

ANNEX A.2f
FEDERATION AERONAUTIQUE INTERNATIONALE

NOMINATION FORM

THE ANTONOV DIPLOMA

(for technical innovation(s))

From NAC: Germany _____ Date: November 7th, 2012 _____
Address: Deutscher Aero Club e.V. _____ Country: Germany _____
Hermann-Blenk-Straße 38 _____
38108 Braunschweig _____
(Only one person from a country may be nominated annually by that candidate's National Airsport Control.)

Name of Nominee: Michael RAMEL _____
Address: Lilienstraße 44 _____
D - 81669 München _____
Deutschland _____

DESCRIPTION OF TECHNICAL INNOVATION(S) - Please Print

Contra Rotation Drive for F3A

In 1999, Michael Ramel developed the first F3A RC Aerobatic Model Aircraft driven by an electric motor. To comply with the maximum weight of 5 kg, he not only had to get the right motors and batteries – he had to design new, lighter models as well. The kits he made for his "E-Factor" have been sold all over the world, mainly to the USA. In the meantime, many F3A pilots fly an electric drive.

In order to take full advantage of that drive, in 2006 Michael Ramel designed a contra drive in combination with the electric motor. A planet gear box spins two propellers, both turning contra each other rotating in the opposite direction. That "Contra Drive" cancels all asymmetric blade effects, any effect of torque and subsequently any trim changes as airspeed changes. F3A pilots' workload is greatly reduced, and even downline braking is improved because of motor-generator effect and the propeller surface area doubled. Main problem are the propellers, as they mustn't have the same pitch.

During the 2011 F3A World Championships, the new drive has been used already by a few pilots. One of them was the German Robin Trumpp. 17 year old Robin Trumpp was second at the 2011 German F3A Championship and made the German Team in the year before. At the World Championship he became 16th among 81 seniors, proving the quality of Michael Ramels new Contra Drive.

NAC Signature *Helmut Köpcke* President DAeC
President or Secretary General of nominating FAI National Airsport Control



(must be submitted to the FAI Office by November 15)