

### MRC 600/900 Retrofit Sources



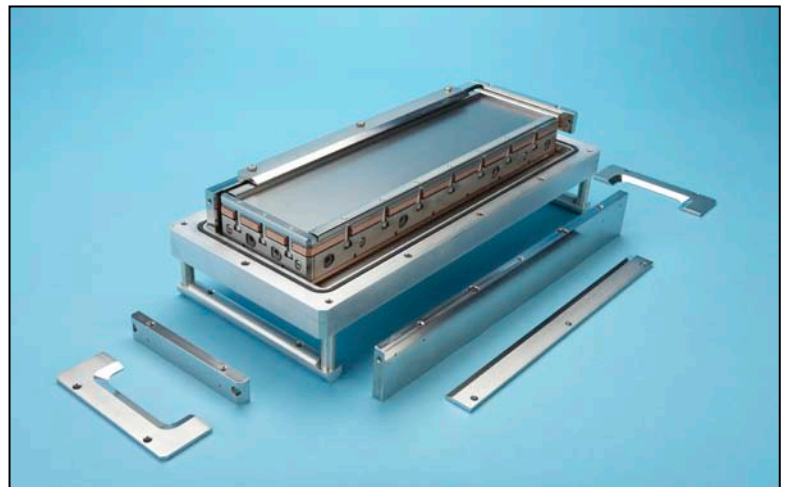
5" x 15" uses original system top plate anode shields

- ▣ Nominal 40 wt% real target utilization- for non-magnetic materials
- ▣ Gas injection through the cathode body option
- ▣ Kamlok™ fast target exchange system or Insert-Style cathode eliminate costly screw seizures
- ▣ Low cost target backing plates for bonded targets instead of more expensive MRC style cathode body/backing plate
- ▣ Higher rates and Lower pressures
- ▣ 5" x 15" target version
- ▣ 90 x 200mm & 90 x 381mm target versions for precious metals and expensive target materials
- ▣ Magnet module for Ni (15-20% utilization)

#### Description

These retrofits feature the benefits of our standard SunSource™ GEN II sputtering sources packaged to fit within the MRC chamber cutouts and envelope. They are not the exact copies of the decades old designs offered by our competitors.

They are high-performance upgrades to the old MRC style design - featuring better target utilization, robustness and reliability, a more stable process environment, lower cost of target backing plates, broad and uniform width and depth "non-wobble" erosion area and very narrow center area of re-deposited material on the target resulting in diminished arcing and particulate generation.



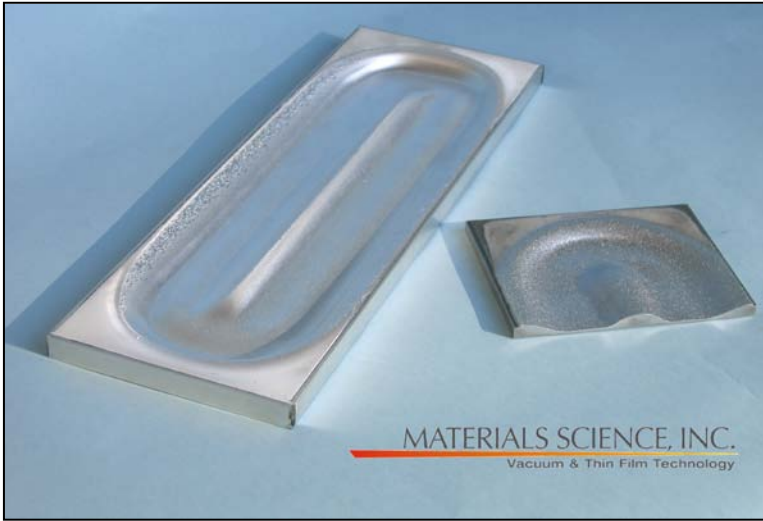
90 x 381mm including flange mounted anode shields

Seized and broken fasteners in the cathode body are completely eliminated by both of the offered Kamlok™ and Insert-Style target mounting arrangements.

