Large Format Mosaic Screens to Visualize Schlieren

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Schlieren screening method is used in various fields of engineering. The spherical long-focused concave mirror, used to visualize Schlieren, is quite expensive and requires a lot of effort while setting up and adjusting. Visualization strongly depends on the light source location relative to the analyzer (camera). The innovation of the project is that the concave mirror was replaced with the retro-reflective screen formed with cube corner prismatic elements or with a lot of transparent spheres and offered original hand-held detector, combining in one device the dot light source and the analyzer of the reflected light. When the screen is retro-reflective Schlieren visualization is not affected by the movement of light source. If the cube corner prismatic elements or spheres are placed according to their size and if bigger elements are placed on the center, the mosaic screen acquires tautochronic features i.e. the coherence of the reflected beams will be observed. The cube corner mosaic screen reflects considerably more light, unlike the mosaic screen made from glass spheres and at the same time, doesn’t require a diffusional screen placed in the sphere’s focal plane behind them. This is the advantage of the cube corner prismatic-mosaic screen. The use of the innovative method will widen the field of usage to visualize Schlieren and it will also simplify the process of detection of the natural gas leakage or detection of the warmed or cooled air flow occurred by any reason.

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