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Advanced metering infrastructure system architecture based demand response program

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Smart meters have the potential to transform consumers' relationship with energy bringing considerable benefits and also for energy industry. A smart metering solution generally delivers a range of applications using an infrastructure comprising networked meters, communication networks, and data collection and management systems. The program of Advanced Metering Infrastructure System Architecture Based Demand Response (AMIDR): Demand response incentive program submitted to the electricity company (EC) is a response to a voluntary to motivate participants to reduce the load at peak periods. The program is incentive rates for the customers, which they get in return if they reduce the power demand during the system peak period. The electricity company (EC) will pay for the customers an incentive which depends on the level of reduction in demand power each month during the peak periods. One of the main objectives of the program (AMIDR) is to raise the efficiency of energy demand and further secure the electrical grid.

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Vertical axis turbine for water power harnessing in micro scale

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Small hydrokinetic turbines include mini hydro (capacity less than 1 MW) and micro hydro (capacity less than 100 kW) turbines. For inclusive growth of hydro power projects, both Mini and Micro level (ultra-low head) hydro-power projects need to be implemented rigorously. Though at mini level, the turbine technology is somewhat developed, but it is not so much in micro-level applications. Micro hydrokinetic power plant could satisfy the electricity needs of smaller communities, single families or small enterprises where grid-connected electricity is scarce. Such power plants often encounter head lower than 5 m, called ultra-low head, which can be suitably tapped for producing electricity especially in run-off river locations where such heads prevail. And most of the rural people living in such locations often have grid-less conditions having to use candles or burn kerosene which even cause carbon emission and hence global warming. Small tributary of river basin generally have low annual average discharge. Ultra-low head micro hydrokinetic cross flow (MHKCF) vertical axis turbines can work efficiently in low discharge perennial tributaries for harnessing micro-scale power. People residing in remote villages may also harvest small scale electricity from these tributaries, which will not only improve their living standards but also influence their economy. Usually, the performance of vertical axis turbine depends on the river flow parameters, which depend on the morphological characters of river reach. Thus suitable turbine designs need to be conceptualized for river reaches. The design and development of MHKCF vertical axis turbines for such cases can be effectively carried out by using Computational Fluid Dynamics, which shall be followed by detailed experimental works for validation.

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