



Volume 32 No. 5

April 2023

S.A. Group

Newsletter

What's in a name?

What is this device and why is its name misleading?



Inside Story:

Find out more about this important device:

- It has strong links to the sound recording industry.
- It's an Australian invention that didn't get recognition here.
- It tells some amazing stories....
- Who invented it and why?

Historical Radio Society of Australia Inc. – S.A. Group

Web Site: www.hrsasa.asn.au

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Centenary of

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Planned meetings for the next few months:

Sunday 30th April

1:00pm to 3:30pm

AWA "SHOW and TELL" DAY

As per EDDYSTONE Day and ASTOR Day, bring along your AWA restorations. They could include domestic radios, TV's, Comms receivers, Military radios/transceivers.....anything with that AWA badge.

To be held at:

St Cyprian's Church Hall

70 Melbourne Street, North Adelaide, SA, 5007

Wednesday 10 May

12 noon for 12:30pm start

Members Lunch

Our regular bi-monthly luncheon for members

To be held at the:

Reepham Hotel

273 Churchill Rd, Prospect, 5082

Sunday May 28

Oral History Meeting (Recording)

Keith Ellison will be recording conversations of a Panel of 3 or 4 guests from the radio/tv broadcasting industry.

To be held at:

St Cyprian's Church Hall

70 Melbourne Street, North Adelaide, SA, 5007

Sunday 25 June

1:00pm to 3:30pm

Home Visit – To Be Advised

We will be visiting the home of a member to look at their workshop and collection.

To be held at:

T.B.A.

Wednesday 12 July

12 noon for 12:30pm start

Members Lunch

Our regular bi-monthly luncheon for members

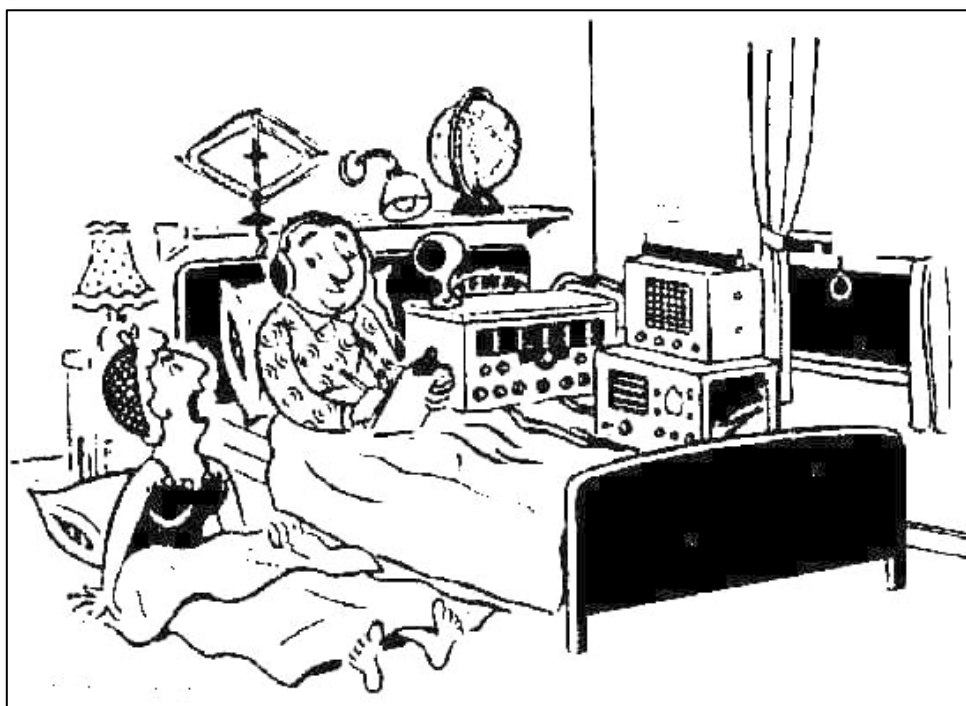
To be held at the:

Reepham Hotel, 273 Churchill Rd, Prospect, 5082

Wanted to Buy, Sell, or Exchange

Are you looking for a hard-to-get part? A strange knob, or a replacement coil? Have an item that you'd like to sell? Why not place a free, classified advertisement on our website? Go to the TRADING POST page of our website at: <https://hrsasa.asn.au/page-16/> and have a look at what's on offer right now and help a fellow member. It changes frequently. *Why not make use of this resource yourself?*

You could also place a free classified advertisement in the "yellow pages" section of our National HRSA Magazine "Radio Waves" and reach an Australia-wide audience. Just contact the Editor, Ian Batty on 0402 736 527 or send it in by email to: ianbatty311@gmail.com



.... When hobbies take over.....

