Powder technology is considered to be one of the most important applied manufacturing methods to acquire products within difficult properties, to be acquired as manufacturing ones. Therefore, all the previous researches were concentrated about studying the material behaviour or the geometrical shape effect to the extrusion die, upon the mechanical properties, being prepared by the foundry methods. Thereby the current research aims to study the capability of applying the powders technology to improve the mechanical properties, concerning in the alloy (Al-5%Mg), utilized in special engineering domains.

After testing and standardization of the used powders in the current research to know its specifications, a mixing process to the Aluminum powder was performed with (5%) of the Magnesium powder in order to prepare Aluminum–Magnesium alloy. Actually (0.5%) of zinc stearates acetates were added as oiling material to the mixture. The mixing process was conducted by using a mixer within a speed of (30 r.p.m) for a period of (45) minutes to acquire a homogeneous distribution to the mixture later on press forming process, were carried out, regarding the powders mixture, at different pressures to prepare the samples.

Thus green density and porosity tests, were performed upon the samples, being prepared in order to specify the optimum pressure to the press, then being sintering at temperatures & different sintering times, whereas when performing mass density and final porosity & hardness in order to specify the optimum sintering.
Therefore, the process of extraction for the sintered powders technology products, was conducted at the optimum sintering temperature, as well as for foundry products by applying.

Different engineering dies shapes. Later on the test of pressure and hardness upon the extruded technology of powders and foundry.

Actually, the results have declared that the extruded powders technology during uniform die (UCRHS), have better properties than the extruded foundry products under the same circumstances.

Accordingly, the microstructure test was carried out for patterns of both types, whereas it is been observed that the extrusion process, has resulted in the correlation process completion among the manufactured powder particles, with the powders technology and grinding occurrence of the particles and increase of the contact surfaces. In addition to the participation and uniformly metallic phases existence, which is attributed in to the hardness increase, while the foundry patterns, were having a rough microstructure and unhomogenous precipitation to the resultant phases.

Forming efficiency was studies per both powders technology and foundry products, through carrying out the extrusion process of the visioplasticity patterns of both types.

Finally, the results have declared that powders technology products, have a high forming ability, compared with the foundry products, moreover for the occurrence of uncommon streaming mode of the mixed type when foundry products extrusion, through a decelerated die (DCRHS).