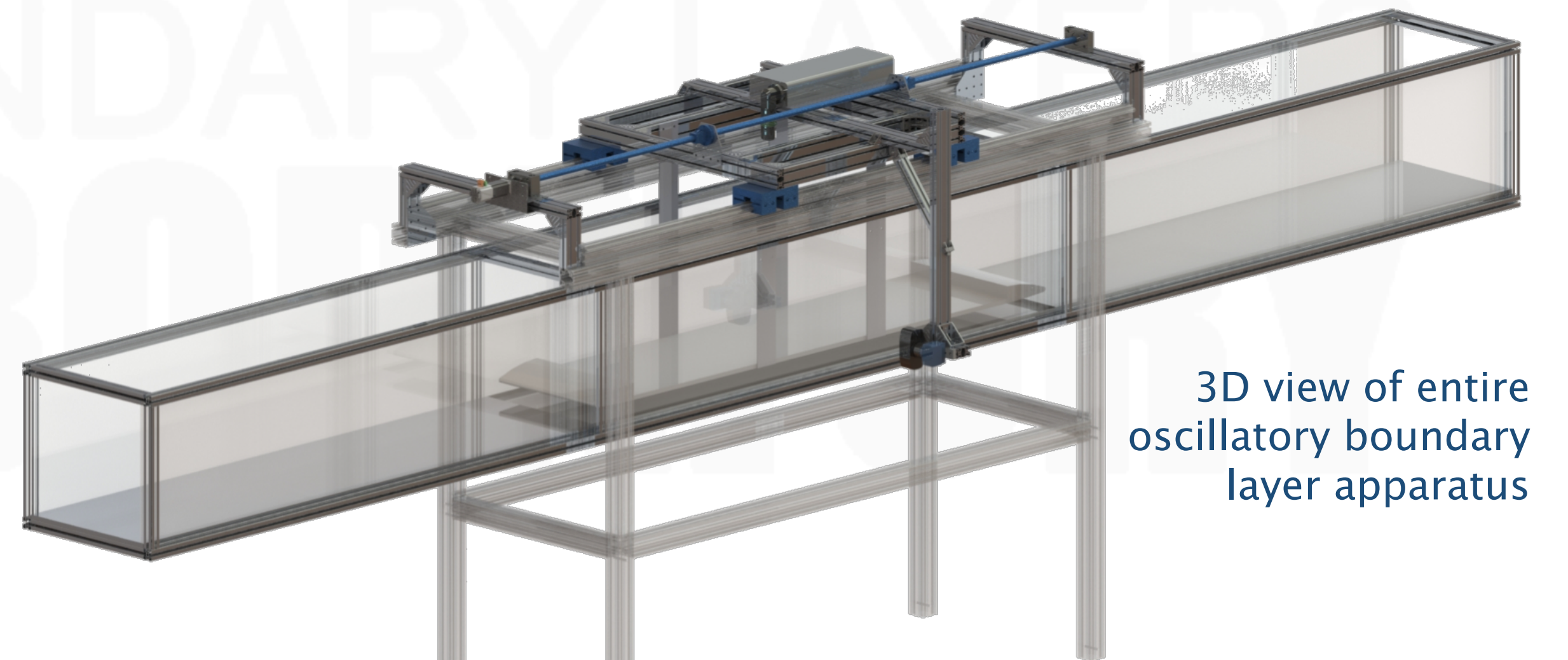
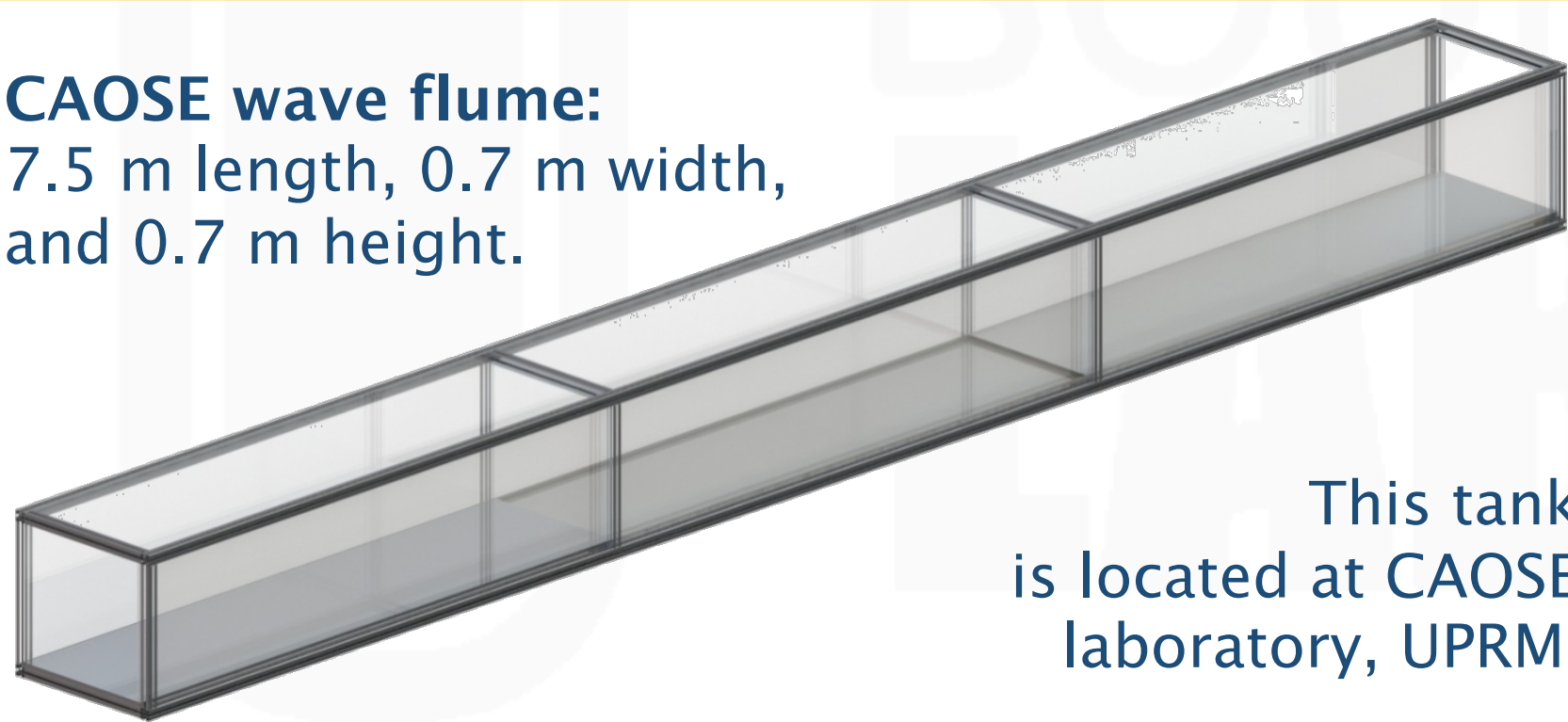
Introduction

Sediment ripples are small undulated formations at the seabed formed by the constant oscillations of water waves, which induce suspension and movement of sediment particles. Flow physics in this environment are being studied by our group to better understand transport phenomena, including contaminants, nutrients, benthic ecosystems, among others. **Our objective** is to experimentally simulate these conditions in the wave flume located in facilities of CAOSE Laboratory at UPRM. The design of our **boundary layer apparatus** includes a rigid structural frame de-coupled from the wave flume, a sediment tray, Acoustic Velocimeters, cameras, lasers, linear rollers, a ball screw system with a servo motor, among others.

