

#MeetOurSTEMAmbassadors

We have so many amazing volunteers and we'd like you meet them!



About me

Name:	Ray Butchart	Photo: 
Location:	East Yorkshire	
Job/course title:	Engineering Trainer and Tech Director	
Organisation:	Setec Ltd	
Fun fact about me:	Would love to spend most of my time underwater!	

Education/career journey:

I attended Armthorpe Academy, near Doncaster, Longcroft School in Beverley and St Johns in Singapore. I enjoyed technical drawing, geography and physics. As an adult learner I studied Electrical Engineering (ONC), Business Studies with Finance and Law (BTEC) and Business Studies (HNC). I served for 22 years in the RAF and 27 years in the rail industry and I am still working.

My current job:

I am a Technical Director with a company involved with the training, development and consultancy of rail industry staff. STEM is not one of our key roles, but I always take time to discuss STEM and STEM subjects with delegates who attend our courses. I enjoy the role of delivering knowledge to delegates and seeing them leave with those extra skills. If you wish to become a trainer, you need to ensure that you are very comfortable standing up in front of people.

STEM Ambassador role:

I was invited to attend a STEM event over 10 years ago and decided I wanted to be involved in the STEM Ambassadors programme. I wanted to give schools and children the inspiration that someone gave me when I was at school. I like to support engineering in schools and I am part of a Green Energy Car Project at a nearby secondary as their engineering advisor. I like to think I bring enthusiasm for my subject(s) and try and in-still this in others.

Student challenge:

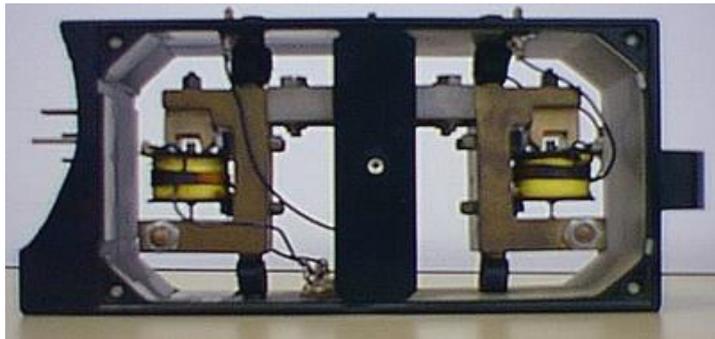
Challenge 1

- Design a flow chart of the activities (to include lights/sounds/movements and if possible times) of a four-barrier level crossing operation

Challenge 2

- Look at the three exercises

What is this and how does it do it? (Hint: think electrical and magnetic!)



Can you say what all the parts of this signal indicate to a train driver and how does it show it?

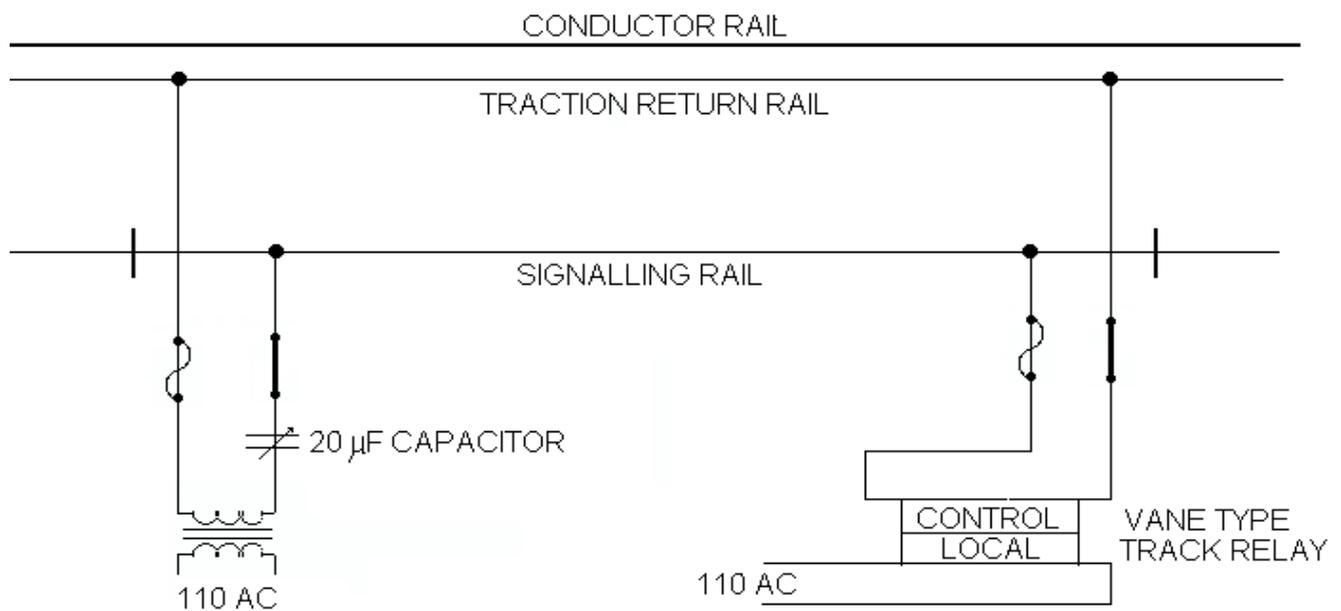


Student challenge (continued):

Q. What type of capacitor is used here and how does it affect the track circuit?
(Hint: this is a DC traction train track using an ac track detection circuit)

Q. List the main components of this track circuit and how do these work?
(Hint: transformer, relay, capacitor and fuse)

Q. What damage would stop this working and how could you test it?



Nice to get to know you!