WARNING: Dealing with Mercury (As found in Mercury Vapour tube rectifiers)

Did you know that since last year in Australia, it is **illegal to own, sell or purchase** any form of mercury as it is under Section 17C of the Controlled Substances Act?

Last year the AHARS Valve Bank needed a disposal licence and had to provide a **Worker Health & Safety Plan** and an **Environmental Protection Plan** to transport **ALL** our mercury vapour tubes including 866, and 83 rectifiers amongst others, for disposal with the *Northern Adelaide Waste Management Authority's Resource Recovery Centre* (at Edinburgh North in SA,) which a licenced mercury recovery site.

(Website: <https://www.nawma.sa.gov.au/hazardous-waste/>)

The transport of any mercury product without an EPA authorised plan within Australia is illegal and having possession of, selling, or purchasing mercury products carries a \$10,000 fine in SA. We would suggest that it would be prudent to find an alternative to any mercury vapour tube rectifier. If you own any of these, we suggest disposing of them with NAWMA Resource Recovery Centre. In the case of the AHARS valve bank, they disposed of over 200 tubes.

President's "Banter"!

From our President, Graham Dicker.

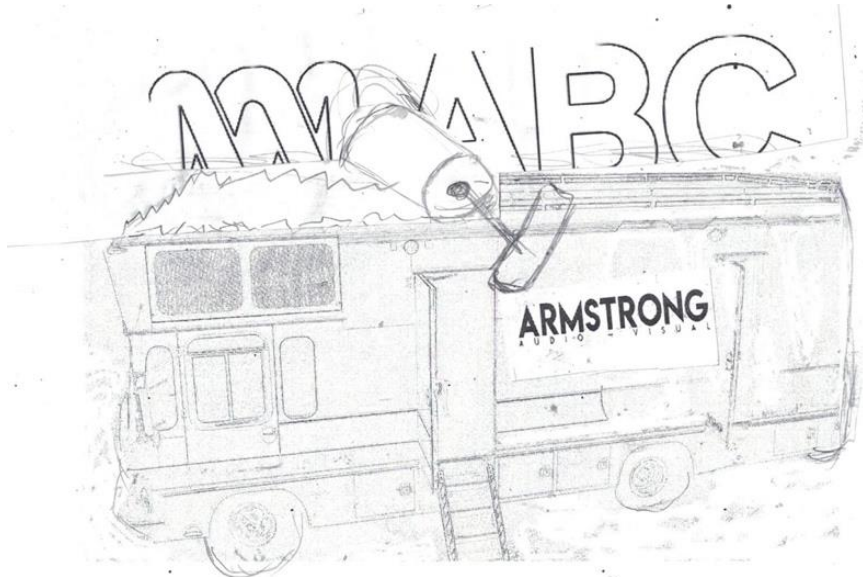
President's monthly stories from the past (and other ramblings)



When was the last time you opened a tin of sardines?

This story is one I was not involved in, but it comes from back in the disco era. I am sure the statute of limitations has now run out so that I can tell this story. On about the second, or third hire of a new Armstrong *Outside Broadcast* (OB) van from Victoria to ABC radio production in Adelaide. One of my good friends and fellow engineers at the time, XXX had an OB to do, and when the van was delivered from Victoria to the ABC parking lot at Collinswood, it was left in the middle of the car park. Time was running out and XXX wanted to load the van with a couple of Studer B67's and an Ampex Ag440-8 and requested, through the usual internal diplomatic channels, for someone in TV-OBs to move the van to the Radio Production loading doors. These doors were located on the ground floor just past telecine, videotape, continuity, and studio 52 (the TV news studio in TV land.) In the middle of the building was the TV reception foyer with an overhanging concrete shelter area outside. After submitting 3 or 4 requests, XXX got fed up waiting and decided to move the relatively brand-new OB van himself, mind you, he had no heavy vehicle licence, just a car one.

