Ampair ® model evolution

Ampair ® wind turbines

UW ™ hydro turbines

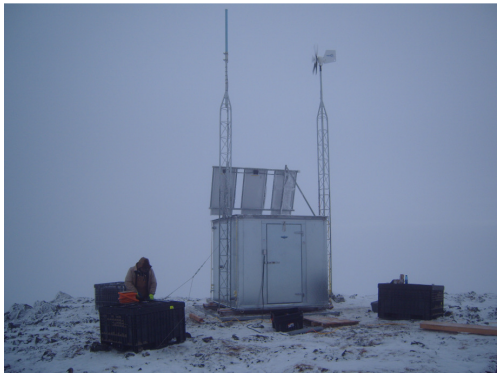
Aquair ® hybrid turbines

This is a guide to how to recognise which model you have

Manuals are available on www.ampair.com

For assistance contact a distributor or sales@ampair.com

Ampair 100, South China Sea



Ampair 100, Alaska

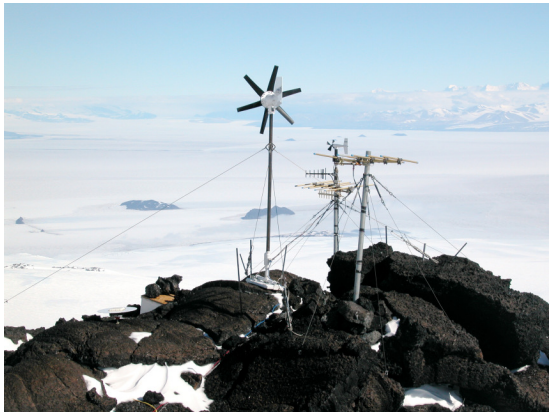
Mike Perham, youngest solo transatlantic

