Zonal Heating of Traction Belts to Enable Recovery from Jams or Obstructions

A belt-traction system, which use may include (but is not limited to) a land-based vehicle or a drill / subterranean vehicle (on Earth or other planets, moons, asteroids or other bodies), contains heating elements or other radiative features distributed in a grid or an array throughout the traction belt or other interface with the substrate; grid or array elements (cells) are interconnected in such a way that power and logic may be shared between cells in the grid or array, in order to melt, sublime, or otherwise take action upon debris or substrate material within or adjacent to the drive system (analogous to FPGA displays or LCD displays, but with the intent to create heat, infrared radiation, or other forms of radiation; or pressure waves at any combination of frequency, modulation, or phase; instead of visible light or visible characters). Power and logic may be provided via pulleys, rollers, or other means to the grid or array, which is capable of distributing power and logic control to the rest of the grid or array. It is envisioned that this technique may be used with the borebots drilling strategy (ref. Morley, 2021, http://www.marspapers.org/paper/Morley_2021.pdf and https://borebots.fyi and https://www.nasa.gov/directorates/spacetech/niac/2021_Phase_I/Autonomous_Robotic_Demonstrator_for_Deep_Drilling/) to prevent ice or other debris from jamming the drive system, and to allow for unforeseen problems caused by the interaction of ice or other substrate material and the borebots drive system to be resolved with precise zonal heating by mission operation specialists via remote data link or other means, including autonomous use of pre-programmed instructions or onboard decision making which may be enabled by onboard or remote artificial intelligence.