IITI DRISHTI CPS Foundation

TECHNOLOGY DEVELOPMENT PROGRAM

SMART CITIES AND SOCIETIES

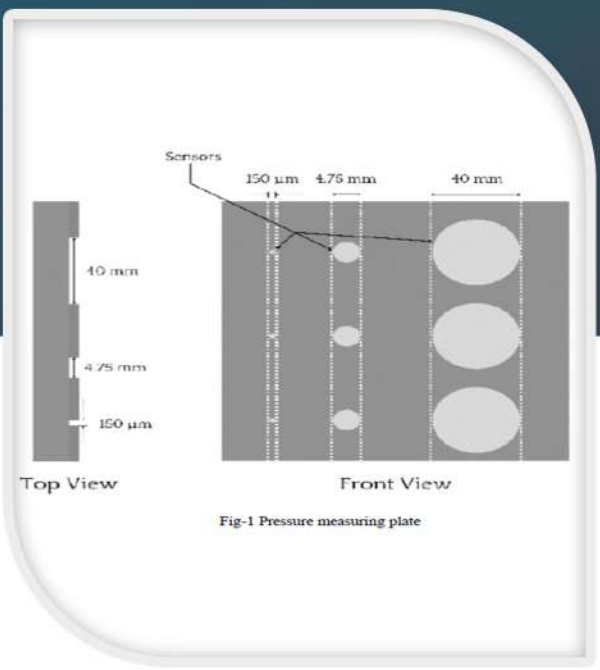

Fig-1 Pressure measuring plate

Hydrostatic Digital Twin

Real-time quality control tool for fresh-state concrete using a hydrostatic digital twin model

Issue Being Addressed

- Conventionally used quality control tests are time-consuming and less effective for the industry
- Conventional methods have a significant scope of human error, which extends the time and cost of construction
- Multiple tests are used to determine the engineering properties of the fresh-state concrete and to determine the quality of fresh-state concrete

Key Feature of the Technology/Product /App Which is Being Developed

- The solutions can be implemented with actuators to fully automate the concrete manufacturing process
- The proposed quality control tool, will lower the defects and save construction time, which will improve the overall economy of the construction projects

CPS Relevance

- The hydrostatic pressure of concrete will be monitored in physical space in real-time. The profile of hydrostatic pressure in physical space will be compared with predicted values from various digital twins. The selected digital twin will identify the real-time quality and defects of concrete in physical space

Impact & Benefits

- The proposed quality control tool, will lower the defects and save construction time, which will improve the overall economy of the construction projects

Team

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CHANAKYA UG Fellowship

Targeted Customers & End Users

- Construction Industries
- Building product manufacturing industries

Commercialization Status

- Developed a model using Monte Carlo simulation which is used to generate the different hydrostatic pressure profiles