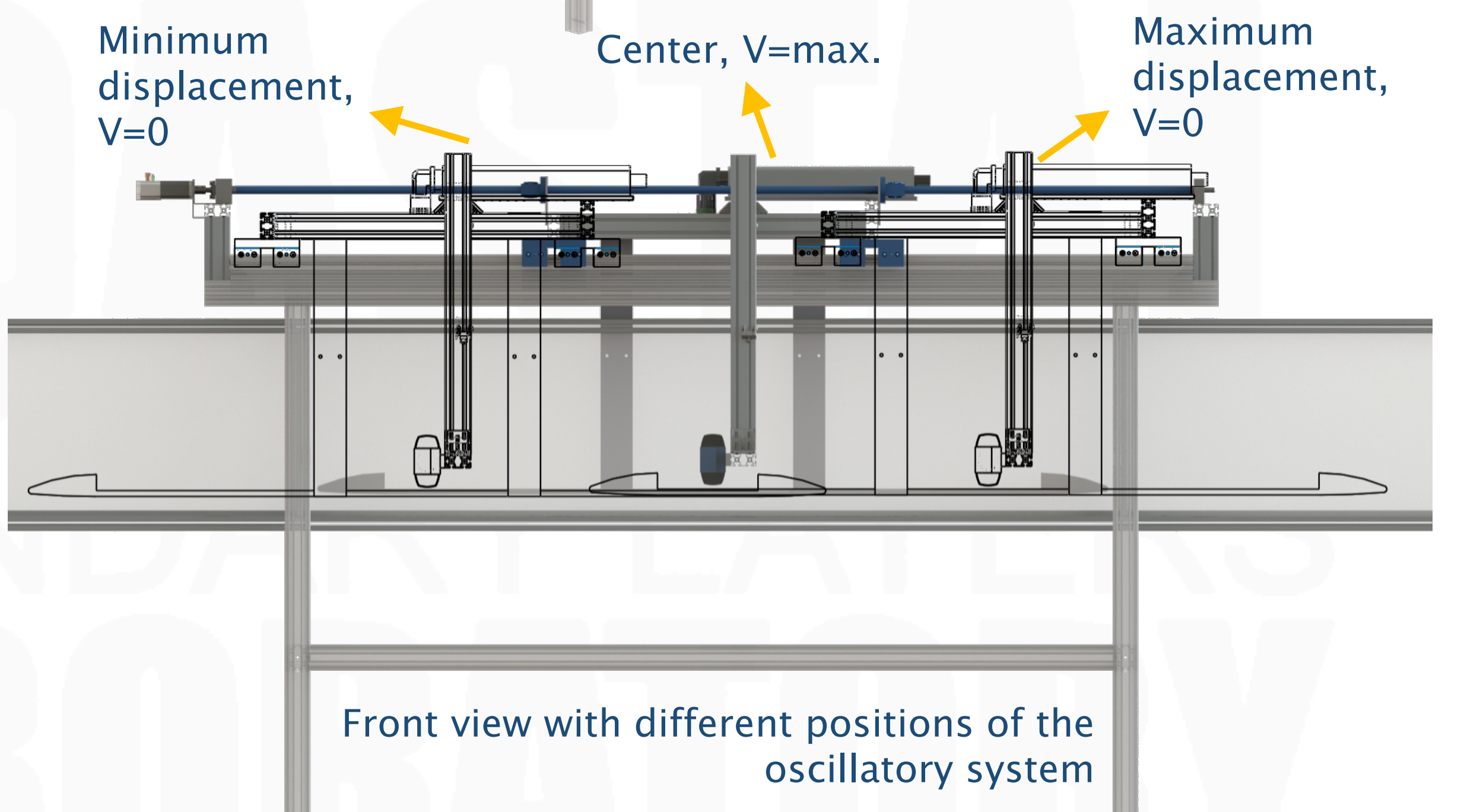