Part way through the backing process XXX heard a horrible noise and looked into both rear vision mirrors – - nothing @!!!! - so, he kept reversing the van and stopped at the loading doors, then hopped outside only to find that he had sheared off the roof of the OB van like opening a sardine can. (The foyer not long after was demolished.)



After that event, the ABC installed 6 new Neve consoles around Adelaide so we would never need to hire or purchase an OB van again. Nothing further was ever said to XXX.

On the other hand, I had the misfortune to accidentally back over a small household gas meter at a morning church service OB and was filling out paperwork for the next 3 years and for at least 5 years after I had left the ABC.

The moral to the story (I always have one) if you work for the government always stuff up in a big way and the event will go undocumented and unnoticed!!!

On a technical note, below is a photo of one of my best helpers around the workshop. It's just a bit of MDF with a bunch of different size holes in it, if you need to solder anything you always need a third hand, well this is it ideal for holding a variety of audio connectors, resistors capacitors and just about anything else, this one is about the 10th one I have made in over 60 years. Its replacement will this time be laser cut so that I can make another one quickly in 2032.

- **Graham Dicker.**



Component Corner

Many new members are probably wondering where to obtain components and valves. The following is a list in order of preference:

HRSA-SA Group Shop: We are working towards a new arrangement for our store. In the meantime, contact our Secretary, Ian Smyth on 0488-488-776 to enquire, or place an order. Ian's email address is:

sec@hrsasa.asn.au

AZTRONICS, 170 Sturt Street, Adelaide. Houses the HRSA-SA Group valve bank and modern components. They will source components for members. Great supporters of the HRSASA.

HRSA Melbourne (see *Radio Waves*) Houses the Victorian HRSA valve bank and odd passive components and kits, plus resource books written especially for members.

WES Components, Sydney. The catalogue is viewable on-line, and orders can be placed through the Shop Keeper/Secretary, as the SA Group has an account, through which we get "trade discount". Go to: <https://www.wes.com.au> to see all their products.

Photo Corner:



Left: Members enjoying the bi-monthly Luncheon on 8th March at the Earl of Leicester Hotel, Parkside.

Right: Members enjoying the bi-monthly Luncheon on 8th March at the Earl of Leicester Hotel, Parkside.



Can you Help?

At our last HRSASA Auction at St Cyprian's Church Hall on Sunday 26th March, Tony Bell purchased a pair of grey coloured unusual 100 Ω Headphones. They are unusual in that they have matched audio line impedance. They are essentially a pair of Comms headphones, not music headphones.

Unfortunately, when he got home with his purchases, the headphones were not there! It seems that someone may have picked them up off the table where they were being kept and they have got mixed in with someone else's purchases..... If you have discovered that you've got a pair that you weren't expecting, then chances are, they're Tony's.



Please contact Tony Bell at: antony.k.bell@gmail.com or via his home phone at: (08)8269-4095

A Big Thank You – to an unknown person!

Also, at our last HRSASA Auction at St Cyprian's Church Hall on Sunday 26th March, Tony Bell had a stroke of luck out in the carpark! By sheer chance, he met someone who had an old plaster ceiling rose among the stuff being carried. Tony says he had been looking for one like that "for several years" and couldn't believe his luck when he saw it. Tony quickly got into conversation with this person and a deal was done! This ceiling rose will be installed at Tony's home to match one he already has in another room.

In his excitement, Tony forgot to thank the person who donated the ceiling rose to him, so he asked us to do so here, and we believe it was another HRSASA member.....

Thank You! You have made Tony very happy!!



