FIRST EXPERIMENTAL RESULTS WITH A SMALL SCALE TRS FLOW SIMULATOR

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In the Ernst Mach Institute, where there is a small scale model (1:41.7) of the large blast simulator at Reiteralpe, a simplified model of a TRS has been constructed at the same scale. With this model the TRS-flow inside the blast simulator can be investigated, including the flow phenomena when ejectors are used to exhaust the TRS-gases. The TRS-flow is simulated either with cold air jets or with helium when simulation of high temperature jets is necessary. From one to four jets can be produced and up to
four ejectors can be driven. Every jet is produced by a nozzle, so as to give an exit velocity of about 130 m/s which is required at the full scale to match the ignition velocity of aluminum powder. To visualize the time-dependent flow phenomena shadow-schlieren pictures can be taken with a 24-spark Cranz-Schardin-Camera.
These pictures show the jet formation process and the exhaust phenomena around an ejector inlet. An estimation is given also about the amount of exhaust gas when aluminum powder is burned in oxygen. In addition several for exhausting TRS-gases out of a simulator are discussed.