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PROJECT ON

"DEVELOPMENT OF DUAL PURPOSE LOW VELOCITY IMPACT TEST RIG"

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ABSTRACT

Dynamic loadings are commonly found in the real world, e.g. impact, crash and blast loadings. Quite some dynamic testing techniques have been developed for laboratory uses ranging from material characterization to testing simulation. Low velocity impact has been an important study in material characterization due to its common occurrence.

As an efficient way to perform low-velocity impact tests, drop-weight impact testing machines have been commonly used. The commercially available low velocity impact testing machines are sophisticated and are costly. This project aims at designing and developing a low cost low velocity impact test rig which can be used In both air and fluid surround environments. The low velocity test rig is fabricated with simple robust design and has simple mechanisms and is easy to operate.

The fabricated test rig is versatile and can be used to test various materials including the composites under two different environments for studying their dynamic behavior under low velocity impact. Further the test rig was used to test a sample mild steel specimen under impact load for different heights and for a constant weight. Strain readings from strain gage mounted on the bottom of the specimen were recorded using the national instruments data acquisition system and labVIEW software.

The peak strains obtained gives an idea of the effect of impact on the specimen. The graphs and data can be further analyzed to study the different dynamic behavior of the sample material.