AIRFOIL: KFm 3:
Details:
Step (TOP): 12% thickness
  length at center chord: 900mm (50%)
  Length on tip chord: 675mm (50%)
  Length: 3750mm
Second Step: 5% thickness (or less)
  length at Center chord: 300mm (about 25%)
  length at tip chord: 200mm (about 25%)
  Length: 3750mm
Wing Technical Data:
Details:
Wingspan: 7500mm (7.5m)
Center Chord: 1800mm (1.8m)
Tip Chord: 1350mm (1.35m)
Wing Area: 118,125cm² (11.81m²)
mean aerodynamic chord: 1565.7mm
Center of Gravity: 1839.3mm from the front
Elevon Length: 2350mm
Elevon Chord: 200mm
Elevon Area: 4500cm² (total 9000cm²)
Aspect Ratio: 4.8
Airfoil Depth: 216mm (center)
  162mm (tips)
Second Step Depth: 90mm (center)
  65mm (tips)
SOLARIS HIGH ALTITUDE SOLAR POWERED AIRPLANE

WING SPAN: 7.5m
WING AREA: 11.8m$^2$

Max. Possible amount of solar cells: about 900 (850)
Weight per cell: 6g

Power System: 2x Hacker A30-10L geared 4:1 with 24”x12” prop
  Thrust: 2900g (22.8A) (14V)
  Combined Thrust: 5800g (14V) (45.6A)
--Proposed Solar Arrays:
  28S 16S (448 cells) (14V) (50A)
  OR
  34S 16S (544 cells) (17V) (50A) – using step down voltage regulator.

Control System: Elevons
  3 Standard Servos per elevon (6 servos in total)
  Estimated power consumption under load: 5-6A
--Proposed Solar Array:
  18S 2P (36 cells) 9V 6A – Using step down Voltage regulator

FPV Camera System:
  1 camera + RV OSD (rage video) (autopilot RTL)
  1 camera w/o OSD (pointing down 90° angle)
  2x 900MHZ 500mw – 2W Tx (channel 2 and 3)
  1x camera (5m pixels) (aerial Photography)
  Estimated Power consumption: 2-4A (12V)
--Proposed Solar Array:
  30S 2P (60 cells) 15V 6A – Step Down Regulator (12V) and (5V)

FPV Pan and Tilt Systems:
  2 Mini Servos (9g) for FPV camera
  2 Mini Servos (9g) for ground camera (and follower of digicam)
  2 Standard Servos (30g) for digicam (follows ground camera)
  Estimated Power Consumption: 4-6A
--Proposed Solar Array:
  18S 2P (36 cells) 9V 6A – Using Step Down Regulator (this array can be merged with the Control System Array to form a 18S 4P Array (9V) (12A)

ALL Solar Systems are protected by diodes and capacitors.
EVERY SYSTEM (eg. Control & PAN&TILT; FPV Camera; Propulsion) will be equipped with LiPo or Li-ion batteries for backup. A proposed System could look like this:
  Control and Pan and Tilt System
    - Input= 9V 12A, step down regulator (6V) connected to 5S NiMh battery pack (6V) connected to receiver.
FPV System
- Input = 15V, step down regulator to 12V connected to 3S Lipo pack (3S 2P 6000MAH) connected to Tx’s (to camera with another step down 5V)

Propulsion System
- Input: 17V, connected to 4S 4P LiPo pack (16.8V 16000MAH to 20000MAH) connected to ESC’s (or 4S 1P 4000MAH)

ESTIMATED WEIGHTS:
- EMPTY MODEL: 3000 to 4000g
- Solar Arrays: up to 5000g
- Cameras: up to 1000g
- RC: up to 500g
- Batteries: about 500g
- CABLES: est. 500g

EXAMPLE CONFIGURATION:
- 544 cells (P) 72 cells (C) 60 cells (F) = 676 cells * 6g = 4056 grams
- 70g (2x) camera system + 30g OSD = 170g
- Model = 3500g
- PAN&TILT = 300g
- MOTORS&ESCS 100g + 50g + 100g (2x) = 500g
- Batteries = 400g
- CABLES = 500g

EST. OVER ALL WEIGHT: 9426g (+/- 1000g for real life estimation)

ESTIMATED WING LOADING AT 10000g = 8g/dm^2 or 2.779 oz./ft^2

Final estimated cruise speed = 10 or 12 MPH
Est. Climb o full throttle: >1500ft per minute at 20MPH
Kline-Fogleman (Modified) Airfoils as of November / 07

KFm1 (7-9% thickness)
Step at 40% chord
Very mild stall, very stable, moderate lift, simple build
good utility airfoil but somewhat superceded by the KFm2

KFm2 (7-9% thickness)
Step at 50% chord
Higher lift, mild stall, stable center of pressure
very simple to build, an excellent utility
airfoil for small to medium size foamies

KFm3 (9-12% thickness)
Steps at 50% and 75% chord
More complicated build, fantastic flight characteristics
high lift, very strong, mild stall, great for heavy lifters or sailplanes

KFm4 (9-12% thickness)
Steps at 50% chord
easy build, fast and manoeuvrable
slightly sharper stall than other KFm airfoils
Good choice for very aerobatic planes