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SPACE PROPULSION SYMPOSIUM (C4)  
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FEATURES OF THE PROPELLANT TANKS PRESSURIZATION SYSTEMS DEVELOPMENT OF  
THE LV UPPER STAGES

**Abstract**

Pressurization systems (PS) have substantial influence by the LV energy massive characteristics, that is especially important for the upper stages, because the weight of payload essentially depends from the weight of pneumatic supply system. Features of modern upper stages activity are the repetition of ignition engines which operational mode can extended 400-700s with long pauses between them. Therefore are series problems of functionability of propellant tanks pressurization system, which solution has shown, that the most preferable are cold gas-pressurization systems. Features of design parameters selection and ground experimental development of the gas tank reducing valve pressurization system are shown. The complex method of PS main characteristics selection and calculation including the bottles volume for gas storing and supply with a glance to heat exchange and compressibility of gas which are confirmed by experimental data. The dependence of a oxidizer vapour reduction degree from of some influencing factors is established. The approved methodology of the pressurization systems development of the LV upper stages propellant tanks is easy in engineering practice is presented.