

The copperman (depicted in the full scale photo) is a life size thermal mannequin manufactured by Measurement Technology, Seattle Washington.



The mannequin was custom designed and fabricated for the United States army. The purpose for the mannequin was for the testing of military apparel for the evaluation and study of various materials. The manly copper structure took two years to construct and is a sophisticated sensing device capable of detecting the slightest temperature changes.

Measurement Technology faced several challenges in the manufacture of this instrument. First was the forming of complex body shapes, this was accomplished by explosion forming. Secondly, the formed and machined components required fusion joining of hundreds of mating joints.

Joining Technologies was contracted by Measurement Technology to provide the joining technology. Joining Technologies selected the electron beam welding process because the thermal mannequin required precision welding of thin Cu cross-sections. In order to fuse Cu, enormous amounts of concentrated energy is required. Secondly, the components had to be hermetically sealed requiring a hard vacuum within each separate section. The copper mannequin has several hundred electron beam welds with each joint requiring hermetic leak specs of 10^{-9} cc/He per sec.

Joining Technologies is particularly proud of our contribution to the manufacturing accomplishment and dedicates the "Copper Man" as a symbol of pride to our organization.