Table 1. Specifications of 1.0 liter 2-cylinder BUSDIG engine.

Table 2. Boost pressure distribution between supercharger (S) and turbocharger (T) for S-T setup.

Table 3. Boost pressure distribution between turbocharger (T) and supercharger (S) for T-S setup

Figure 1. schematic of the design of BUSDIG engine [7].

Figure 2. Simulation model of the baseline 2-cylinder 1.0 L BUSDIG engine with single stage turbocharger.

Figure 3. Normalized valve lift profiles used in simulations.

Figure 4. Schematics of the boost strategies used in this study.

Figure 5. Effect of EVO on engine brake power with a turbocharger.

Figure 6. Effect of EVO on engine brake torque with a turbocharger.

Figure 7. Effect of EVO on engine mass airflow rate with a turbocharger.

Figure 8. Effect of EVO on engine brake thermal efficiency with a turbocharger.

Figure 9. Effect of EVO on turbine inlet temperature with a turbocharger.

Figure 10. Effect of ED on engine brake power with a turbocharger.

Figure 11. Effect of ED on engine brake torque with a turbocharger.

Figure 12. Effect of ED on turbine inlet temperature with a turbocharger.

Figure 13. Effect of ED on engine brake thermal efficiency with a turbocharger.

Figure 14. Effect of boost pressure distribution on brake power for the S-T setup.

Figure 15. Effect of boost pressure distribution on brake torque for the S-T setup.

Figure 16. Effect of boost pressure distribution on intake/exhaust pressure for the S-T setup.

Figure 17. Effect of boost pressure distribution on brake thermal efficiency for the S-T setup.

Figure 18. Effect of boost pressure distribution on brake power for the T-S setup.

Figure 19. Effect of boost pressure distribution on brake torque for the T-S setup.

Figure 20. Effect of boost pressure distribution on brake thermal efficiency for the T-S setup.

Figure 21. Power consumption by supercharger with S-T and T-S setups.