An Invitation from the Adelaide Hills Amateur Radio Society (AHARS)

ADELAIDE HILLS AMATEUR RADIO SOCIETY

**BIG ANNUAL
BUY AND SELL**

SATURDAY 15TH OF JULY

MARION RSL – 31-39 NORFOLK ROAD MARION SA 5043

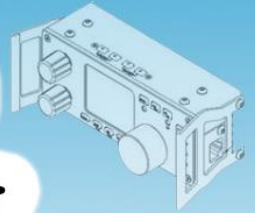
SELLERS ARRIVE AT 8:30AM - \$10.00 PER TABLE (INCLUDES 2 TICKETS)

EMAIL GEOFFB.100@BIGPOND.COM TO BOOK YOUR TABLE

BUYERS WELCOME AT 9:30AM - ADMISSION \$5.00

**SNACKS AND LUNCH AVAILABLE FROM THE KITCHEN
CHIPS, SOUP, BACON & EGG SANGERS, SAUSAGE SIZZLE
HAM, CHICKEN, & SALAD ROLLS**

TEA AND COFFEE, AND THE BAR WILL BE OPEN



FEATURE ARTICLE:

David Warren - Inventor of the black box flight recorder



Dave Warren (left) and Ken Fraser with a black box flight recorder prototype.

It was David Warren's interest in the possibility of personally recording music that led to the invention of the world's first flight recorder or 'black box'.

David Warren (1925-2010) was born in 1925 at a remote mission station on Groote Eylandt in the Gulf of Carpentaria, North Australia. He was the first European child to be born on Groote Eylandt. To ensure a good education, he was "sent south" at age four, to spend most of the next 12 years in boarding schools (mainly Launceston Grammar and Trinity Grammar, Sydney).

In 1934, David's father was killed in one of Australia's earliest air disasters, the loss of the Miss Hobart in Bass Strait. His last gift to David was a crystal set. David found he could listen to the set after lights-out in the school dormitory and became interested in electronics. He began building radios as a schoolboy hobby and enrolled for the public examination to become, he hoped, Australia's youngest "radio ham". When the sudden wartime bans on amateur radio dampened David's hopes, he turned to chemistry as a hobby and, ultimately, a life-time profession. However, his schoolboy knowledge of electronics stood him in good stead when, many years later, when he decided to design and build the world's first flight data recorder, now widely known as the "black box".

Following his school years, and University training, David was employed as a research scientist at the Aeronautical Research Laboratory (ARL) in Melbourne. In the mid-1950's, he was involved in the accident investigations related to the mysterious crash of the world's first jet-powered commercial aircraft, the BAC "Comet". It occurred to Dave that it would be extremely useful if there had been a recording of what had happened in the aeroplane immediately prior to the crash. David then recalled the world's first miniature recorder that he had recently seen at a trade fair. Suddenly he could visualise such a recorder placed in all aircraft, continually recording details and able to be recovered after a crash.

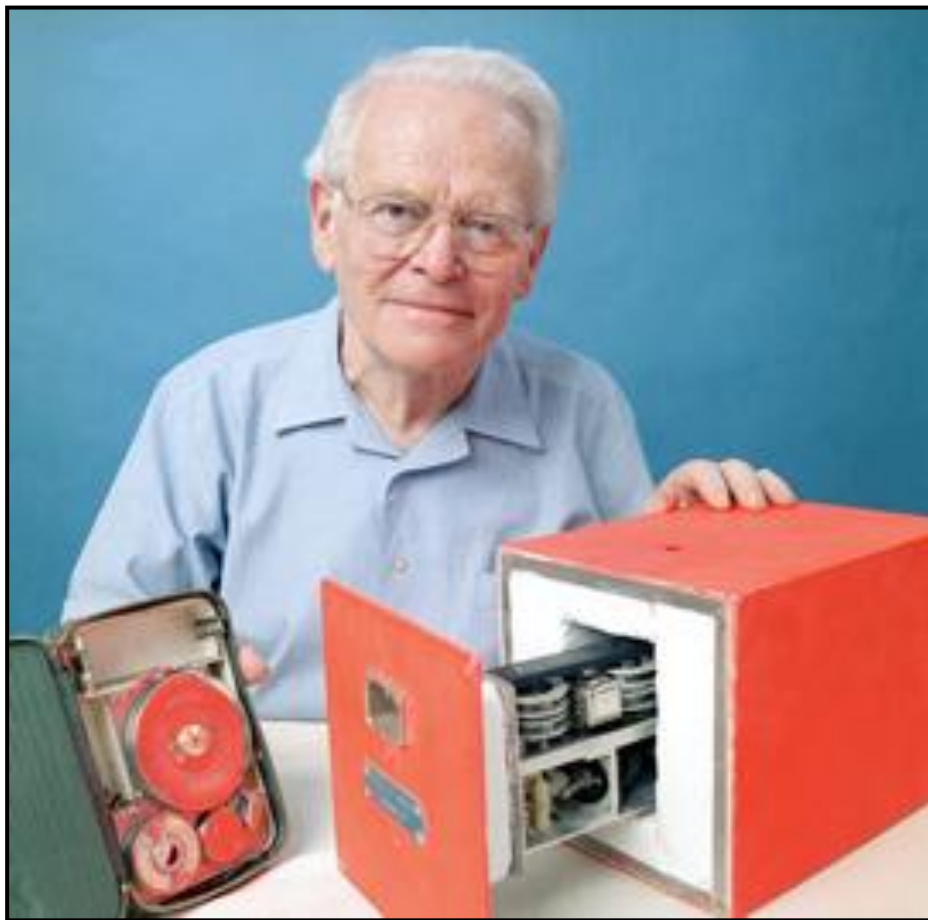
As with many new concepts, especially in Australia, David had trouble getting his idea off the ground. Eventually David prepared a report that was circulated internationally but produced little interest. David

drew on his early work experience as a teacher, remembering 'show and tell' was more effective than just 'tell'. He decided, in his own time, to build a demonstration recorder. Thus, the first 'black box' was born. It could continually store up to four hours of speech, prior to any accident, as well as flight instrument readings. But still no interest was shown from any authorities.

It was 1958, during an informal visit to ARL by Sir Robert Hardingham, the former British air Vice-Marshal, that the breakthrough occurred. David Warren was asked, during his lunchtime, to demonstrate his 'unofficial project'. Straightaway Sir Robert saw the potential. David and his black box were almost immediately on a flight to England. The reception there was most encouraging. The Ministry of Aviation announced that the installation of the black box flight recorder for instrument readings might soon be made mandatory. The black box was also successfully demonstrated in Canada. In America the authorities declined an invitation from the Australian Embassy to demonstrate the device.

Back in Australia, plans were made for further development and production. However, a continuing lack of Australian support meant that, as the idea finally took off around the world, companies in other countries moved ahead with development, capturing the growing market.

It was only after the crash of a Fokker Friendship at Mackay (Queensland) in 1960 that the inquiry judge strongly recommended that black box flight recorders be installed in all airliners. Australia then became the first country in the world to make cockpit-voice recording compulsory.



David Warren with the Black Box Flight Recorder, which he invented. While they are called "black box" audio and data flight recorders, they are in fact bright orange so that they can be more easily found underwater, or in wreckage.

Photograph:// <http://www.dst.defence.gov.au/gallery>

Since that time, David Warren’s invention, the black box flight recorder, has been universally adopted as a means to investigate accidents and to prevent their recurrence. The black box flight recorder has more than proved itself with its significant contribution to international airline safety.

In recent years, David has received a number of awards in recognition of his contributions to aeronautics and energy research, including:

- The Australian Institute of Energy Medal, 1999.
- Hartnett Medal of the Royal Society of the Arts, 2000.
- Lawrence Hargrave Award of the Aeronautical Society, 2001.

In 2002, he was officially recognised in the 2002 Australia Day Honours list, being appointed an Officer in the General Division of the Order of Australia for his "service to the aviation industry, particularly through the early conceptual work and prototype development of the black box flight data recorder".



The recovered flight data recorder of Atlas Air Flight 3591, a Boeing 767-300 cargo jet, that crashed in the muddy marshland of Trinity Bay Feb. 23, 2019. (NTSB photo)

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Meet Colin Windsor: (Part Two)

From time to time, we like to feature members that we've probably met many times but know very little about.

Now well into his retirement from work as a radio and TV Technician, he still has that mischievous twinkle in his eye, and many stories to tell.....

The story so far.....

After completing his initial training in Adelaide at W.R.E. (Salisbury,) and later at Woomera (also for WRE) Colin headed off to the "big smoke" in Sydney to find out a bit

more about life.... and work!

He landed a job at **DIXON PRIMER TV** as a trainee serviceman straight away. Their aim was teaching the trainees the three stages of the business as they saw it, namely: (1) pickup and delivery of TV's (2) installation of antenna and systems and (3) repairing of faulty TV's. These young blokes spent about a month on each of these 3 jobs in turn, partnered with an experienced employee so they could learn the ropes. Last month we read about stage 1, "Pick-up and Delivery", and stage 2 Installation of Antennas", now we move onto stage 3....

Tales from TV servicing in Sydney - 1958

By Colin Windsor

At the end of the month, into the workshop I went and was given my own bench and proceeded to attempt to fix faulty TV's that were absolutely flooding in!

I remember one novice who replaced a brightness control knob because the job card said "*no brightness*" the boss, one Brian Wilson, couldn't stop laughing.

The leading hand at that time was a Pom called Andrew McKnight who was a very experienced tech who until recently, had a thriving business in London, until he caught his business partner in bed with his wife! Poor Andrew got chronically depressed and once, tried to do himself in. His method was rather sensational! Sometime earlier, Andrew had purchased at an Auction, a wartime fast torpedo boat. This boat had a Rolls Royce Merlin engine in it, the same engine as was used in Spitfire fighter aircraft! This thing could go well over 40 mph - fast enough to escape government patrol boats chasing illegal importers of whatever! Andrew's "get rich quick" scheme was to buy gold bullion from Arabs in London, take the boat, and sell the gold to dealers on the French Riviera for lucrative profit. One day, during a deep depression, he tied a 50-foot length of rope around his neck, and the other end to the starboard rear tying up post on the boat. He wanted to go out in a blaze of headlines, so he set the boat heading up the Thames River. However, the weight of his body caused the boat to set a course for the mud flats where he ran aground and was rescued!! He resumed his gold running exploits for a while until one afternoon, while sipping champagne on the French Riviera, a bellboy delivered him a telegram which read "*keep your eye on your torpedo boat*". A little while later, an explosion blew it to bits, so he assumed the opposition was intent on getting rid of any competition.

Very quickly, he sold up, and emigrated to Australia. He obviously was skilled at other things as he had by the time I arrived, become our “Leading Hand” at Dixon Primer TV.

Andrew was a one of those old-style techs that used his fingers to tell if voltages were missing by bridging any suspect component with his fingers, then, after receiving a shock saying “Well, that one's OK! “



One day, the workshop crew asked me to tune in all the stations on this brand-new push-button model **Bush Simpson** radio that had just arrived. I had a good look at it for quite some time, but there was no way I could see how to tune it. I spent some time trying to figure it out but at knockoff time said to the others, “I'll think about it, and I'll tune it in tomorrow”. With that, I rang a mate in Adelaide to explain. He said that they had been having the same trouble with these radios and had discovered that if you just pull out the button that you'd pushed in, and then turn it in or turn it out, you can tune it to a particular station. Repeat for each push button until they are all done. The next morning I announced “There's only one way the tuning can be done and it's like

this.....” and showed them how. They were all amazed at my powers of deduction!

Eventually I was given my own Holden panel van, plus tools, a good supply of valves, and a two-way radio. I also found that TV set covers make a very handy mattress in the back of the van! We were supposed to do 7 to 9 jobs a day. Sometimes, I got a few jobs in in the same street so I would delay calling them in as “completed”, then go window shopping to some department store that might have models displaying panties and bras and bikinis, or lie in on a towel on Bondi Beach next to a topless bather and read a book! Unfortunately, one day I was caught by the two-way operator when after calling in a job as completed, he said that customer rang half an hour after you left to say you left your soldering line behind!

On another occasion, I remember having trouble with an HTC 21-inch TV which had a vertical jitter. I had no idea where to start, so I asked the customer if I could borrow their phone and rang STC Headquarters in Sydney and asked for the Service Manager. I told him how I had this trouble and he replied, “I'll get my circuit diagram of that model, it's a tricky fault, no wonder you're having trouble”. He then gave me a list of probable faulty parts which I replaced, and when I got back, the boss was very impressed!

More tales from Colin in our next Newsletter!



HRSA-SA Group - Amateur Radio Call-Back Network



In 2020, when our HRSA-SA Group was unable to hold meetings due to Covid-19, a small group of licensed radio amateurs decided to hold a local call-back net.