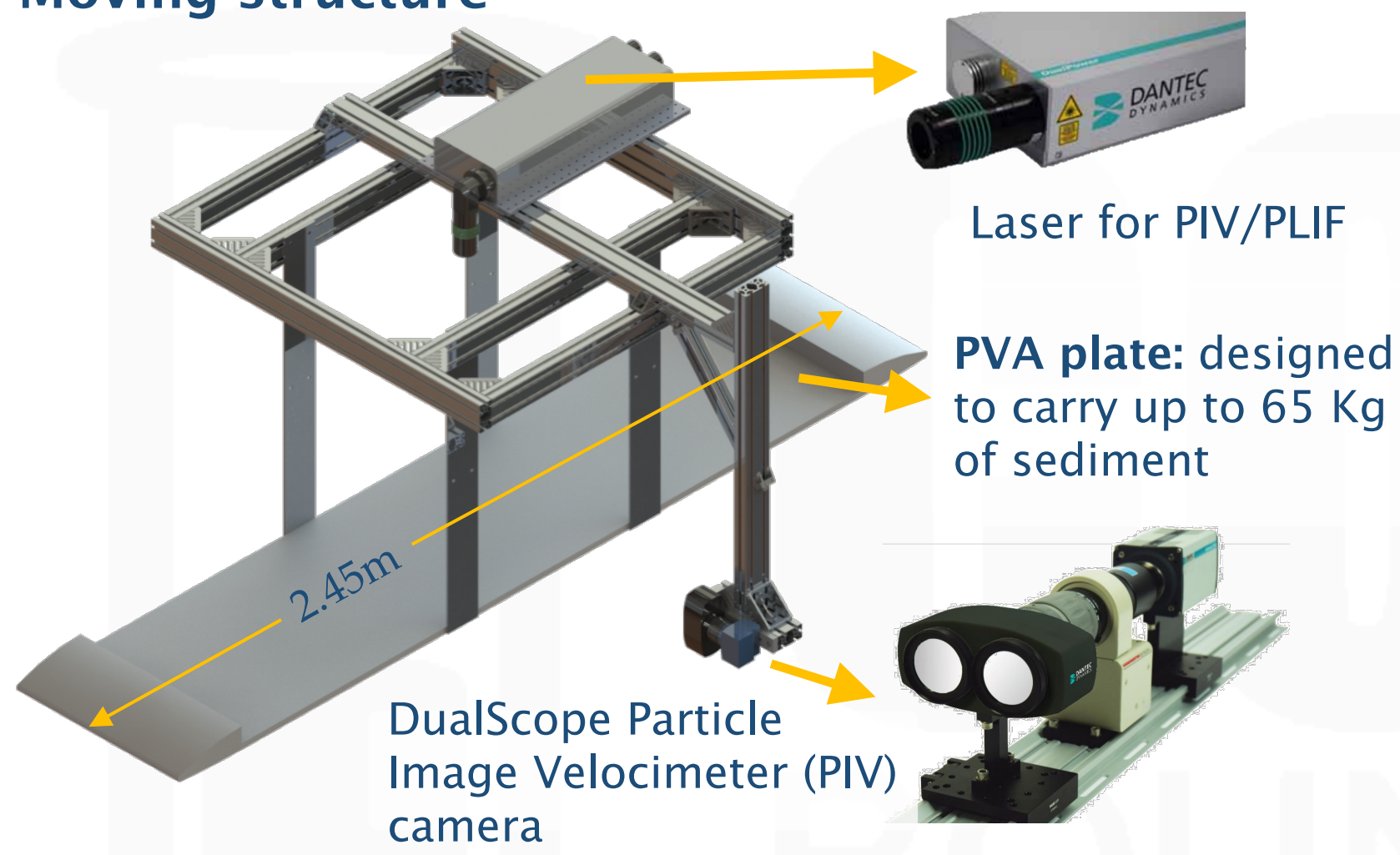


3D-CAD design

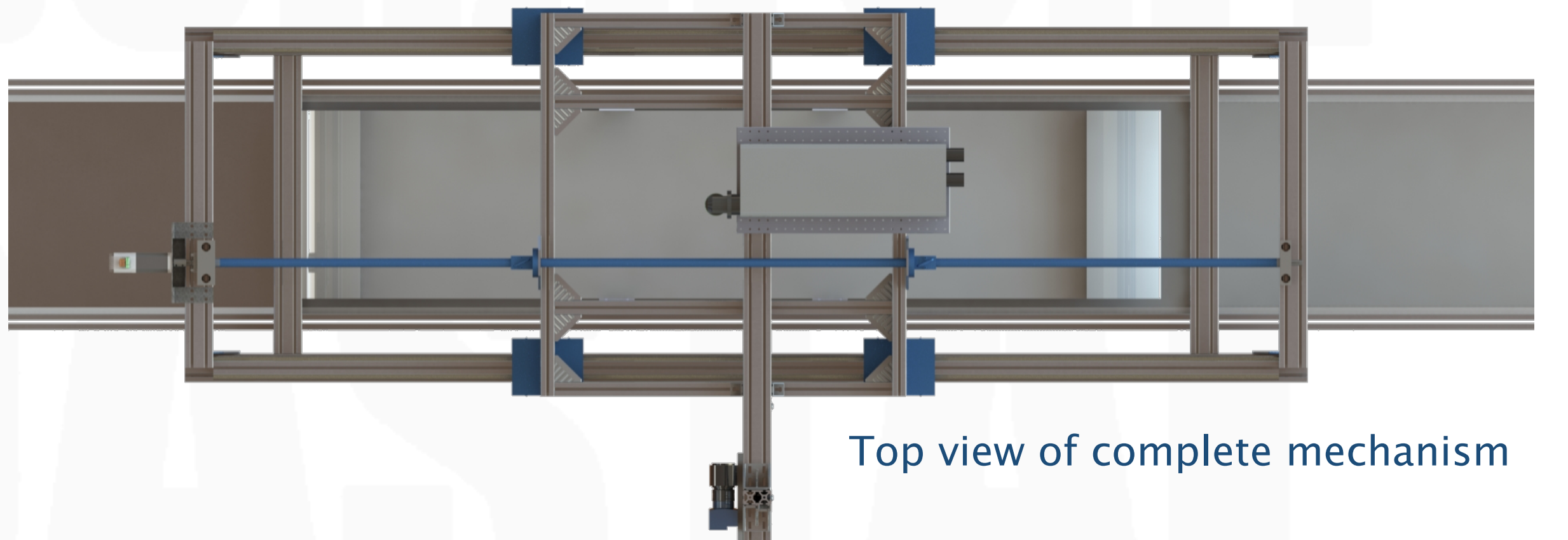