Ampair 100, Norway, Turnerhytten

Ampair 100, Antarctic

Ampair 100, Norway

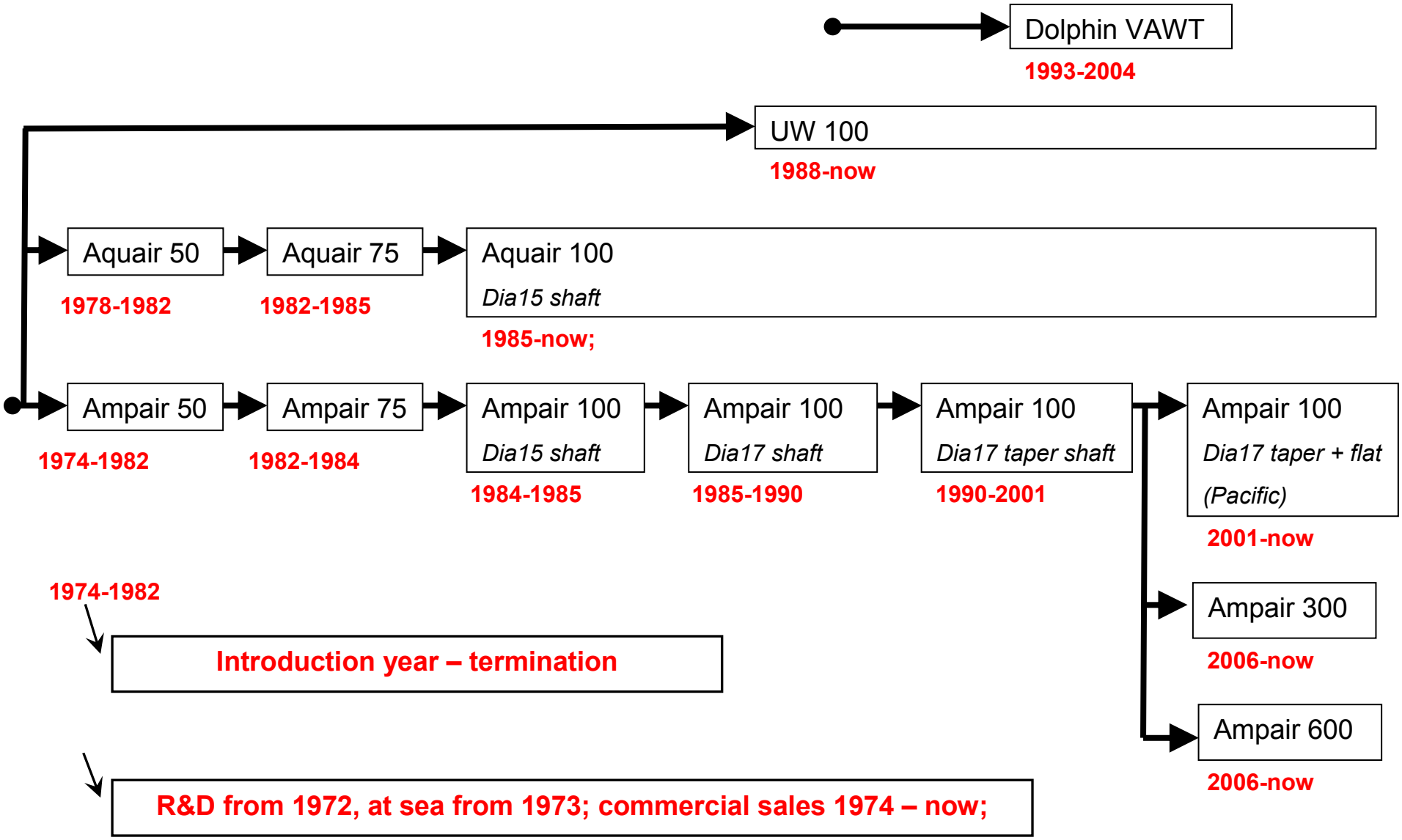
Ampair 100, Alaska



Ampair 100, Antarctic

Ampair 100, Antarctic SY Northanger

Ampair product portfolio evolution

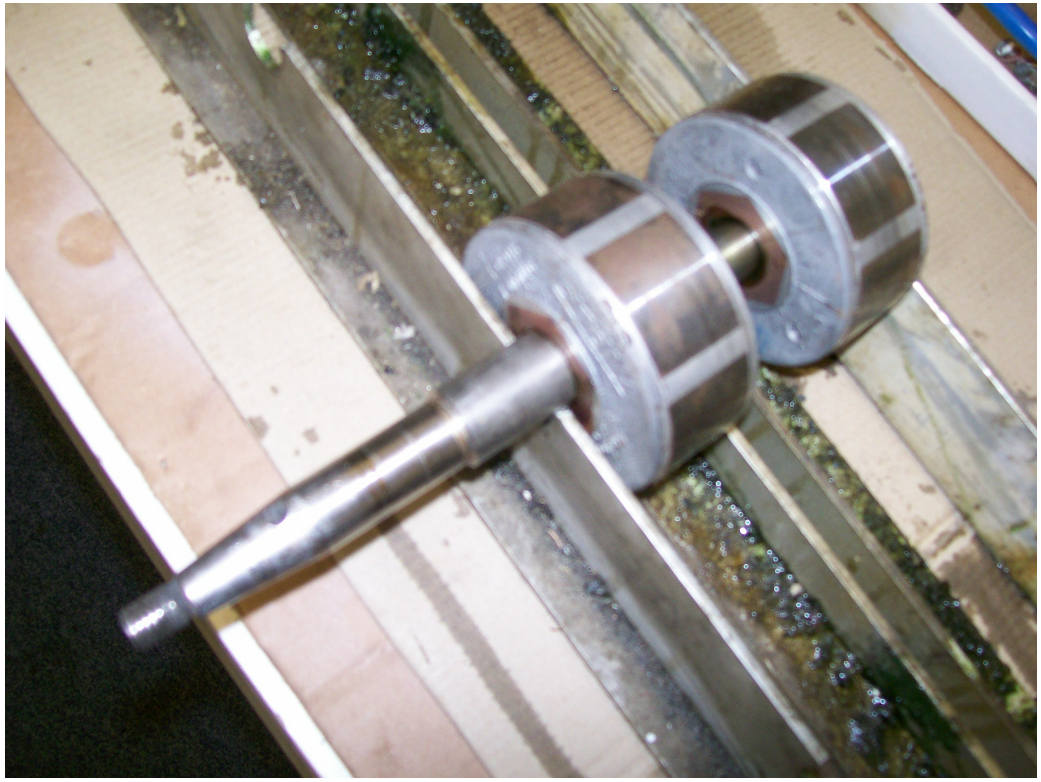


Ampair 50 (1974 – 1982)