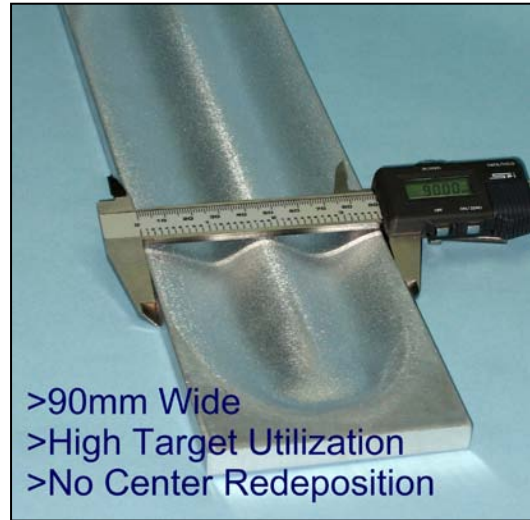
If you are sputtering precious metals or expensive target materials, you might want to consider the use of a narrower 90mm wide target – especially if you do not run the system continuously. We can shorten the target length for the 90mm wide sources if you do not use the entire substrate pallet area.

## Features

### Two Different Target Widths Are Offered – 5 Inch and 90mm



Eroded 5" x 15" and Cross-sectioned 5" wide targets

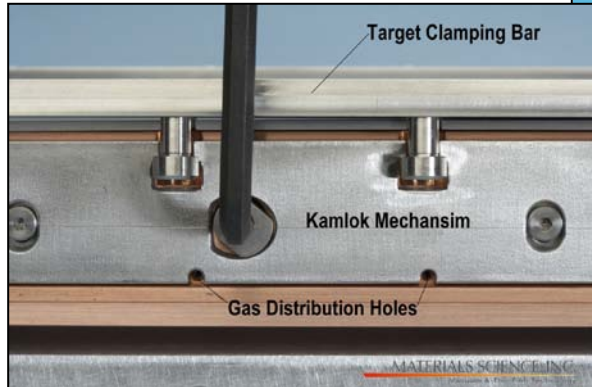


Eroded 90mm wide target

### Two Available Target Mounting Systems

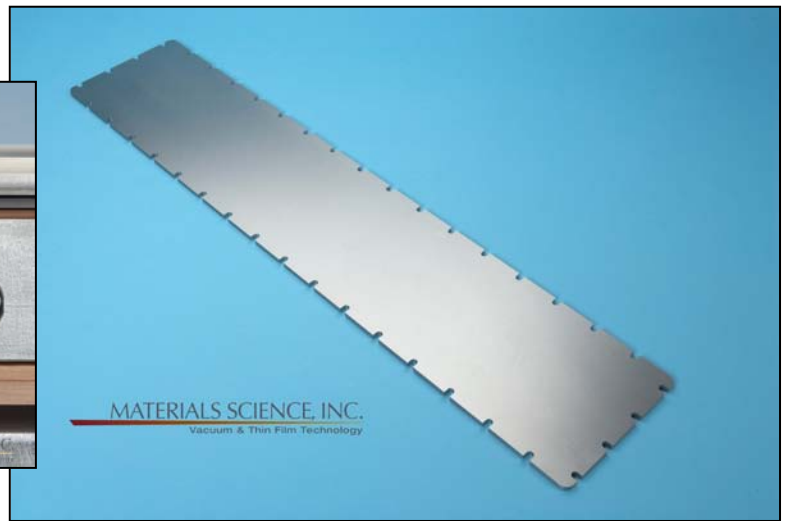
#### Kamlok™ System

Kamlok™ System eliminates broken fasteners in cathode body and allows fast target exchange using no screws



Argon gas through cathode body (Optional)