The first broadcast was on the 26th of April 2020. Although the ban on meetings was soon lifted, the broadcasts have continued and as we approach the completion of our third year, we have had 147 broadcasts.

While the aim is primarily for HRSA members, non-members are also welcome, the more the merrier. The group has a small band of listeners who either do not have the required licence or do not have transmitting facilities. Topics generally centre around historic radio, or activities coming at HRSA events, plus a range of widely varying content, can be heard.

For those licenced amateurs and those that would like to listen to the broadcast and have the correct facilities the details are:

Wednesday Nights (each week) – Starting at 2000 hrs.

On VK5RHO repeater (Houghton/Anstey Hill) which has an input of 146.25 MHz and an output of 146.85 MHz

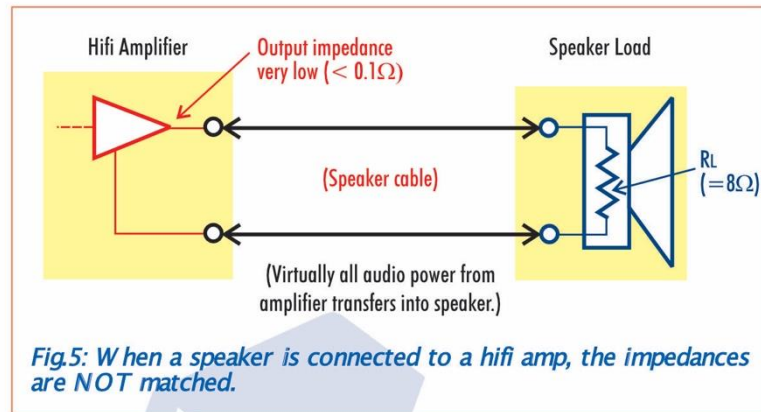
There are generally two full rounds and a quick “wrap-up” round.

New participants are most welcome.

So why not tune in and listen, or join in the conversation?

AUDIO IMPEDANCE MATCHING

There are a few applications where audio impedance matching is important, but perhaps not as many as you might think. Because audio signals are quite low in frequency, it's generally only where they have to be sent over quite long cables that transmission-line effects make it necessary to perform impedance matching to prevent reflections. And in most cases, we can get quite efficient signal transfer simply by arranging for the output impedance of our audio source (such as an amplifier) to be much lower than that of our load (such as a loudspeaker). In the case of most hi-fi amplifiers and speakers, for example, we generally arrange for the amplifier output impedance to be very much LOWER than the speaker impedance.



A typical speaker impedance is 8W, for example, but most hi-fi amplifiers have an output impedance of 0.1W or less (Fig.5). This not only ensures that most of the audio energy is transferred to the speaker, but also that the amplifier's low output impedance provides good electrical DAMPING for the speaker's moving voice coil giving higher fidelity.

HOWEVER, Older valve amplifiers and radios need a different form of impedance matching, because output valves generally have a (fairly) fixed and relatively high output impedance, so they cannot deliver audio energy efficiently into the low load impedance of a typical speaker. Therefore, an output transformer must be used, to produce a closer impedance match. The transformer is used to "step up" the impedance of the speaker, so that it gives the output valve an effective load of a few thousand ohms. This makes it at least comparable with the valve's own output impedance, so only a small amount of energy is wasted as heat in the valve.

...ooooOOOooo...

Audio Transformers and Impedance Matching

Other than the mains isolation transformer there is another audio transformer too, which will change the output voltage level depending on the input AC signal. The loudspeaker is a huge load and needs to provide the required current and voltage across it to produce proper sound vibration. An **Audio transformer with Step-up feature will step up the voltage** or the current level to drive a load across it. Same happens for the Stepdown transformer too. It converts the voltage from higher to lower with the increased current output. The audio transformer also provides **impedance matching specifications**. When the output of one circuit or device is directly connected to the input of another device, it is very important that the device output impedance and device input impedance both are matched. An impedance matching transformer provides this feature and converts higher impedance output to lower impedance to drive a low impedance speaker or feeding to another low impedance device.

Working of Audio Transformer and its Construction

Although an Audio transformer does not have a physical connection between his primary and secondary coil, the transformer provide bidirectional feature between this two windings. We can also use the same primary

side as secondary and secondary as primary. In such case, the transformer provides signal loss in one direction and signal gain in reverse direction or vice versa.

