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Developing high performance preheating devices for ramp compression experiments on high pulsed powers drivers THIERRY D'ALMEIDA, JRMY VICH, GAEL LE BLANC, CAMILLE CHAUVIN, Commissariat a l'Energie atomique et aux energies alternatives, THIERRY DUVAUT, Universit de Reims Champagne Ardenne — The CEA operates several High-Pulsed Power (HPP) drivers dedicated to Isentropic Compression Experiments (ICE). In these experiments, various types of materials are magnetically ramp-compressed to stress levels ranging from few kilobars to 1 Mbar. Several diagnostics, including laser Doppler interferometers, pyrometers and stress gauges, are fielded in order to characterize materials of interest in these quasi-isentropic states. The latter are usually produced starting from ambient conditions. Ramp compressing samples from various non ambient initial temperatures can significantly extend the range of our studies into previously unexplored thermodynamic paths and help constrain Equation of State models incorporated in numerical codes. Attempts to couple reliable, high performance pre-heating devices with HPP drivers have encountered numbers of technical limitations due to restricting experimental configurations and to severe electromagnetic environments associated with operations on HPP platforms. We have developed a novel configuration which allows nonmetallic and metallic samples to be heated to several hundred degrees with satisfying temperature uniformity and stability prior to their loading. A detailed description of these new devices is presented. Their performances and robustness are potentially valuable for extending the range of thermodynamic paths achievable under ramp loading using high pulsed power drivers in the near future

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