- Original Ampair design
- Commercial sales 1974 on
- Used WIPAC stator and WIPAC rotor
- Available in 7 blade or 14 blade configuration
- Blades supplied by MultiWing
- Cast aluminium front housing with spun rear
- Pictured unit working in Norway in 2007

Ampair 75 (1982 – 1984)

- WIPAC stators replaced by Ampair stators in 1982 at start of Ampair 75 model.
- No photos known

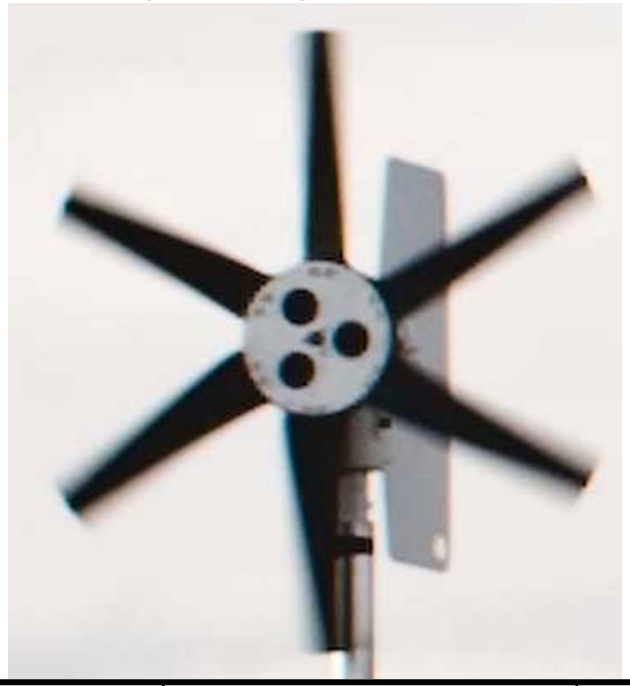


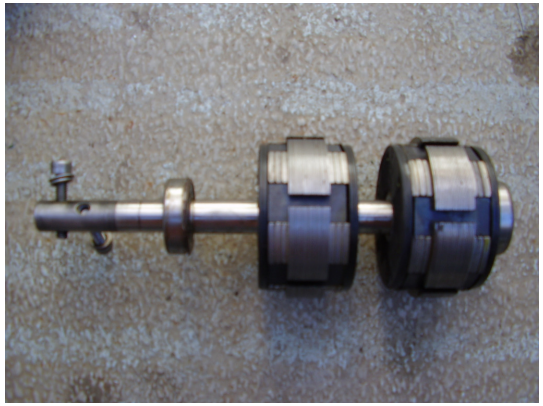
- Photo is of WIPAC rotor as used until approx 1991. This example is from an Ampair 100 Mk1c with a dia 17 taper shaft and it must be one of the very last WIPAC rotors we used. Note the appearance of the rotor end caps with the lettering cast into the alloy end caps. These rotors are equal in magnetic characteristics and physical dimensions to Ampair rotors that replaced them.

Ampair 100 Mk 1a (1984 - 1985 dia 15 shaft)

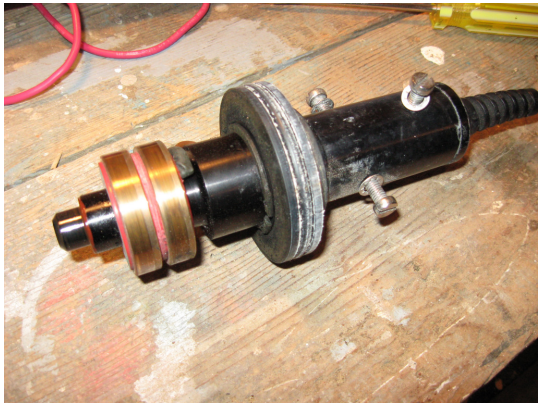
- Ampair stators
- Two piece cast aluminium housing
- Initially unreinforced sand casting
- Progressively added reinforcing ribs
- Obvious three holes in front hub are common with all the Aquair front hubs so be careful if using as recognition feature