Typical Kamlok™ Style Molybdenum Target Backing Plate



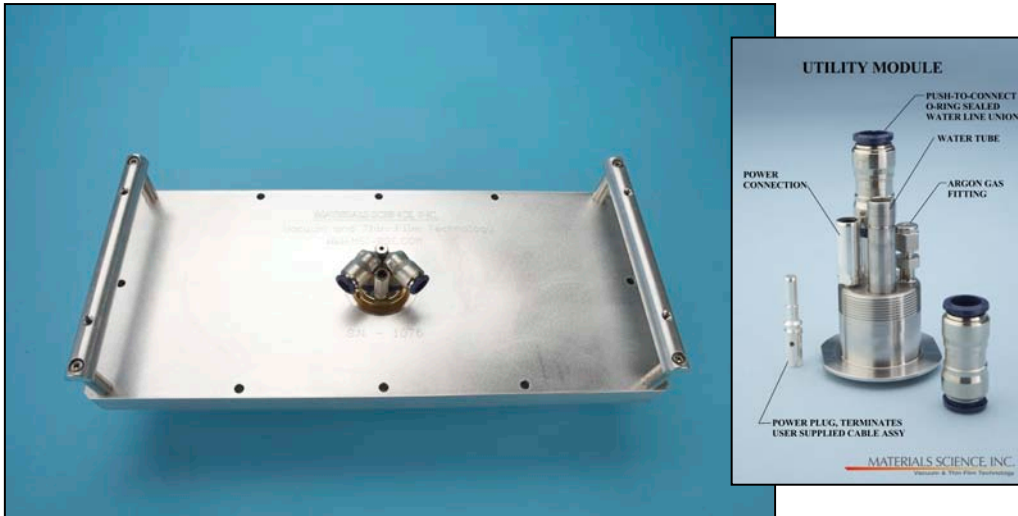
#### Insert-Style Mounting System



Experienced users know that Helicoil™ and other threaded inserts often are backed out of the cathode body when fastener galling occurs. Worse yet, the screw often seizes in the cathode body, requiring it to be drilled out and the body re-machined. The combination of the proprietary, easily removable cathode body target clamp threaded inserts and the [i-Kote™ adaptive coating](#) on the screws very significantly reduces cost of ownership and vastly improves uptime. Simply cut off either the flange on the insert or cut/break off the screw head, and replace them with inexpensive parts on-site. Access to a machine shop is not necessary.

## **Easily Maintained and Serviced Utility Connections**

Water, power and (optional) argon gas connections made at a single point on utility module



The unique gas injection feature in SunSource™ designs that allows better process control and performance is normally not desired by users of legacy MRC systems or those made by other manufacturers that have copied the MRC design. The control system and mass flow controllers must be reconfigured and nearly all users have chosen not to do so, despite its proven benefits. Because of this, we have eliminated the argon gas through the cathode body feature in the MRC retrofit sources, although it can easily be made available since it is a standard feature of SunSource™ sputtering sources. We must know this in advance, because the cathode body and the utility module (shown above) will both be different. If you wish to have the possibility of using the internal gas injection feature, then you MUST specify this at the time of ordering. There is no cost increase for this. What you will have to do is blank off the Swagelok gas fitting and ensure that it does not leak. You can add this feature later on, but at some expense.

## **Magnetic Target Materials**

It is possible to sputter Nickel and Permalloy, but a different, dedicated magnet module must be used. It is interchangeable with the standard magnet module, but a different set of target clamps must be used and the target backing plate cannot be used. Magnetic materials MUST be directly water cooled to achieve the values noted below. All of our magnet designs are based upon the TOTAL combined target and backing plate thickness. Realistically, the required thickness for a molybdenum backing plate (copper must be thicker) means that even a very thin target cannot be used when bonded or clamped to a backing plate.

Depending upon the permeability of the target material, the total possible thickness will vary. For Nickel and Permalloy, it's .200 inches thick. The target utilization will vary between 15 wt% (expected) to as high as 20 wt%. The practical limit is the depth of the erosion groove (can be measured in KWHr's once a process and target material has been qualified without having to break vacuum to actually measure the deepest point in the erosion groove). This is dependent upon quite a number of factors. Process conditions like pressure, RF or DC power, actual composition and quality of the target material, etc. will all influence this. Figure on 15% and be happy if it is better. The benefit of our design is that the erosion profile will remain uniform, with no deeper erosion points at the end turnarounds or down the length of the erosion groove, and no "wobbles" that will distort uniformity.

## **DC, Pulsed DC, AC, RF and HIPPMs Compatible**

Please specify the power supply type and power levels that will be used, if necessary. The insulator configuration may need to be adapted if they fall beyond the traditional 13.56 MHz or DC/Pulsed DC power supplies used in the MRC style systems.

## **Interface Information**

Note: Complete installation control drawings can be downloaded from the “Drawings & Manuals” or “Retrofit Sources” pages on the Materials Science, Inc. web site.

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