Claims

1. A method for designing an aircraft, the method comprising:

a. defining an initial catalog of requirements for at least one aircraft design, the catalog of requirements comprising requirements relating to one or more of a minimum payload, a minimum range, take off and landing requirements, a minimum cruising altitude, a minimum cruising speed and maximum values for one or more of a wing span, a fuselage length and a surface pressure per wheel of a landing gear for the at least one aircraft design;

b. carrying out an optimization of the at least one aircraft design based on the catalog of requirements in terms of anticipated operating costs;

c. simulating a predefined total flight network with the at least one aircraft design and determining a total flight network efficiency;

d. checking whether the determined total flight network efficiency constitutes an optimum; and

e. adapting the catalog of requirements and performing an iteration starting from step (b) upon a determination that the determined total flight network efficiency does not constitute the optimum.

2. The method as claimed in claim 1, wherein the simulation in step (c) uses information about one or more of a length of a flight route, take off and landing conditions for any airport on individual flight routes and maximum values for one or more of a wing span, a fuselage length and a surface

pressure per wheel of the landing gear, which are made available for every flight route of the total flight network.

3. The method as claimed in claim 2, wherein the simulation in step (c) uses information about a payload volume or about airport slots at the airports on the individual flight routes, which are made available for every flight route of the total flight network.

4. The method as claimed in claim 3, wherein the payload volume is used in the simulation in step (c) and is broken down into a standard rate payload volume and a special rate payload volume.

5. The method as claimed in claim 1, wherein aircraft models which are already available are taken into account in the simulation in step (c).

6. The method as claimed in claim 1, wherein the adaptation of the catalog of requirements in step (e) gives rise to a change in a number of aircraft designs in the catalog of requirements.

7. The method as claimed in claim 1, further comprising providing constraints that are predefined in relation to a maximum number of aircraft designs or maximum development costs for all of the aircraft designs.

8. The method as claimed in claim 1, wherein the optimization in step (b) is carried out by means of a synthesis method.

9. A system for designing aircraft, the system comprising:

a catalog of requirements memory storing a catalog of requirements for at least one aircraft design;

a synthesis module configured to determine aircraft designs optimized in terms of costs based on the catalog of requirements from the catalog of requirements memory;

a simulation module configured to carry out a simulation of a total flight network with the aircraft designs determined by the synthesis module and to determine a total flight network efficiency; and

an optimization module configured to check whether the total flight network efficiency determined by the simulation module is an optimum and, upon a determination that the determined total flight network efficiency does not constitute the optimum, to change the catalog of requirements in the catalog of requirements memory.

10. The system as claimed in claim 9, further comprising a first data base connected to the simulation module and containing information on all flight routes of the total flight network.

11. The system as claimed in claim 9, further comprising a second data base connected to the simulation module and containing information on available aircraft models, the simulation module being configured to take into account the information on the available aircraft models while the simulation of the total flight network is being carried out.

12. The system as claimed in claim 9, wherein the system is

configured to carry out a method for designing an aircraft, the method comprising:

a. defining an initial catalog of requirements for the at least one aircraft design;

b. carrying out the optimization of the at least one aircraft design based on the catalog of requirements in terms of anticipated operating costs;

c. simulating the total flight network with the at least one aircraft design and determining the total flight network efficiency;

d. checking whether the determined total flight network efficiency constitutes the optimum; and

e. adapting the catalog of requirements and performing an iteration starting from step (b) upon a determination that the determined total flight network efficiency does not constitute the optimum.

13. The method as claimed in claim 1, further comprising manufacturing the aircraft in accordance with the at least one aircraft design based on the determined flight network efficiency constituting the optimum.

14. A method for designing an aircraft, the method comprising:

a. defining an initial catalog of requirements for at least one aircraft design, the catalog of requirements comprising requirements relating to one or more of a minimum payload, a minimum range, take off and landing requirements, a minimum cruising altitude, a minimum cruising speed and maximum values for one or more of a wing span, a fuselage

length and a surface pressure per wheel of a landing gear for the at least one aircraft design;

b. carrying out an optimization of the at least one aircraft design based on the catalog of requirements in terms of anticipated operating costs, the operating costs being calculated as functions of technical variables or of a configuration of the at least one aircraft design;

c. simulating a predefined total flight network with the at least one aircraft design and determining a total flight network efficiency, the total flight network efficiency being determined by summing up individual flight route efficiencies, the flight route efficiencies each being calculated using receipts that are anticipated for use of the at least one aircraft design on a respective flight route minus costs for the use of the at least one aircraft design on the respective flight route;

d. checking whether the determined total flight network efficiency constitutes an optimum; and

e. adapting the catalog of requirements and performing an iteration starting from step (b) upon a determination that the determined total flight network efficiency does not constitute the optimum.