Davis Derby **WiPAN** Development

WiPAN – **Wi**reless **P**ersonnel **A**rea **N**etwork

Davis Derby is currently developing the WiPAN system platform and is looking to invite suitable companies to work with Davis Derby to integrate the technology into portable products.

The rules for the Russian mines have changed in relation to tracking and personnel gas sensors. The initial development of the WiPAN has been focused on complying with these rules and we are currently working with the 2 Russian companies below to fulfil these requirements

1. **Aerotest** (Handheld Gas Sensor and Cap Lamp)

TRUCKLOG MINEWATCH STEDFAST

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2. **Gorniy TSOT** (Handheld Gas Sensor)

The Handheld gas sensors will display different values of gas content

The Cap Lamp will provide personnel location to within less than10m, also notification to the miner and finally location of a trapped/disabled miner.

The WiPAN system includes 3 basic components, these being:

1. ***End Points*** The end points modules are fitted into either the lamps, hand held gas sensors or other transducer. These devices collect information from the device and transmit to the network. The devices can also receive data from the system and output to the device. The end points take their power supply from the device battery units.

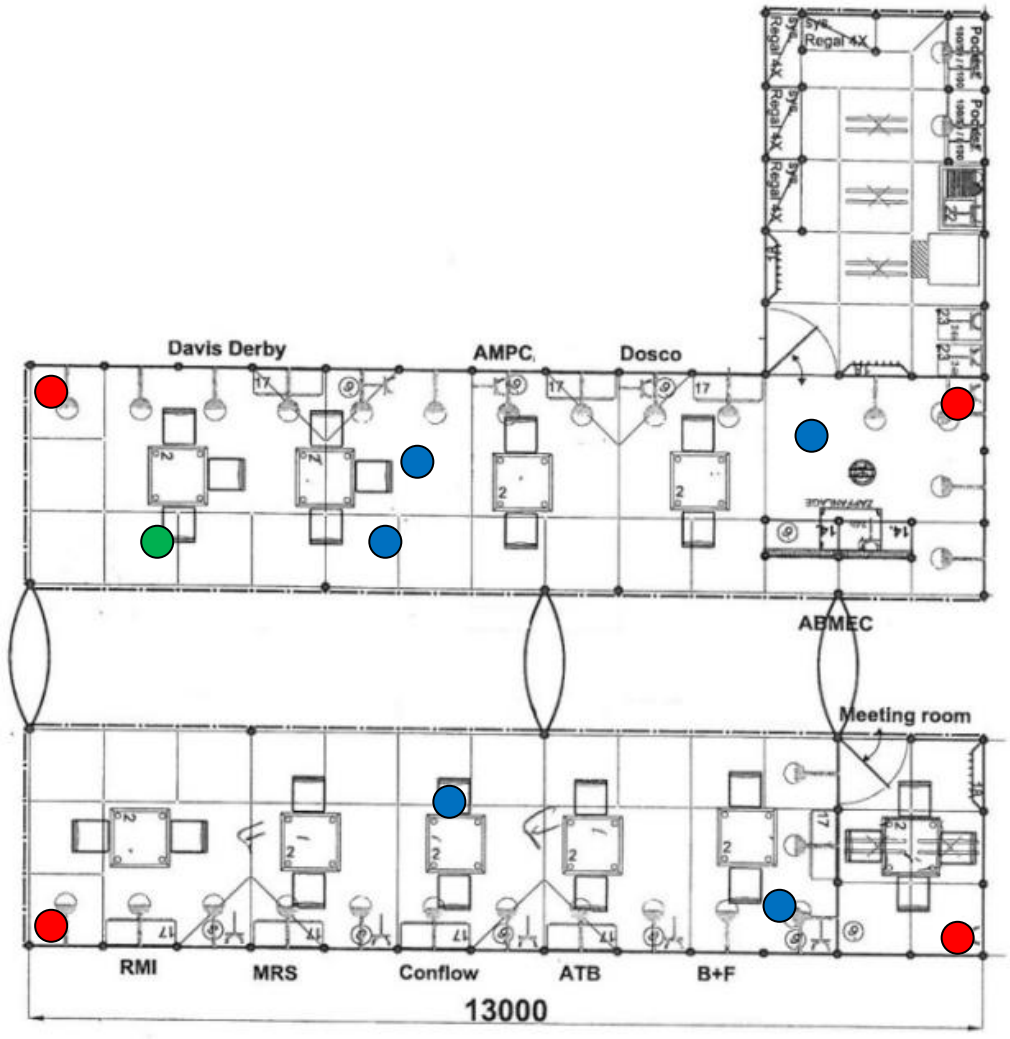
2. ***Router*** This unit passes data to and from end points, other routers and coordinator within radio contact. Each router also has the facility to have 6 digital or analogue inputs and output connections for local device monitoring and control.

