The RSGB recognises the importance of construction as a key element of amateur radio, whether that is using traditional construction skills or developing software or systems engineering.

The results of the annual RSGB Construction Competition were announced during the 2024 AGM on 13 April 2024. The winners and runners up are shown below.

**Antennas category runner up:**
Matt Heywood, M7ENW for “Jaromir Yagi”
Using repurposed material, this project was completed at a very low cost. The judges hope that it will inspire others to construct simple antennas.

Matt explains the meaning of the name he gave his antenna: it is “in honour of Jaromir Jagr, a Czech ice hockey player who had one of the longest professional careers ever – he’s now aged 52 and is in his 36th season.”

**Antennas category winner:**
David Matthews, GM8HFP for “Magnetic loop antenna and controllers”.
David built a remotely-controlled magnetic loop system which includes position referencing on the antenna’s capacitor shaft. Great attention to detail was shown in the planning, design and execution of this project. Many of the components were constructed at home using readily-available materials and modern techniques such as 3D printing.

David explains the reasons behind his construction: “This is a project I put together over about a year in order to get on the air from a very unpromising location. I live in a flat in Edinburgh’s Dean Village, a conservation area in a deep river valley. An outside antenna is not possible and there is no attic space. An indoor magnetic loop provides a compact alternative that can be moved into position and then stored away when not in use.”

**Beginners’ category winner and recipient of the Gavin Nesbitt, MM1BXF trophy:**
Charlie Camilleri, G3ABC for “QO-100 DATV-capable station.”
Charlie is an 18-year-old undergraduate beginning a university course in electrical engineering. In recent months he attained a Full UK amateur radio licence. Charlie has completed perhaps one of the most difficult challenges presented in amateur radio – the construction of a QO-100 DATV-capable transceiver system.

Charlie says: “Most of my operation is remote from University halls, hence the need for the custom software and automatic control. I’ve had some good success using this station at Southampton University Wirless Society, G3KMI meetings and made some good contacts on narrowband as well.”

**Beginners’ category runner up:**
Hannah Lee, M7YYQ for “Quarter-wave vertical antenna”.
The judges were impressed that 22-year-old Hannah had the initiative to construct her first antenna rather than buy it. It is a dual-band vertical antenna made from readily-available materials that she repurposed and then used in a contest.

Hannah told us how and why she built the antenna: “It’s a 1/4 wave vertical rated for 7MHz and 21MHz. It is made from a plastic fishing pole about 8 metres tall, with 10 metres of stereo wire coiled around for the radiating element. I made the antenna feed point from an old dipole, and made 8x5m radials, also using stereo wire. I strapped the antenna onto a wooden support with tent ropes, where it stays very well. The antenna works wonderfully, and I managed to make lots of QSOs with French operators during the [REF] contest.”
Construction Excellence category winner:

James Winnard, G3SPE for “1kW linear amplifier.”
It is clear that the planning and construction of this 1kW amplifier were well thought out and well executed. James has continued a long tradition, within amateur radio, of carefully home-brewed devices. The judges were impressed with the final product which can now be used to take advantage of our new licensing arrangements in the UK.

James outlines some key information about his project: “this is a linear amplifier capable of 1kW output. This is achieved with a BLF188XR LDMOS and only requires just over 2W from my Exiter unit to produce 400W-500W peak The Amplifier is designed to operate on all the usual HF bands either switched separately or controlled entirely by the Exiter unit. The power supply is constructed around a 50V 25A toroidal transformer. Filtering is achieved by seventh order filters constructed by coils wound on 1.25” plastic drain pipe. Safety circuits have been incorporated to take care of most fault events.”

Construction Excellence category runner up:

Craig Shaw, G0KVL for “Scrapheap challenge bug”.
Craig has achieved a high standard of construction using repurposed items and basic tools. The judges were impressed with the quality achieved using these simple resources and facilities.

Craig says that his bug was “made from anything I could get my hands on, all built at work using a pistol drill, files and general hand tools.”

Innovation category winner:

William Cooper, G7FDD for “The tomato ketchup antenna”.
This is a fun but practical demonstration to introduce people of all ages to amateur radio and science. The judges especially liked the use of an unconventional material to tune an antenna by changing its dielectric properties.

William explains the reasoning behind the design: “if the Ketchup in the centre container, attached to the radiator is shaken it becomes thicker changing the transmit frequency. People love the fun fact of using a food product and are amazed at the seen difference in frequency.”

Note: there was no runner up in this category.

Software category winner:

Heather Nickalls, M0HMO for “Meteor Beacon Network Software”. Heather’s work required a broad understanding across radio and astronomy. She has constructed an excellent software package that supports the Meteor Beacon Project. The judges were especially impressed with the combination of skills and disciplines that were brought together to produce a complex analysis, visualisation and reporting facility that all who are interested in can benefit from.

According to Heather, the objective of the project was “to create a software suite to control and analyse an international network of receivers and a central transmitter to enable the study of meteors and upper atmospheric features through their interaction with 6m CW transmissions. Also, to provide STEM and outreach access to live meteor tracking data via this network.”

Software category runner up:

Steven Hiscocks, M1SDH for “Map tool to help UK amateurs”.
The judges recognised the value of the contribution made to the amateur radio community in the development of this useful tool.

Steven explains the rationale behind his software: “Recently I’ve built and hosted a map tool to aid UK amateurs identify locations and activation boundaries for various portable programmes/awards. My initial goal was combining POTA references, overlaid with various nature/conservation/protected areas from across the UK. This quickly grew, based on feedback from other amateurs, to cover many other popular schemes like WAB squares, WWFF, SOTA, HEMA and newer schemes like UKBOTA. I’ve also expanded coverage to cover entire the UK, Isle of Man and Channel Islands.”

The Pat Hawker G3VA Award, presented to the overall winner of the 2024 Construction Competition, was received by Heather Nickalls, M0HMO for “Meteor Beacon Network Software”.

The judges would like to praise all of the entrants, including those who were not mentioned, for taking the time to enter the competition and share their projects.

rsbg.org/construction-competition