Digging out SY Nothanger whilst frozen in to Canadian Arctic winter





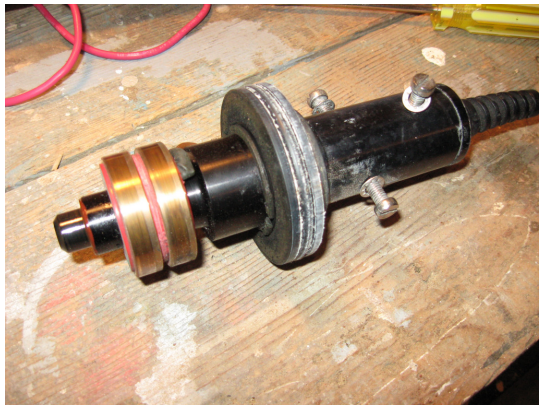
Straight 15mm shaft



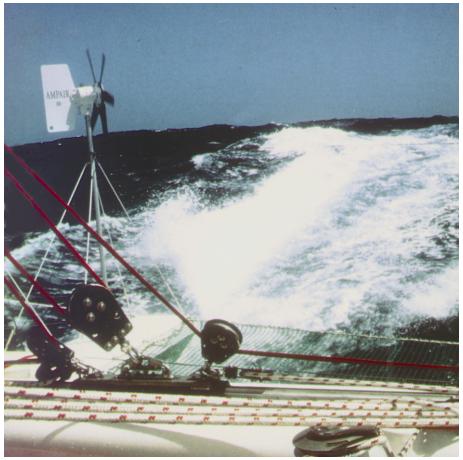
early style 38mm pivot

Ampair 100 Mk 1b (1985 - 1990; dia 17 parallel shaft)

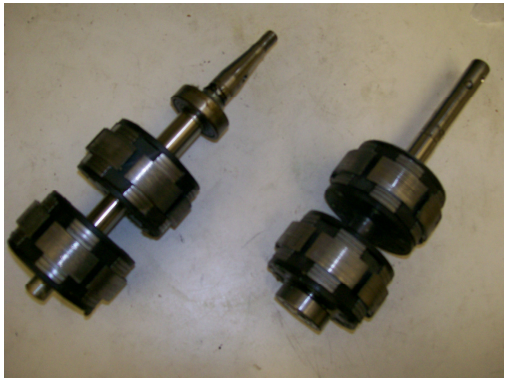
- Ampair 100 Mk 1b with a 17.0 mm diameter shaft. It was during the A100-Mk1a that the lower pivot housing casting received the reinforcement that shows up as a step in the silhouette on the photo.
- Symmetric tailfin layout common with Aquair
- These photos are of #1340 still working in West Indies in 2008
- 17mm shaft
- 38mm dia pivot



Ampair 100 Mk 1c (1990 – 2001, dia 17 taper shaft)