3. ***Co-ordinator*** This unit collects all the information received from end points either directly or from routers and sends it to the surface via the mine wide Ethernet IP data highway. The unit also has data outputs for connection to the stationary control system, a colour LCD display and also includes router functionality.

The components are currently being certified to the ATEX M1 standard. Eurotest Company has designed their miners' lamp and portable gas sensor to accept the Davis Derby endpoint and is in the process of obtaining Russian approvals.

At Ugol Rossii in Novokuznetsk, 4 -7 June 2013 (Hall 1, stand C.14), we will be demonstrating the system showing the location of people and gas monitoring simulation around the stand.

<u>Ugol Rossii Stand layout shown below</u>

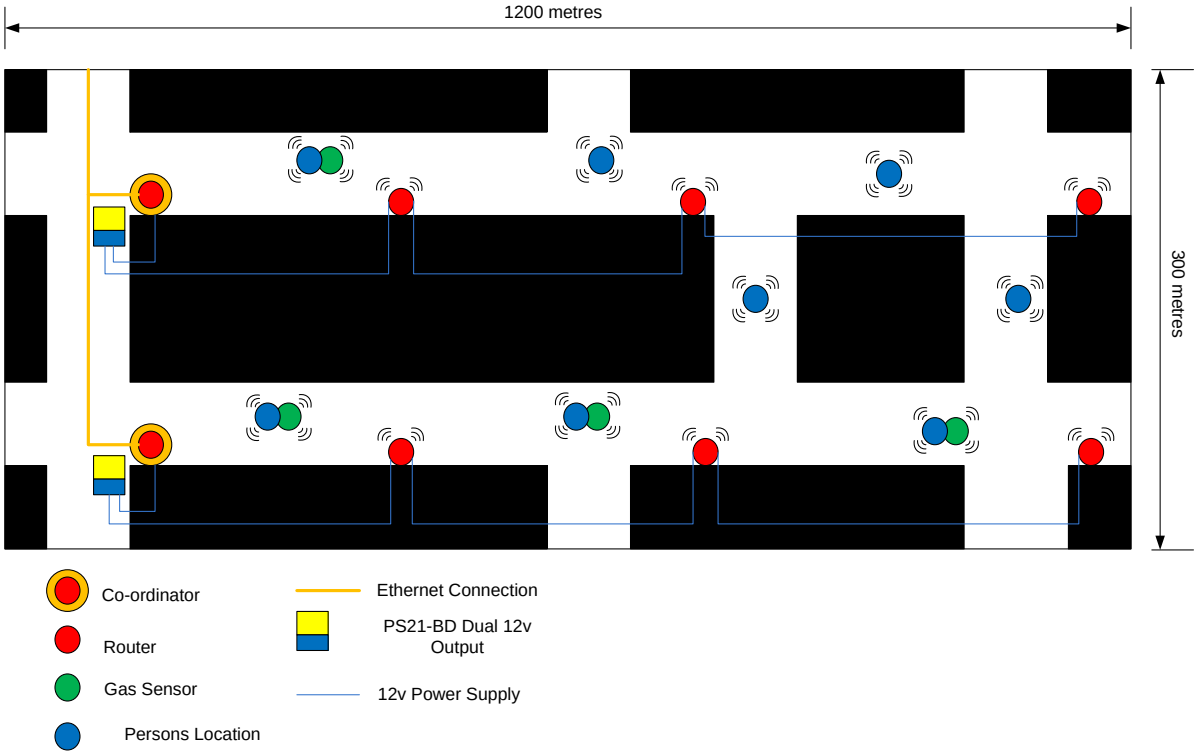


- The blue dots shown above represent the location of people on the stand hovering over the blue dot will show the details of that person.
- The green dots shown above relate to the handheld sensor. If the dot is green then all the sensor values are healthy, if it is amber or red then the sensor shown will be in a warning or trip state. Warning and Trip values can be set in the configuration of the system.
- The red dots shown above relate to the routers that are connected to the system. Hovering over the dot will show the details of that unit.

On the exhibition system the co-ordinator is supplied by a mains power supply unit, the routers and the end points are supplied by battery. In an actual installation in the mine the co-ordinators and the routers will normally be supplied at by intrinsically safe 12vdc supply and have on board battery support. The end points will all use the portable device's supply.

Following various site tests and obtaining the necessary certification, our plan is to carry out underground mine testing and finalise the operational specifications before release for sale.

Small area of a mine showing proposed layout of WiPAN system



The layout above shows the positions of the Co-ordinators, routers and end points, we expect that the range between end points and routers will be between 300 and 400metres. Underground installation tests at the mine we will allow us to define operational ranges between routes and coordinators and firm specifications and installation details.

Davis Derby is also currently investigating the use of this technology in the wider field of safety automation, including remote sensors in conveyor applications.

New Conveyor Lockout Key