CLAIMS:

1. An aircraft engine system (50, 150, 180, 250) comprising:

a high pressure stage turbocharger assembly (52, 252) comprising a high pressure stage wastegate (88, 288) and a turbocharger control unit (80, 280) configured for controlling pressure input to the engine (E) by controlling the extent to which the high pressure stage wastegate opens and closes; and

a supplemental stage turbocharger assembly (56, 256) disposed in series with respect to said high pressure stage turbocharger assembly comprising a supplemental wastegate (132, 332, 349) and a supplemental turbocharger control unit (120, 320) configured for controlling pressure input to the high pressure stage turbocharger assembly by controlling the extent to which the supplemental wastegate opens and closes, characterised in that the supplemental stage turbocharger assembly is configured to provide

a compressor unit (62, 262) of the high pressure stage turbocharger assembly with substantially constant original critical altitude pressure input when the aircraft engine system is located

above an original critical altitude (CR) of the aircraft engine system and below a new critical altitude (CR2, CR3) of the aircraft engine system.

2. An aircraft engine system according to claim 1, wherein the supplemental stage turbocharger assembly is added as a retrofit assembly to the aircraft engine.

3. An aircraft engine system according to claim 1, wherein the supplemental stage turbocharger assembly is a multistage supplemental turbocharger assembly and comprises two or more turbochargers (300, 341) disposed in series to one another.

4. An aircraft engine system according to claim 1, wherein said turbocharger control unit is configured to be operated in a closed-loop system within the high pressure stage turbocharger assembly.

5. An aircraft engine system according to claim 1, wherein said supplemental wastegate is configured for assuring that a compressor (104, 304, 345) of the supplemental stage turbocharger assembly generates said constant original critical altitude pressure input.

6. An aircraft engine system according to claim 1, wherein said constant original critical altitude pressure input is corresponding with the pressure input residing at the original critical altitude.

7. An aircraft engine system according to claim 1, wherein the supplemental wastegate is disconnected from said turbocharger control unit.

8. An aircraft engine system according to claim 5, wherein said supplemental control unit is configured for monitoring pressure output from the compressor of the supplemental stage turbocharger assembly, so as to generate a control signal to the supplemental wastegate.

9. An aircraft configured with an engine system according to any one of claims 1-8.