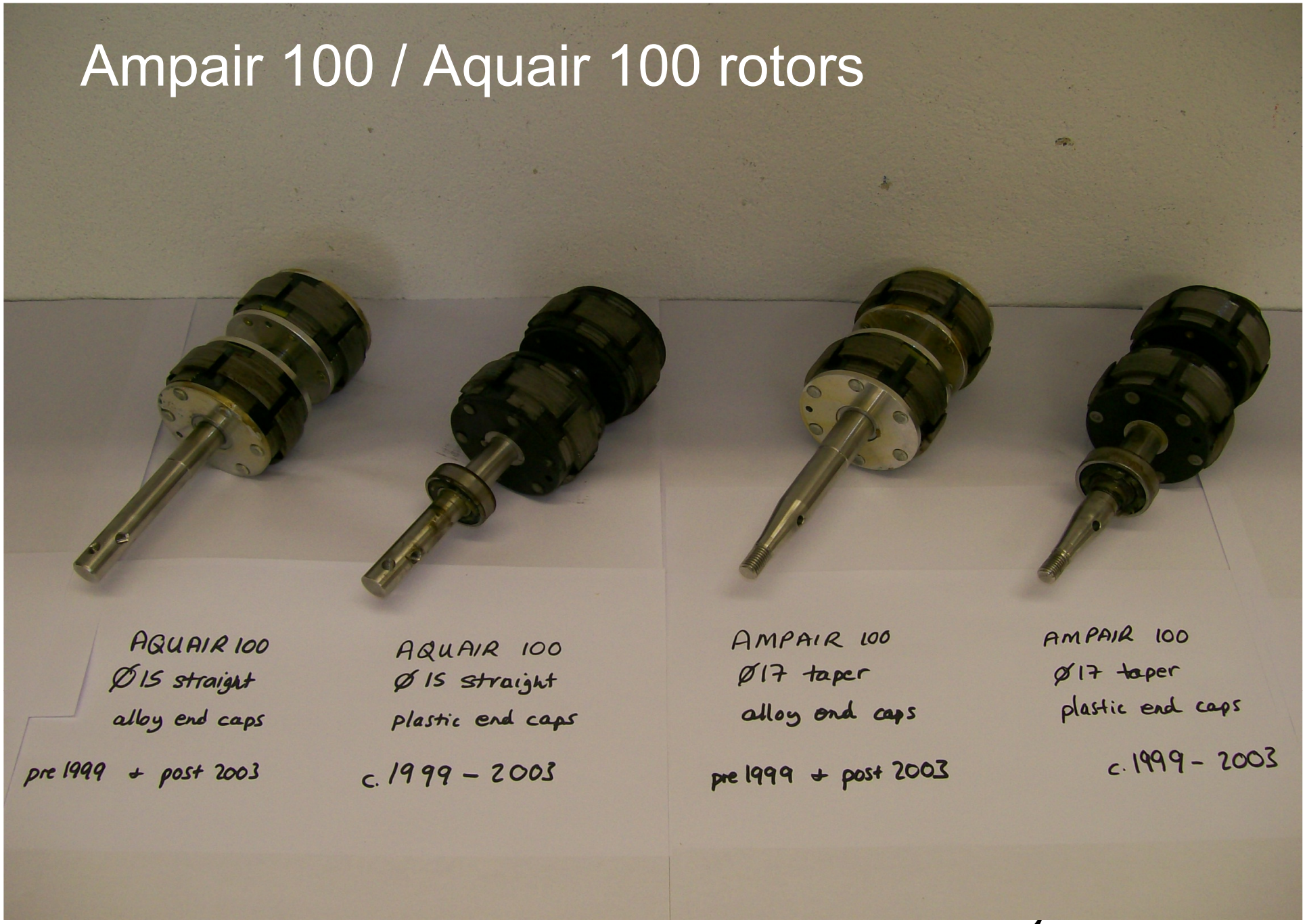


Just 4 blades will run OK



- Final evolution of sand cast patterns but still with 38mm dia pivot per Ampair Mk1b
- Used 17mm shaft with tapered end (photo, left) rather than older 15mm and 17mm parallel shaft (photo, right) both with Ampair manufacture rotors

Ampair 100 / Aquair 100 rotors



Ampair 100 Mk2 “Pacific/Hawk” (2001 to date)

Ampair 100 (Hawk), Torfaen Eco Building

Ampair 100, Antarctic, Univ New Mexico

- The Mk2 Ampair was also called the Pacific/Hawk depending on colour scheme
- Smoother gravity die castings without ribs
- Wider hole spacing on blades to suit domed and cast hub
- Single left hand thread on central hub bolt under black cap
- New tail shape and 40mm OD pivot

Ampair 300 (2006 to date)

