and roll forging die contact area is large, so the deformation space is relatively small, the blank deformed larger and more uniform by role of upsetting extrusion.

From Figure 4 (d), it can be seen that, during the bend-shaping, the deformation of the blank mainly concentrated on the bending deformation region.Large plastic deformation occurred in this region, so the equivalent strain of the bending parts is greater.

From Figure 4 (e) it can be seen, when the blank is under the overall final forging, since only the fist portion of both sides was formed by die forging, the deformation is a bit larger, while the rest of the parts is just shaping with a small deformation.Both ends of the fist, and flash-generating parts of in the fists of both sides and some parts with overlap ,the equivalent strain is a bit larger.

III. CONCLUSION

Through three-dimensional finite element simulation, the flow state, strain field and temperature field during the blank forming process is analyzed in this paper. According to the simulation results, the process parameters of precision roll forging - forging was optimized and mold structure is improved, which provides a theoretical basis for the research and development of the process.

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