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Some effects of vortex shedding in grid-generated turbulence¹ GIANFRANCESCO MELINA, PAUL J.K. BRUCE, JOHN CHRISTOS VASSIL-ICOS, Imperial College London — We perform hot-wire measurements in a wind tunnel downstream of different types of turbulence-generating grids: a regular grid (RG60), a fractal square grid (FSG17) and a single square grid (SSG). We characterize the flow highlighting similarities and differences between the grids and between the production and the decay regions of turbulence. We focus on the effects of vortex shedding from the bars of the grids. For this purpose we design a novel 3D configuration formed by the SSG and a set of four splitter plates detached from the grid. We show that, by placing the splitter plates, the peak of turbulence intensity on the centerline is reduced and its location is moved downstream. We compare data from the different turbulence generators and find that a reduction of vortex shedding energy correlates with an increase in the magnitudes of the skewness and flatness of the turbulent velocity fluctuations in the production region.

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