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Advances in ITER Ion Cyclotron System Design R.H. GOULDING, D.W. SWAIN, ITER International Team, EU PARTICIPANT TEAM, INDIA PARTICIPANT TEAM, US PARTICIPANT TEAM — The ITER Ion Cyclotron (IC) Heating and Current Drive System is designed to couple 20 MW of power into an ELMy H-mode plasma for a period > 1000 s at frequencies of 40-55 MHz. Two alternate launcher concepts are under development, both of which couple power through a 24-element array of four toroidal by six toroidal current straps. The "internal" approach features tuning elements connected in series with each current strap at a location inside the port but outside the torus vacuum. Straps are connected in poloidal pairs in a load-resilient arrangement with low VSWR in the twelve feed lines for all values of plasma resistive loading. The "external" approach utilizes triplets of poloidal straps connected together in parallel. This reduces the total number of tuning elements, but all matching elements are external to the port, so that the portion of the feed network with high VSWR is increased. Eight feed lines are connected in a configuration that is also load resilient. An overview of the mechanical and electrical design of each concept will be presented. The IC system also incorporates rf generators, power supplies, and transmission lines whose specifications differ depending on antenna concept. The present status of the design of these components will also be discussed.

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