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| **Abstract:** |  |
| Abstract— In this work, we have developed a very low-cost synchronous machine that can be run as both a synchronous motor as well an alternator. When the machine runs as an alternator, an induction motor or a DC shunt motor is required as the prime mover. This has also been developed. The machine has four poles. Its stator voltage is 415 V (AC), stator current is 0.75 A, rotor voltage is 0 to 240 V (DC) and rotor current is 0.4 A. With this machine, at least eight experiments can be performed for undergraduate-level students. There are future expansion provisions in this machine. All the experimental results support theory. It has also been found that the machine reduces the cost by around 67 % than that of an equivalent machine imported from a foreign country. | |