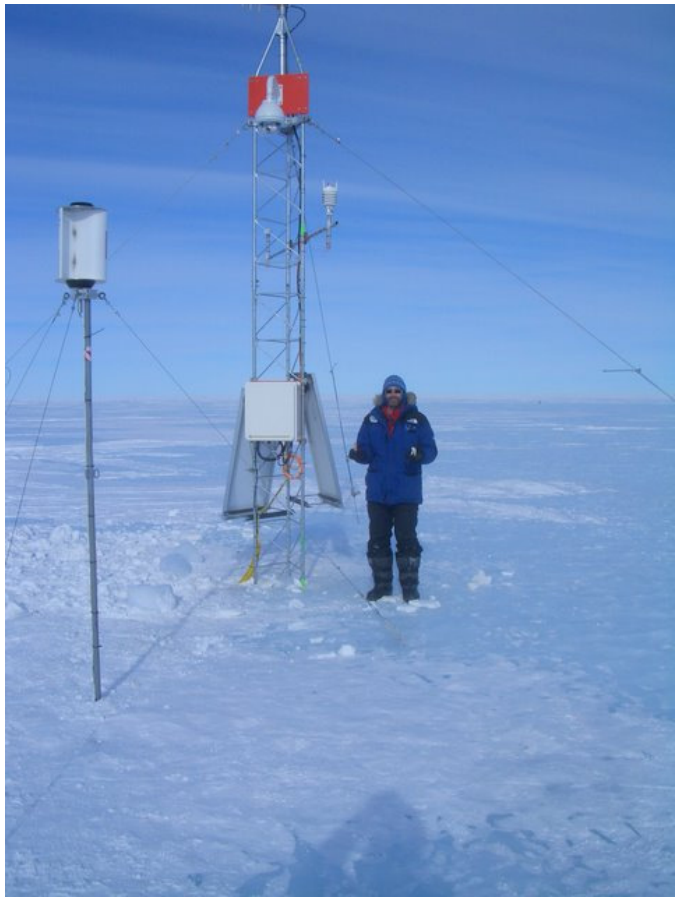
- Automatic pitching hub linking all three blades
- Until end 2008 all units had white GRP blades with mounting brackets
- 2009 onwards black blades with shaft mounts introduced (old units progressively refitted)

Ampair 600 (2007 – now)

- First grid connected Ampair turbine
- Available in 24V, 48V battery charge and 230V grid connect
- Marine grade but more common as a land machine
- Earlier units pictured all upgraded to black blades and monoblock hubs in 2008

Dolphin (1993 - 2004)

Dolphin supplying weather and camera station near McMurdo in Antarctic, for Stanford University



Aquair 100 (1985 +)

