



## Augmented Reality in Dies Alignment for Machine Setup

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**Abstract.** Forging is one of the material deformation processing techniques. While the operation cycle is short and efficient, the machine setup process is generally long and results in time waste. One of the difficulties in operation is position alignment procedure of the equipment during the die changing process. Due to the size and shape complexity of the machine and equipment, the operators are unable to clearly see the important parts – e.g. guided pins, holes, and sub-plate – which need to be moved to finely adjust the alignment. Augmented Reality (AR) is used to solve this problem by rendering virtual objects and guides associated to those parts over the real equipment. Hence, the operators can monitor the position of the parts during the alignment process through the virtual objects. This AR system is developed based on ARcore SDK together with Unity on the Android platform. The experiment was conducted in real factory environment.

**Keywords:** Machine setup, Forging, Augmented Reality, Die changing