



YACHTING

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XIII

S B E R A T E R M A T T E R S

MAN AT THE TOP
CPT. DAVID 'HUTCH' HUTCHISON

THE SUPERYACHT CUP 2007
EVENT OF THE YEAR

STATE OF MIND
REASONING AND YACHT CREW

DIVING MATTERS
HAVE YOU GOT THE BOTTLE?

A Colin Squire Publication

Featuring
The Yacht Owner
Supplement



What could be more frustrating for the owners of a multi-million yacht than having to spend the night in a hotel because of the noise from the airco? Or having guests who can't wait to reach port so they can escape from the stifling heat or chilly air? Add in the fact that a key factor in high crew turnover

is poor air quality in the cabins, and you have a wealth of reasons why properly balanced air conditioning is arguably the single most important factor when it comes to onboard comfort. Andrew Rogers traces the origins of airco and talks to one of the gurus of this specialist field, Cees Hopman of Heinen & Hopman.

The introduction of specialised air conditioning for yachts over the last two decades has clearly played a major role in the boom of our industry. Sailing has changed from a sport to an essential extension of the wealthy lifestyle, and the giant leaps forward made in the airco arena, have to a large extent, made this possible.

For no matter how much is spent on interior decoration, fabulous facilities and high-tech luxuries, the ambience onboard a superyacht is hugely related to the on board temperature and ventilation. Most owners spend their time sailing in hot climates, making a cooler indoor environment essential for all but the most hardened sailors. Similarly, as adventurous owners explore remoter and colder areas, the heat definitely needs to be up onboard.

Controlling the 'air' on a superyacht is far more complex than most people realise, however, and involves infinitely more than simply creating a cool or warm temperature. Vessels need to be ventilated to provide combustion air for the engines, to cool the engine room, to guarantee the supply of fresh air on board, to balance the exhaust air, and to protect the interior against moisture and fumes. Most importantly of all, a comfortable climate must be engendered for owners, guests and crew.

More specifically, air conditioning is required to filter out dust and soot, and to regulate and control temperature and humidity. No matter what the outside temperature, on board systems need to be able to keep temperatures at a pleasant level.

These demands have to be balanced against the perennial struggle for space on a superyacht: As owners require ever more ingenious systems on their home from home, they expect the air-conditioning system to take up as little of the precious real estate as possible. Another key consideration on these floating palaces is noise and vibration. Quite simply, the air treatment equipment should be completely unnoticeable.

THE INVENTION OF AIRCO

Air conditioning as a concept is barely a century old, and yet it has transformed the 'indoor' world as we know it. Although various people contributed to the evolution of air ventilation systems, American Willis Havilland Carrier is officially credited with inventing air conditioning in 1902.

His was a spray-driven system, which controlled both temperature and humidity using a nozzle originally designed to distribute insecticide. It was first used in a



printing shop, where it was needed because colour ink has to stay at a certain temperature. Carrier went on to set up the Carrier Engineering Corporation (now part of United Technologies), which is still one of the market leaders for air conditioning systems in buildings.

This pioneering work was initially aimed only at industrial applications. The first system designed to enhance human comfort used three centrifugal chillers to cool shoppers at a Detroit department store in 1924. Next up came cinemas and smaller air conditioning units were soon rolling off the Carrier production line.

In 1928 the first residential airco solution was launched, quaintly named the Weathermaker. But depression and war meant that another two decades passed before low-cost, mass-produced units came onto the market.

THE RISE OF THE MOTORYACHT

A variant of these 'residential' air-conditioners soon found themselves deployed on yachts. Until then, the only ventilation on most boats was an open porthole and goosenecks on deck, which could be turned to face the wind. As the post-war gloom lifted in the late 1940s and early 1950s, the motoryacht building industry began its

meteoric rise. American owners led the way in building larger and more sophisticated vessels, and they did not expect to be sweating profusely in their cabin at night.

NEW WAY OF THINKING

Because air-conditioning had its origins Stateside, and the vast majority of owners hailed from that country in the 1960s and 1970s, American companies dominated the market.

Over in Holland, however, Cees Hopman had other ideas. Having built up 15 years of experience in the design, engineering and installation of air conditioning, cooling, ventilation and central heating systems in buildings, Cees Hopman was convinced his company, Heinen & Hopman, had the answers.

'Air conditioning involves not only cooling of the air but balancing it. A yacht is actually a steel box, and humidification and dehumidification are vital. Air conditioned air needs to be filtered and cleaned, de-humidified in summer and humidified in winter. It is a total air treatment, of which fresh air is the most important. If the CO₂ concentration in the air exceeds 2%, it starts to have an adverse effect on people.'