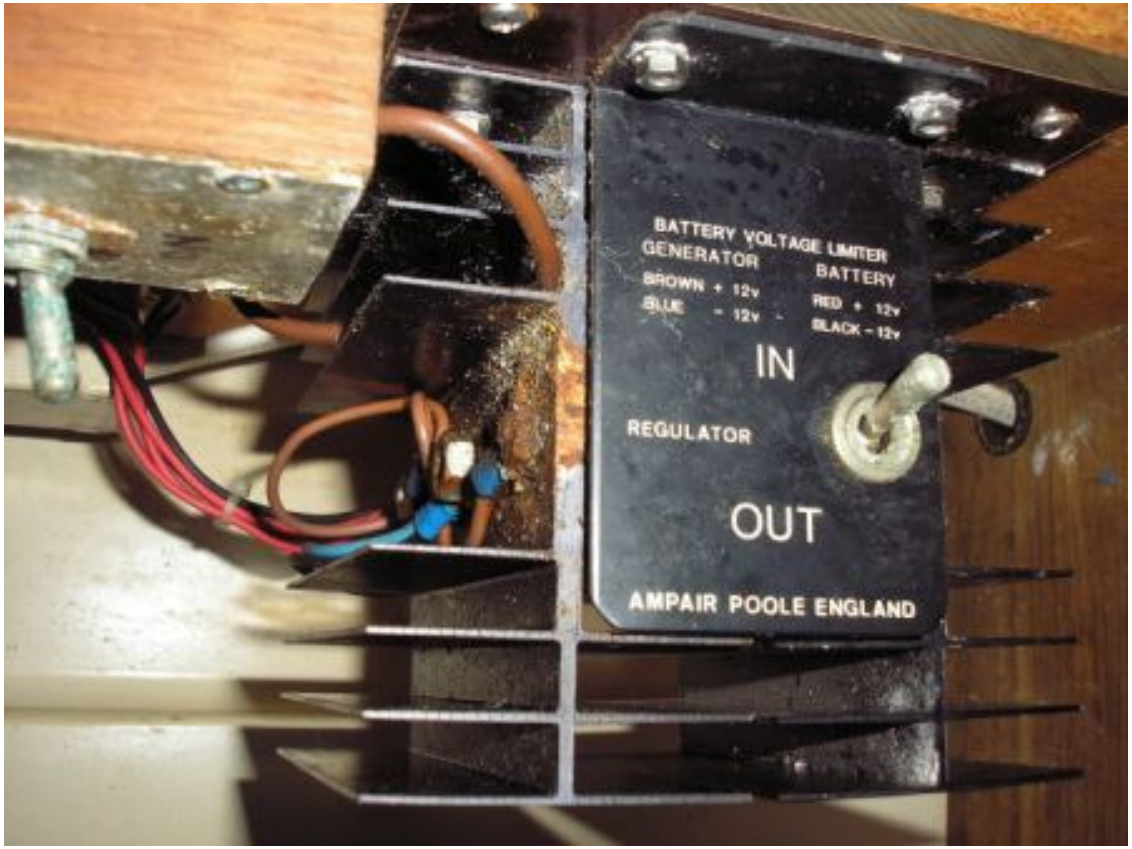
- The best deep water turbine
- The best hybrid turbine
- Various mountings

UW 100 (1988 +) called Aquair UW until about 2004

- Specialist open stream micro hydro unit
- Many mounting solutions possible – client constructs locally
- 4-wire output to rectifier mounted above water on heatsink

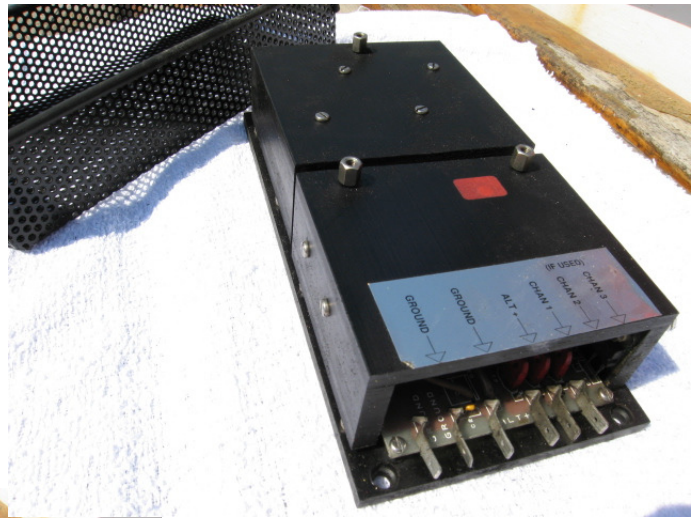
100W regulator systems – Mk1 (1982 - 1994)

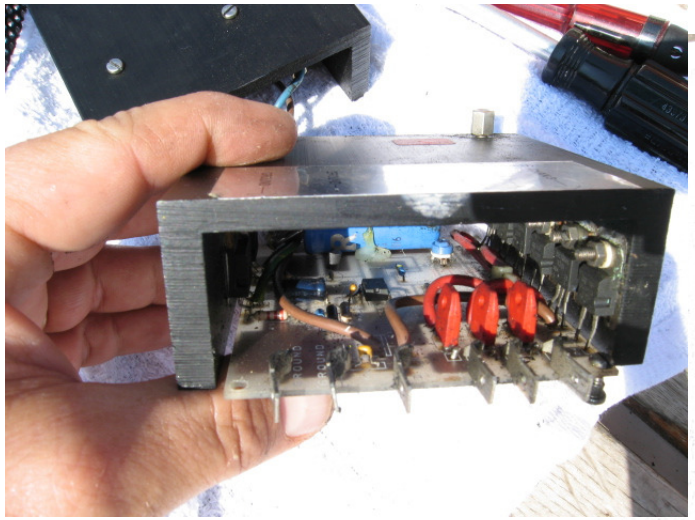
- Original Ampair 100W zener diode regulator.
- Previously used on Ampair 50 units from 1982 or so
- The output was too coarse and not sharp enough (too protective)
- Replaced by Mk 2 active shunt type

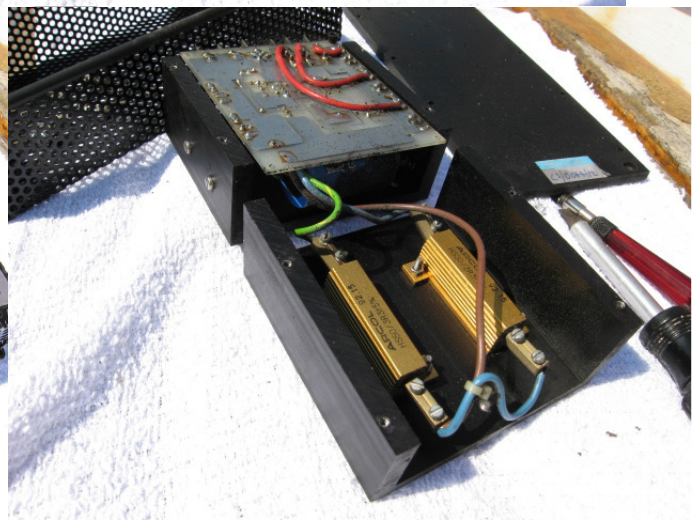


100W regulator systems – Mk2 (1992 – 1994)

- The Ampair 100W Mk 2 regulator was an active shunt type
- The version illustrated is a special version of this regulator made to convert 24V Ampair generators into 12V output units.
- Note that the 100W Ampair & Aquair turbines have a rectified output







100W regulator – Mk3 (1994 to 2009)

- Mk 3 active switch type
  - Generator idles when battery charged
- Six versions:
  - SM1B-12: single input, single output
  - SM1B-24: single input, single output
  - DM1B-12: dual input, single output
  - DM1B-24: dual, single output
  - SM3B-12: single input, triple output
  - SM3B-24: single input, triple output
- Rectified turbine DC input from 100W turbine

300W regulator: model PR 300 (2006 - 2007)

- One model only: PR 300
- Separate rectifier assembly (turbine + rectifier + regulator)
- Dual input **or** dual output
- Manual link selection for 12v **or** 24V (must purchase correct voltage turbine)
- Flexible and sophisticated links for programming unit
- In use many clients found this difficult to set up which often caused damage
- Fragile and less reliable in service
- Turbine freewheels when battery charged

300W regulator model S12/24: (2006 - 2009)

- Two models
  - A03 RG S12
  - A03 RG S24
- Integrated rectifier assembly (turbine + rectifier/regulator)
- single input **and** single output
- Encapsulated (potted) electronics
- Basic, robust and reliable
- Turbine freewheels when battery charged
- Superceded by Ampair Voyager in 2009

600W regulator TS24 / TS48 (2007 - 2009)

- Two models
  - A06 RG TS 24
  - A06 RG TS 48
- High specification package
  - TriStar 45 PWM regulator
  - Diversion (dump load) when charged
  - Air cooled diversion resistors in rear compartment
  - Remote temp and voltage sensing
  - Stop switch, fuses, ample terminals, integral rectifier, smoothing capacitor
  - Volt and Amp meters on TS24, only Amp meter on TS 48
  - Three phase turbine AC input
  - Optional DC solar input for some clients

Ampair 600 grid connect (2006 - 2009)

- IC 700 + SMA WB 700
- Ampair designed IC 700 to match SMA WB 700
- All of early models upgraded to rev 2.3 during 2008
- Only sold as complete set with Ampair 600-230
- Earlier models have circuit breakers and later models have fuses.