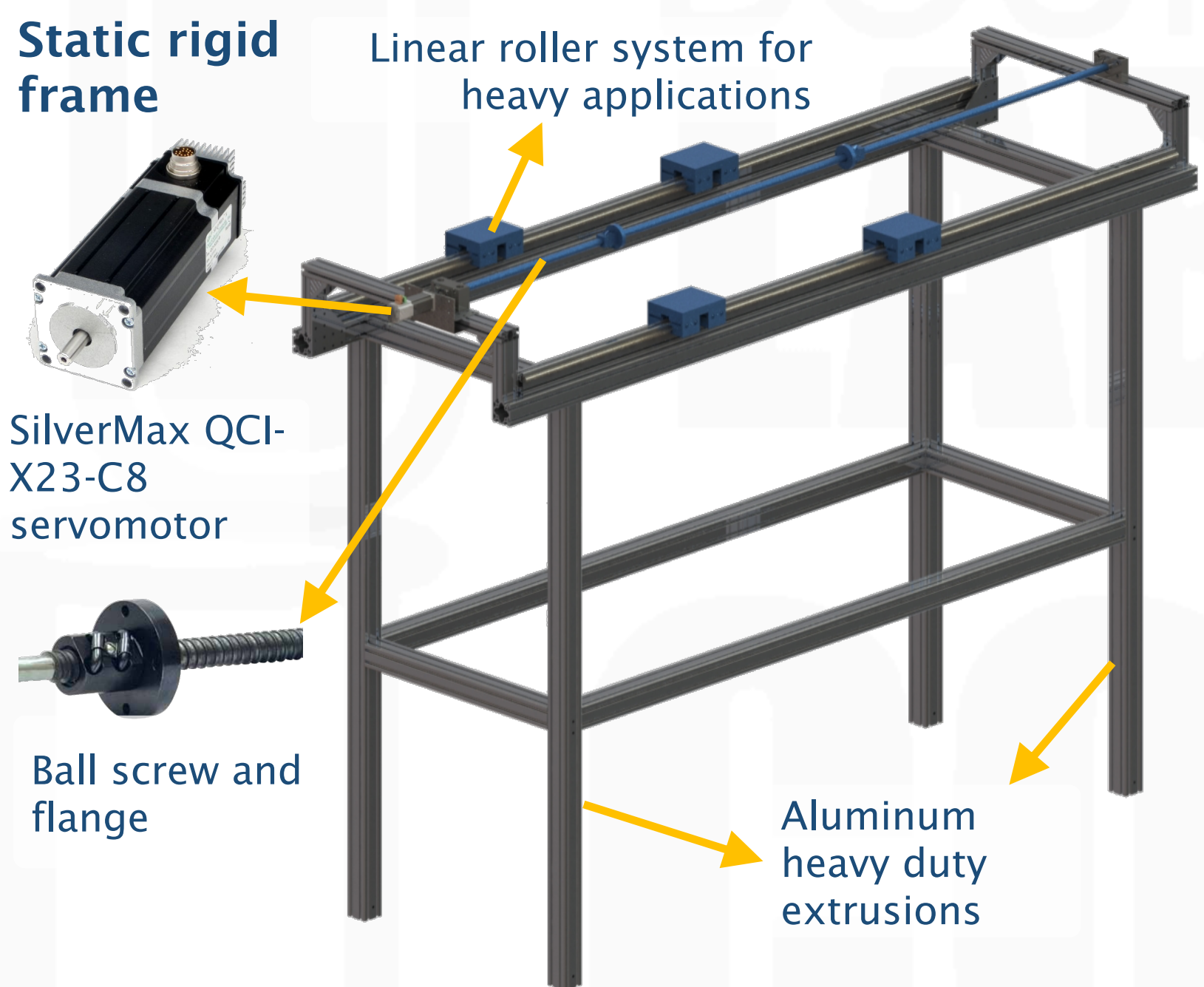
CAOSE wave flume:
 7.5 m length, 0.7 m width,
 and 0.7 m height.



