

Self-Propelled Intelligent Robotic Vehicle Based on Octahedral Dodekapod to Move in Active Branched Pipelines with Variable Cross-Sections

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Abstract : Comparative analysis of robotic vehicles for pipe inspection is presented in this paper. The promising concept of self-propelled intelligent robotic vehicle (SPIRV) based on octahedral dodekapod for inspection and operation in active branched pipelines with variable cross-sections is reasoned. SPIRV is able to move in pipeline, regardless of its spatial orientation. SPIRV can also be used to move along the outside of the pipelines as well as in space between surfaces of annular tubes. Every one of faces of the octahedral dodekapod can clamp/unclamp a thing with a closed loop surface of various forms as well as put pressure on environmental surface of contact. These properties open new possibilities for its applications in SPIRV. We examine design principles of octahedral dodekapod as future intelligent building blocks for various robotic vehicles that can self-move and self-reconfigure.

Keywords : Modular robot, octahedral dodekapod, pipe inspection robot, spatial parallel structure

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