

## Improved Harness Technology™

**Less Weight**  
**Less Space**  
**More Precise**  
**More Reliable**

Trackwise Improved Harness Technology™ represents a new way for you to reduce the cost, weight, space and improve the performance of your Electrical Wiring Interconnect Systems – data and power.

Trackwise has developed a means of producing multilayer flexible printed circuit boards (PCBs) of any length. The process is protected by granted UK Patent Number 2498994, granted US Patent Number 9,226,410, granted China Patent Number CN 104145539 B and International Patent application PCT/GB2013/050147.

Flex PCBs were developed in the 1950s as a replacement for wiring harness, so as to save weight, save space, increase reliability. Today they are at the core of all modern electronics, but their application has been limited due to the current maximum size. Trackwise' innovation has removed this limit. Now the only limit is the requirements of your application. The proven benefits of multilayer flex PCBs currently enjoyed at only unit level can therefore be realised at subsystem and system level.



**5metre (200inch) long, 6 layer flex PCB**



**15metre, impedance controlled data harness**

Aside from space and weight savings of **up to 75%**, the technology offers the opportunity to combine high speed data and power within an integrated product. The printed nature of manufacture ensures precision and repeatability. The multilayer capability means that EMC shielding can be incorporated within the PCB itself. Please contact Trackwise for a white paper regarding representing shielded twisted pairs within flex.

A further advantage of flex PCBs is their planar nature – which makes them entirely suitable for bonding to or embedding within composites, with significantly reduced installation times – and reduced risk of damage in operation. Repairability – customised to your needs – can be built into the product at the time of manufacture.

The benefits of Improved Harness Technology™ are numerous and vary in priority according to the application – from the improved packaging of missile systems and lightweighting of UAVs allowing for greater performance and/or additional payload, to the releasing of vital space within armoured vehicles for enhanced personnel comfort/operability, to cost/efficiency/environmental benefits accrued through significantly reduced installation times and weight/fuel savings for commercial aircraft and rotorcraft.

**For further information, please contact:**

Trackwise  
1 Ashvale, Alexandra Way  
Tewkesbury GL20 8NB  
UK  
[www.trackwise.co.uk](http://www.trackwise.co.uk)

## Improved Harness Technology™

---

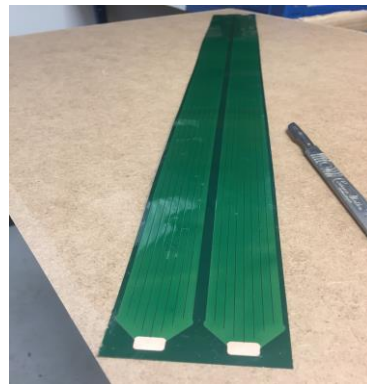
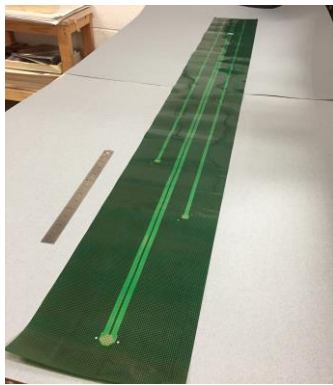
### Length unlimited:

Trackwise has developed a means of producing multilayer flexible printed circuit boards (PCBs) of any length. The process is protected by granted UK Patent Number 2498994, granted US Patent Number 9,226,410, granted China Patent Number CN 104145539 B and International Patent application PCT/GB2013/050147.

Trackwise has an ongoing R&D program to produce 2m, then 10m, then 25m long multilayer flexible PCBs.

### In composite wiring:

Due to the planar nature of flex PCBs, wiring can now be bonded onto or embedded into composite structures:



### Harsh environment:

Flex printed circuit boards is a robust technology – CleanSky TRL6 flex qualified for 260C,40gRMS:



### Connectors:

Flex printed circuit boards can be terminated in standard aerospace connectors – D38999, EN4165 etc. either via plated thru hole terminations (which has some implications on available circuit length) or via flex to wire transition:

