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Global energy confinement in the first operational phase of Wendelstein 7-X GOLO FUCHERT, S.A. BOZHENKOV, M. BEURSKENS, A. DINKLAGE, Y. FENG, J. GEIGER, P. HELANDER, M. HIRSCH, U. HOEFEL, M.W. JAKUBOWSKI, J. KNAUER, A. LANGENBERG, H.P. LAQUA, H. MAASSBERG, D. MOSEEV, H. NIEMANN, D. ZHANG, E. PASCH, K. RAHBARNIA, T. STANGE, H. TRIMINO MORA, J. TURKIN, IPP Greifswald, Germany, N. PABLANT, Princeton Plasma Physics Laboratory, G. WURDEN, Los Alamos National Laboratory, R.C. WOLF, Max-Planck-Intitut fuer Plasmaphysik, Greifswald, Germany, W7-X TEAM — Wendelstein 7-X went into operation on Dec. 10th 2015 for a first operation phase (OP1.1), dedicated to testing and commissioning of device components and diagnostics before the uncooled test divertor is installed. Nevertheless, a first physics program could be conducted alongside the commissioning. One of the OP1.1 activities was the determination of the energy content and confinement time of the plasma, which were estimated independently from profile measurements and data from a diamagnetic loop. The results were combined with radiation losses and limiter heat fluxes to a global power balance, where the combined losses match the heating power within 10-40 %. This gives confidence that reasonable experimental data is available for OP1.1. Typical energy confinement times were found to be roughly between 100 and 150 ms. These values are consistent with the ISS04 scaling and show power degradation and strong dependence on the radiated power. Clear signs of stellarator optimization were neither expected nor observed in OP1.1 due to the neoclassical $\sqrt{\nu}$ -transport in the high Te-low density core plasma.

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