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| Duration | Two days |
| Level | 3 |
| Location | North Oxfordshire |
| Documentation | The course gains access to the WireTrain Tech Note Library and the relevant sections to this workshop. This means you'll have a ready reference and series of guides to refer to after the course. |
| Style | The workshop is principally about practical skills training but we also layer in background information to give a rounded knowledge of the materials, techniques and tooling used. |

OVERVIEW

Designed for those wishing to learn how to build professional motorsport looms based around the System 25 and Deutsch Autosport materials by TE. Attendees are generally those who currently work in motorsport and need to widen their skills base to include the build and repair of motorsport wiring systems.

During the two day workshop we will build a standalone wiring harness, using the materials and techniques found in modern motorsport wiring looms. We use products manufactured by the TE group and supplied by IS Rayfast, we will be working with Type 55A wire, DR25 sleeving and moulded parts, Deutsch Autosport connectors and the associated build consumables.

This workshop is typically run with a reduced group size of 4 to increase one-on-one opportunity

WORKSHOP THEORY TOPICS

To reinforce your understanding we will also introduce you to these essential theory topics:

- Understanding layout, schematic and point-to-point drawings
- Overview of main wire types and applications
- Wire identification with HS wire IDs, colour codes and advised usage
- Why we use twisted pairs
- When and how to ground shielded cable
- Why we twist wiring harness legs.
- Overview of the 'Order of assembly' basics
- Review of alternative sleeving methods
- A guide to common types of heat shrink and their application
- Review of wire stripping tool options, cost vs performance
- Looking at the correct wire position in an indent style crimp, issues with over/under crimping
- Indent tooling options, setting the indent dial and selection of a suitable positioner turret
- Using of polyamide tape (Kapton) and the PTFE alternative
- Wire splice crimping options and affordable tooling

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WORKSHOP PRACTICAL TASKS

The practical loom building will guide you through the following:

- Wire cutting and applying wire IDs
- Laying up the wires to a 1:1 board
- Hand twisting a standard twisted pair for CAN
- Creating the general loom form, bundling and taping
- Conventional multi core twisting
- Contra helically winding harness legs (Multi Layer opposed twisting)
- Counter twisted bundle for two twisted pairs of CAN
- Taping legs and transitions.
- Heat shrinking techniques and sleeving harness legs in DR25 sleeving
- De-booting practice, destructive and non-destructive methods
- Working with adhesive lined boots
- Fitting of conventional moulded boots and bonding with harness epoxy
- Working with moulded parts and different cable leg transition types
- Cable labelling and clear sleeve application
- Applying glue fillets for finish and function
- Wire stripping and trimming practice with correct strip lengths for common contacts
- Working with Indent crimping tools, turret selection and indent dial settings
- Build using AS shell sizes 10 to 14, ASL and ASC connectors from the Deutsch Autosport family
- Practice tube crimp splicing and sleeving
- Cable leg preparation and moulded boot application
- Crimp splicing of wires in the boot area, also the splice and tail technique
- Service loop techniques
- Crimping a CAN termination resistors in the boot area
- Inserting and extracting AS pins and sockets, tips and techniques

* **Prerequisite skills:** Whilst prior wiring experience is not essential, an existing level of detailed hand skills is strongly advised to get the most from this workshop. A good level of manual dexterity and good close up eyesight will be required.

**The workshop involves working with hot equipment and sharp tools, a safety briefing will be given.

*** To complete the whole workshop in two days it can be a busy event, given each attendees own rate of completion we may shorten some areas to maximise your overall training and experience.