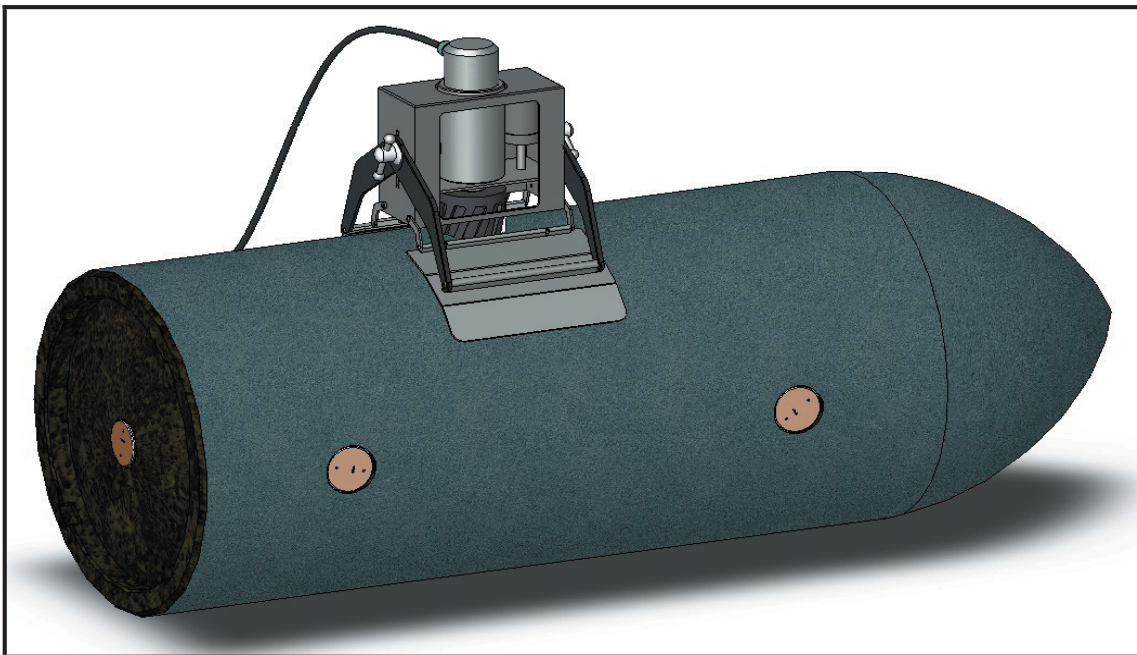


The **'mate'** (mmic advanced trepanning equipment) is designed to act as a replacement for older trepanning systems to cover any 'capability gap' as they are phased-out of service, and to allow the deployment of a cutting system where hydro-abrasive systems may present an unacceptable logistical burden.

The equipment is similar in principle to mmic's **'monica'** drilling equipment in that it is a remotely operated drilling machine which attaches to the target using flexible vacuum-generating feet.

A hydraulic or pneumatic motor is used to power an annular (hollow) cutter to allow the wall of a munition to be breached so that the munition fill can be accessed. Alternatively a cutter may be used to trepan a hole around a fuze pocket allowing it to be removed intact from the munition body.



The picture above shows a view of a prototype of the **'mate'** equipment modelled in a 3D CAD (Computer Aided Design) package. The target is a scale model of a 1000lb Large Aircraft Bomb.

The two vacuum feet have a total area of approximately 300 X 400mm (equivalent to a sheet of A3 paper). They are evacuated to a high level of vacuum using a simple compressed air venturi device containing no moving parts. The hold-on force created by these pads will be approximately 500kg, and is independent of the condition of the target surface- the pads will attach reliably to wet, corroded, pitted and dented targets.

Being flexible the pads can adjust to a wide range of target curvatures from flat plate down to targets approximately 200mm in diameter (smaller targets can be attacked using a simple adapter similar to that used in the **'monica'** system).

The main advantage of a vacuum system over the 'traditional' trepanner is that the equipment does not require access to the full diameter of a munition, so only a limited area of the munition surface need be cleared. This considerably reduces both disturbance to the target and the need for digging and shoring operations on buried targets.

The drill is powered by a hydraulic or pneumatic air motor (depending on requirements) with drilling down-force being provided by hydraulic/pneumatic rams.

The drill used is to be an annular (hollow) type similar to the current **'monica'** type but increased somewhat in scale.



The picture above shows the standard 18mm **'monica'** drill next to the proposed **'mate'** cutter which can cut a 100mm diameter hole to a depth of 125mm. A 50 pence piece is shown for scale.

The cutters used can be provided to cover a range of diameters (up to 150mm) and depths (up to 200mm) of cut and will all work in a range of materials- mmic eod ltd have considerable experience in the design of complex and highly efficient cutters such as are used in the **'monica'** system. A considerable improvement in cutting performance and cutting time is predicted over current trepanning systems.

The system will be operated remotely using either a cable or wireless link (depending on requirements) to initiate and terminate drilling. The operating distance can be up to 1000m if required. Status and/or video information on the drilling process can be relayed to the operator on a robust interface.