The audio transformer works at frequencies between 20 Hz to 20 kHz. So, the operation of an Audio transformer has much wider frequency range.

As discussed above, the audio transformer uses **Impedance balancing** technique. It is very useful for balancing amplifiers and loads (Loudspeaker and other) that use a different input or output impedances for maximum power transfer application.

In modern days, speakers impedances ranges from 4 to 16 ohms, typically 4 ohms, 8 ohms or 16 ohms speakers are available whereas Transistor or Solid state amplifiers use 200 – 300 ohms output impedance. If the amplifier is a retro design, such as old Valve or Tube amplifier then the output voltage sometimes reach 300V with 3k impedance. We need impedance matching transformer which will convert the High impedance to low impedance and should convert the voltage and current to a level which will directly drive a loudspeaker.

A Transformer can have multiple windings in the primary and secondary side. The ratio between primary and secondary windings, the number of coils turns in the primary side (N_p) and a number of coil turns in secondary (N_s) is called the **turns ratio**. This turns ratio also defines the primary and secondary voltage ratio as the voltage is directly proportional to the primary and secondary winding turns.

So, $N_p/N_s = V_p/V_s$

Audio Transformer Impedance Ratio

Impedance is the most important factor for impedance matching transformers. For impedance matching transformer the impedance ratio between primary to secondary can be calculated using the primary and secondary turn or the primary and secondary output voltage.

To calculate the **impedance ratio** we need to square the transformer turns ratio or the transformer voltage ratio.

$$\frac{Z_p}{Z_s} = \left(\frac{N_p}{N_s}\right)^2 = \left(\frac{V_p}{V_s}\right)^2$$

In the above equation, Z_p is primary impedance and Z_s is secondary impedance. N_p/N_s is the turns ratio of the transformer and V_p/V_s is the voltage ratio of the transformer. Impedance ratio is the square of turns ratio or voltage ratio. So, a transformer with 4:1 turns ratio or voltage ratio could provide 16:1 impedance ratio.

Example

We can calculate some practical values depending on the formulas given above.

Suppose a transformer with a 25:1 turns ratio is used to balance the power amplifier output with a loudspeaker. The Power amplifier provides 100 ohms output impedance, what would be the nominal speaker impedance needed for maximum power transfer?

Solution:

$$\frac{Z_p}{Z_s} = \left(\frac{N_p}{N_s}\right)^2 = 25:1$$

$$\Rightarrow \frac{100 \text{ ohms}}{Z_s} = \left(\frac{N_p}{N_s}\right)^2 = \frac{25}{1}$$

$$\Rightarrow \frac{100 \text{ ohms}}{Z_s} = \left(\frac{5}{1}\right)^2$$

$$\Rightarrow Z_s = \frac{100 \text{ ohms} \times 1}{5^2}$$

$$Z_s = 4 \Omega$$

So, using the 25:1 turn's ratio transformer across 100Ω power amplifier we could efficiently drive 4Ω Loud Speaker with maximum power transfer.

Types of Audio Transformer

As discussed in the above segment, the Audio transformer can be used in multiple applications. But generally, **three types of Audio Transformers** are mainly used for audio related purposes.

- A. Impedance matching Transformer
- B. Step up Audio Transformer with Wide frequency range which is within the audible frequency.
- C. Step down Audio Transformer with Wide frequency range which is within the audible frequency.

There is another specific Audio transformer also available, which are useful for digital audio applications and generally works in high frequency.

Transformers can also have multiple primary and secondary taps, which provide flexibilities to the user to change the output devices without changing the costly audio transformer. For example, A transformer can have multiple secondary taps to connect multiple loads with 4 ohms, 8 ohms or even 16 ohms impedance but only one tap need to be connected to the load when working with it. Such transformers are generally costly and can be found in retro musical systems or amplifiers.

The transformer can have different bodies depending on where it would be used. A **chassis mount transformer** needs a supporting chassis to support the bulky weight. Also, there are **PCB mounted audio transformers** available in various shapes and sizes depending on their specifications and usages.

A modern, commonly available, multi-output, step-up audio transformer:

