The 2020 ACARE targets present a challenge to the aircraft manufacturers to reduce CO2 emissions through engine efficiency and aircraft design improvements. A “pro-green” aircraft configuration has been proposed that has a significantly higher aspect ratio wing and lower wing sweep than today’s standard designs. This reduction in sweep opens the possibility to design a wing for natural laminar flow (NLF). Such a wing could enable 20% wing drag reduction compared to today’s designs.

The main objective of the TELFONA project is to demonstrate the ability to predict NLF aircraft performance in flight based on wind tunnel test and CFD results. The project consists of two design, test and analysis loops.

The first phase of this work involves the calibration of laminar-to-turbulent transition prediction methods for the ETW facility. This will be done using a new wind tunnel model with a wing shape especially designed for this calibration activity. This wind tunnel model is known as the TELFONA Pathfinder model.

The second phase of the project consists of the design and wind tunnel test of a Natural Laminar Flow wing for a large commercial aircraft. It is this model, known as the TELFONA Performance model that will be used to validate the predicted benefits of the Pro-green aircraft concept.

In addition to these two main activities, a number of supporting activities will be done. These include the development of new measurement techniques for the ETW facility, the development of advanced transition prediction methods and the modification of existing performance prediction methodologies to account for laminar flow.

This paper will present the project plans in detail and a review of progress to date.