Unfortunately, the land-based air conditioning systems were not properly adapted to the highly specialised yacht environment that. 'Ventilation tended to be insufficient, causing problems with fumes and moulds in the lower levels,' Hopman continues. 'In most cases, yachts only had a small suction pipe to the outside of the fan coil. And interior designers often overlooked the importance of air ducts altogether, suggesting that simply opening a porthole or window was sufficient for ventilation.'

BREAKTHROUGH

In the early 1980s, his company did some pioneering work on yachts for the Hakvoort and Heesen yards. But the door for expansion into larger yachts – especially for American owners – remained firmly shut. The breakthrough came during a conversation at the De Vries yard in 1982,' Hopman remembers. The yard was building the 52-metre Feadship, Rio Rita, and Johan de Vries listened to my theories carefully. "OK, you can have a go for 80,000 Dutch guilders", he told me. "But if it doesn't work, I won't pay."

Launched in 1984, Rio Rita was fitted with a system called Forced Balanced Ventilation. Hopman explains the philosophy thus: 'You need exhausts on board a yacht for the sanitary spaces otherwise you get a terrible smell. But every cubic metre of air taken out has to be replaced by another. Simply opening the doors or portholes is not sufficient as hot and humid air comes in. By filling the whole boat with fresh, dry, filtered air, a more measured ventilation takes place.'

Pleased with the success of this venture, De Vries asked Heinen & Hopman to become involved in another major Feadship project, the 55-metre Double Haven. 'This fabulous yacht was being built for a certain Mr. Friedrich from Hong Kong,' Hopman recalls. 'Mr. Friedrich couldn't stand noise. Whenever Double Haven came into a harbour, he would always sleep in a hotel rather than on his boat. So he asked us to provide an installation that would produce less than 38 DBA. I told him this was technically possible so long as we had a certain degree of freedom to work together with the yard.'

'I will never forget the day the owner came on board and asked the yard when the air conditioning would be turned on. "It is on Mr Friedrich," came the reply. Friedrich was so satisfied that he recommended our company to at least 10 new customers.'

Then as now, personal recommendation among the owner community is worth a thousand ads and Heinen & Hopman soon became leaders in the yacht air conditioning world. The path to draught-free, invisible and whisper-quiet air conditioning was laid.

DIFFERENCES IN SYSTEMS

Today there are essentially two types of airco. The classic fan coil system uses separate units for each cabin, with the possibility to individually control each unit. This system is suitable for most boats.

Larger boats mostly use single-ducted heat systems, which benefit from having no moving parts in the rooms themselves. Apart from noise, obvious advantages of



such a centralised system are enhanced flexibility with the interior layout and reduced maintenance. Moreover, with no cabinets required around the edges of the rooms to house airco units, the windows are much larger and views increased.

A good example of this type of solution is the companies Variable Air Volume system, which offers many other benefits compared to fan coils. Air quality is better due to the option of installing multi-stage filters and air treatment systems. The central system ensures more efficient energy management, while humidity control is improved both in summer and winter.

FINDING THE RIGHT BALANCE

'Ultimately, a totally balanced air conditioning and ventilation system increases the resale value of a superyacht,' Hopman says. 'But there are prerequisites to this statement. It is vital, for example, that we are involved at the pre-engineering phase of any new build. The next stage on the roadmap to success is the engineering and layout phase of the installation process. The most essential elements at this stage are proper access and installing the best possible equipment to the highest specifications.'

Location is a key factor according to Hopman. 'It is preferable to install our air conditioning unit right in the centre of the boat, which has many advantages in terms of efficiency, costs and quality. Smart designers see the air conditioning as a central part of a yacht design... And this makes maintenance far easier for the crew.'

Maintenance is something Hopman feels passionately about. 'It is incredible that some owners

are prepared to spend six-figure sums on a system and then leave its service to unqualified people and/or companies. Activities such as clearing out the air ducts, filters and air handling systems are specialist tasks, as is the replacement of parts to upgrade or improve the system. Waiting for problems to occur before addressing them is a recipe for malfunctioning air conditioning and expensive repairs.'

After years of being frustrated at witnessing damage from blocked ducts or – horror of horrors – removed air filters, Hopman decided to act. His company now offers a regular maintenance service in all the world's major cruising areas. 'Because we have been involved at every stage from installation to service, we are aware of the problems that have been encountered by the crew, owners and their yacht management companies and address these every step of the way,' Hopman says. 'An annual check-up means owners are spared unnecessary repairs and, even more importantly, sudden failure of the AC installation.'

Generally speaking, we can say that the future of air conditioning will involve lower sound levels, better filtration, better controls, better regulation, more automation and greater energy efficiency. 'More and more owners, consultants and management companies are realising that the life cycle of a yacht actually starts when it is commissioned from the yard,' Hopman concludes. 'And so does the air conditioning and ventilation system...'

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