

## The KMITL Geotechnical Centrifuge Facility

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Owner: King Mongkut's Institute of Technology Ladkrabang

Location: Bangkok, Thailand

### Introduction

Physical modeling, through the use of a centrifuge, is crucial for comprehending the key factors that affect the performance of geotechnical materials by simulating scaled-down versions of real-world processes. It allows us to identify the critical parameters that control its behavior and to evaluate the efficiency of new designs and solutions. Our KMITL Geotechnical Centrifuge Facility in Bangkok, Thailand, is equipped with a 5.4 meter diameter and 150 g-ton capacity, which allows us to conduct a wide range of experiments and testing. Our centrifuge is predominantly used for research and teaching purposes. On demand, we also offer highly-specialized consulting services to the industry, providing them with the necessary data and insights to design and construct safe and efficient geotechnical structures. Our centrifuge is not only a research tool, but also a valuable asset for the industry, enabling them to test and validate their designs in a controlled and efficient manner.

### Key Technical Specifications

Beam Centrifuge	
Manufacturer	KMITL
Year established	2023
Radius to base of soil container	3.7 m
Capacity	150 g-ton (max G-level: 150g)
Bucket area	1 m x 1 m
Major equipment	4 axis robotic manipulator Humidity and rainfall simulation

### Beam Centrifuge

The KMITL Geotechnical Centrifuge Facility, located in Bangkok, Thailand, is a brand new commercial centrifuge that represents a significant step forward for the geotechnical community in Thailand. With an effective diameter of 5.42 meters, it is capable of accelerating up to 150g, and has a payload capacity of 1 ton. Its 150-ton capacity enables geotechnical processes to be simulated on a small scale model. Our centrifuge, despite its compact size in comparison to major facilities around the world, has been engineered to provide optimal accessibility and efficiency in terms of test turnaround time. Additionally, the maintenance required for the machine has been designed to be both less complicated and more cost-effective. The facility has also been constructed at an elevation of one meter above ground level in order to mitigate potential flooding issues in the surrounding

area. The centrifuge is also equipped with a platform measuring 1 m x 1 m x 1.4 m, where the soil container is placed. The setup offers the possibility of a soil container of up to 1.4 m length, allowing testing of large models corresponding to up to 210 m length (at the maximum g level).



KMITL Geotechnical Centrifuge Facility in Bangkok, Thailand