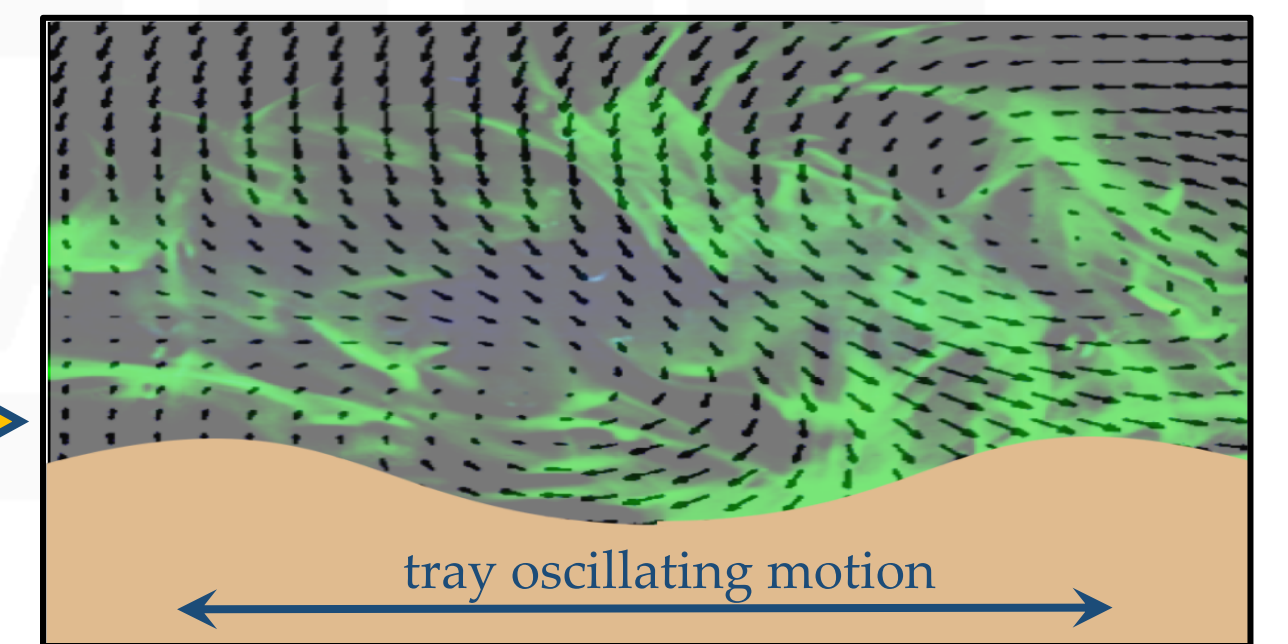
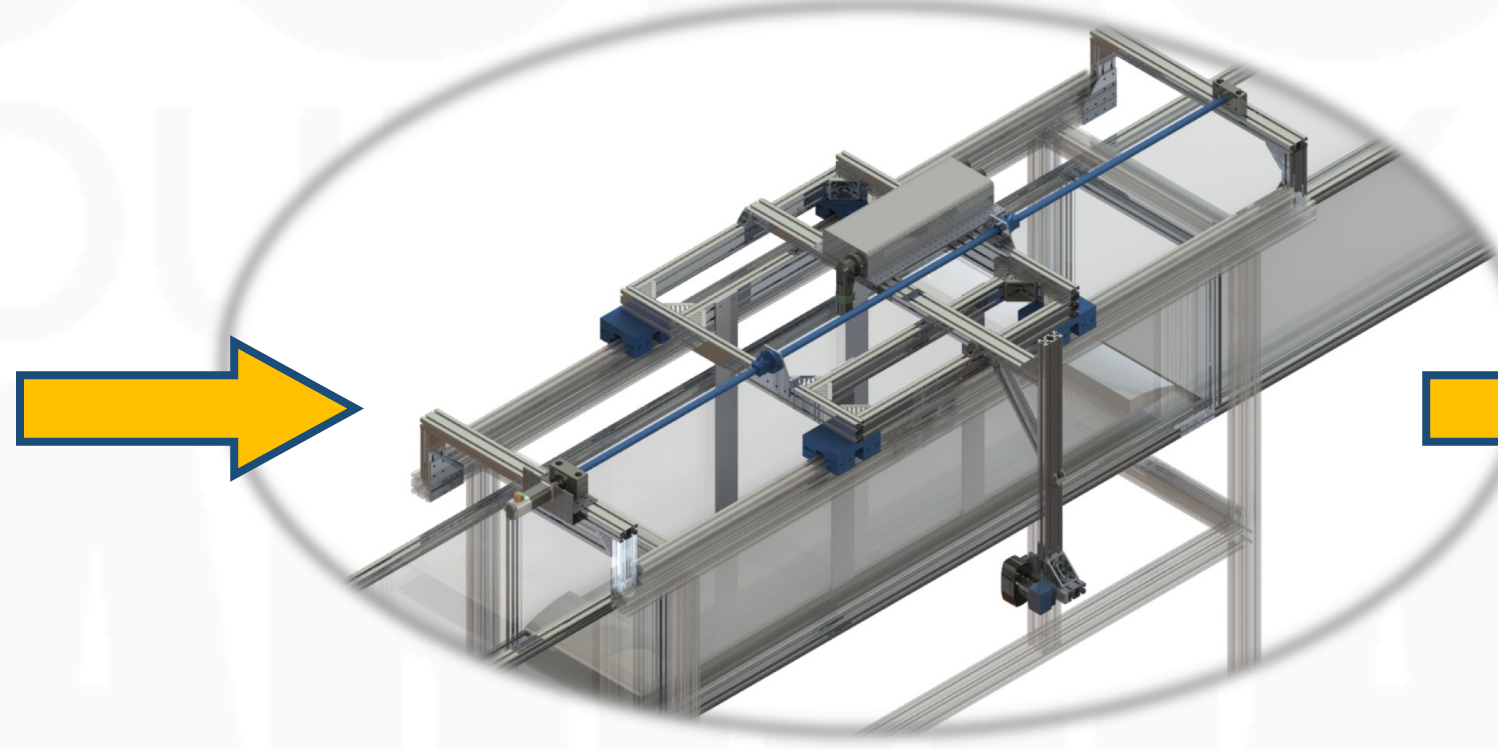
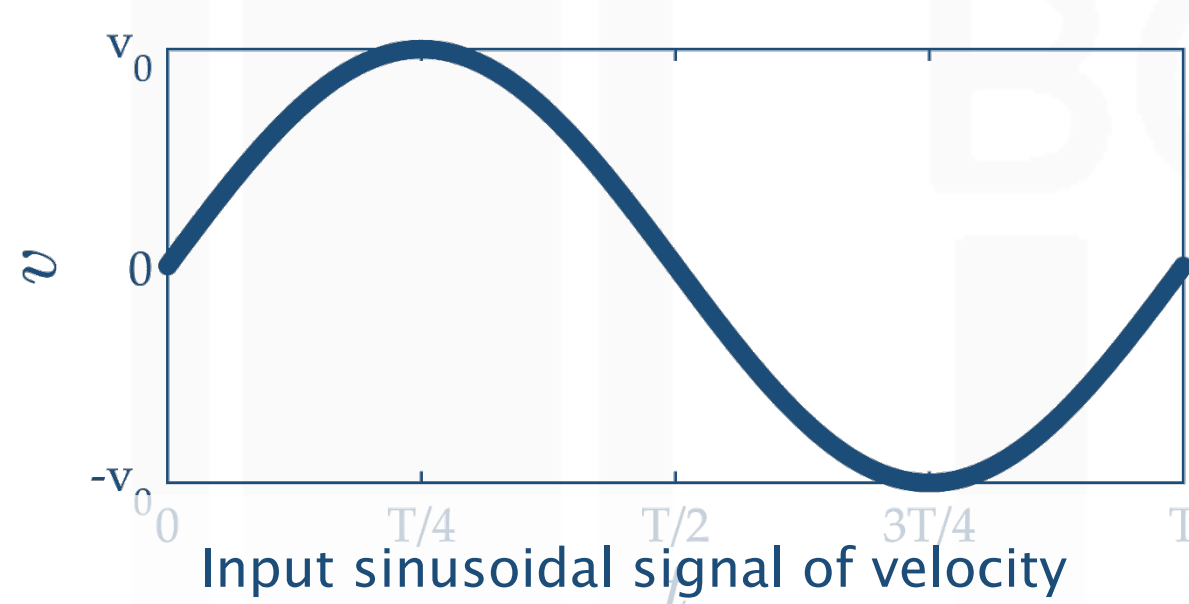
Moving structure



Static rigid frame



System overview



Sample image of dye concentration and flow fluctuations due to waves on a rippled boundary