

A FLEXIBLE LONG-RANGE TOWED ANTENNA BASED ON VECTOR-SCALAR RECEIVERS

P.D. Gruzdev, A.I. Mashoshin, T.V. Paderina

The aim of the work is to investigate the characteristics of a flexible long-range towed antenna (TA) based on combined (vector-scalar) receivers (CR). It is shown that the replacement of pressure receivers in the TA with combined receivers allows: to increase the noise immunity (specifically the concentration coefficient) of the TA by 3 times; to ensure an unambiguous determination of the bearing of the detected target; to ensure the operability of the TA when maneuvering the towboat along the course. It is stated that in order to create an effective TA based on the CR, it is necessary to solve a number of technological problems: to develop a small-sized, interference-resistant, and reliable four-channel CR, which includes an inclinometer that allows for the control of the TA's rotation around its own axis; and to ensure the suppression of vibrations and flow noise during towing. The article presents the design of the CR, which was specifically developed for integration into the TA, as well as the technical and algorithmic methods for suppressing vibrations and flow noise during towing. Additionally, an algorithm for restoring the shape of the TA during the tugboat's course maneuvering is proposed.

Keywords: hydroacoustics, flexible long-range towed antenna, vector-scalar receiver, noise immunity, resolution capacity, flow noise.

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Information about the authors

GRUZDEV Pavel Dmitrievich, leading engineer

JSC «Concern «Elektropribor»

Scientific interests in hydroacoustic antenna

Work address: 197046, Saint-Petersburg, Malaya Posadskaya str., 30

E-mail: pdgruzdev@yandex.ru

Phone: +79112860051

ORCID: 0009-0006-2873-9861

MASHOSHIN Andrey Ivanovich, doctor of science, professor,
chief of the research center

JSC «Concern «Elektropribor»

Scientific interests in underwater acoustic, AUV control systems

Work address: 197046, Saint-Petersburg, Malaya Posadskaya str., 30

E-mail: aimashoshin@mail.ru

Phone: +79217632345

ORCID: 0000-0002-4785-966X

PADERINA Tatyana Vladimirovna, senior researcher

JSC «Concern «Elektropribor»

Scientific interests in gyroscopic devices

Work address: 197046, Saint-Petersburg, Malaya Posadskaya str., 30

E-mail: paderinata@gmail.com

Phone: +79112106379

ORCID: 0000-0001-5293-6351



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