The Slurpper: Gas Operated Super Suction & Spray Device (GOS^{3}D)

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This is the first developed maintenance-free multipurpose SLUPPER which can be used as dry and wet vacuum cleaner, pump, blower, sprayer for almost any medium (e.g. solid & liquid) operated by pressurised gas employing basic Bernoulli and Venturi principle. Few sets of experiments were then conducted considering two critical parameters namely, gun pressure inlet angle and inlet & outlet pipe diameters. Two compressible fluid flow models were employed to model the performance of the slurpper which were mass conservation model and energy balance model to obtain the optimized suction velocity. Subsequently, wire-frame and solid modelling of the system were also generated for Finite Element Analysis (FEA) using COSMOS X-Press to simulate the actual working conditions prior to fabrication process. Finally, the slurpper was operationally validated using with 1.5 litres, 4 cylinder engine running with 1200rpm. The results tested with various mediums were able to transfer excellent rates exhibiting as shown in the results. The suction velocity was estimated to be about 17m/s (60km/h). Invention of slurpper can be proudly concluded that, not only it can be operated successfully by exhaust gas, but also by any pressurised gas medium which can be simultaneously used for dry and wet vacuuming and spraying without the need of electricity as conventionally practiced. Not only it is compact and handy, but this maintenance free super durable slurpper enables life time warranty.