Improvement of a VCM Type Lens Actuator by TRIZ

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ABSTRACT

Current mobile phones have built-in camera which need AF (Auto-Focusing) module in order to produce good quality photos. The lenses of the AF modules are moved by actuators. The VCM type actuators are widely used because of their cost effectiveness but those have weakness of consuming large amounts of electronic power for video capability. This situation is the main obstacle for future development and considered as the inventive problem to solve. TRIZ has been used to solve this inventive problem. In this paper, ARIZ and Goldfire Innovator™ are used in problem-solving process and the results are presented.

Ⅰ. INTRODUCTION

TRIZ was used to find a solution for problem of VCM type actuator. TRIZ is a problem solving method based on logic and data, not intuition. This method was developed by G.S. Altshuller and is well documented now[1,2,3,4,5]. More than two hundred thousand patents have been analyzed to discover the patterns and systematic methodology that predict breakthrough solutions to the inventive problems. ARIZ (Algorithm of Inventive problem Solving) is algorithm for problem solving step by step.

Ⅱ. PROBLEM DESCRIPTION

As the VCM type actuators constantly use electronic power in focusing the lens, they have weakness of consuming large amounts of electronic power for video capability.

Fig. 1 Schematic diagram of a VCM type actuator

Ⅲ. PROBLEM SOLVING

ARIZ and Goldfire Innovator are used to find solution for this problem. ARIZ offers appropriate tools on stage of problem solving process. By utilizing ARIZ, approach solution of problem more effectively.

Goldfire Innovator is one of commercial TRIZ software and involves knowledge base data so users use this program to find proper effects for problem solving. It materialized the main concepts of TRIZ and powerful databases.

Ⅳ. CONCLUSION

This paper presents a case of TRIZ application. Current problem of VCM type actuator was solved using ARIZ and Goldfire TRIZ software. Appropriate tools in problem solving phase, effects module and functional analysis module helped to find an inventive solution of the problem.

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