











## V. SPECTRAL COMPOSITION OF REGIME PARAMETERS

The analysis of the spectral composition of the regime variables (currents and voltages) shows different total harmonic distortion (THD) of the variables depending on the location of non-linear elements in their working regimes as well as on the disturbing impacts.

Despite the high power of the electrical propulsion power system and the by it drawn non-sinusoidal current the frequency distortion (total harmonic distortion THD) of the net voltage is relatively low.

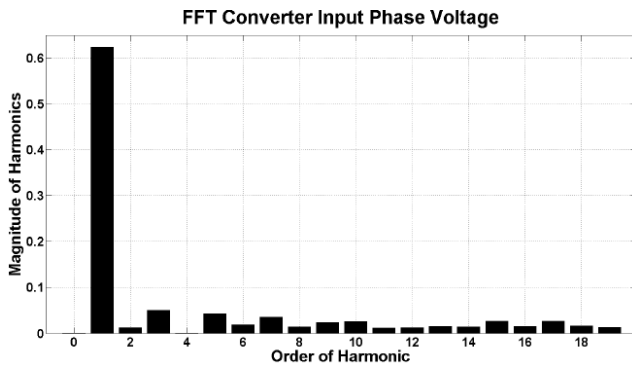


Fig.17. Harmonics of converter input phase voltage

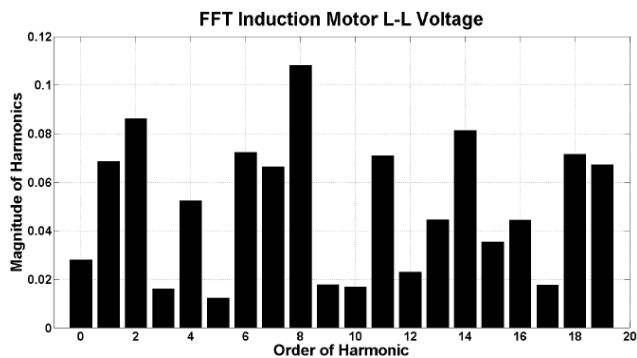


Fig.18. Harmonics of motor line-to-line voltage

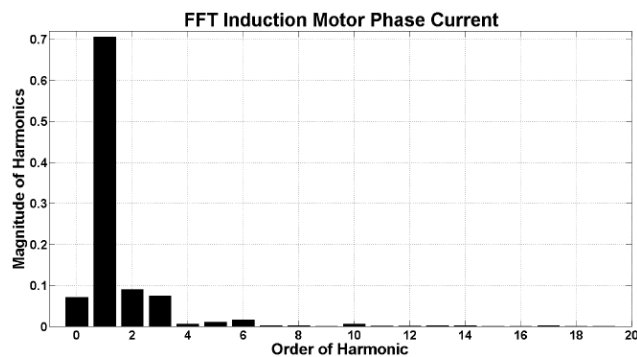


Fig.19. Harmonic of motor phase current

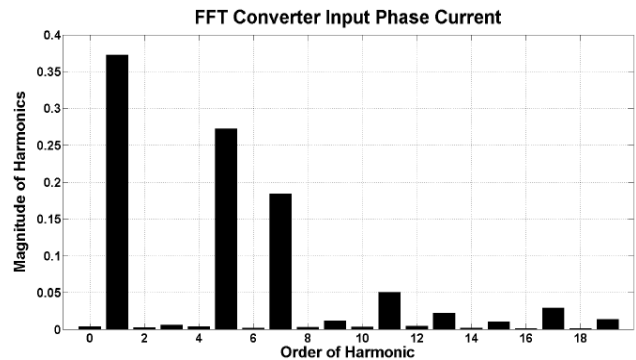


Fig.20. Harmonics of motor phase current

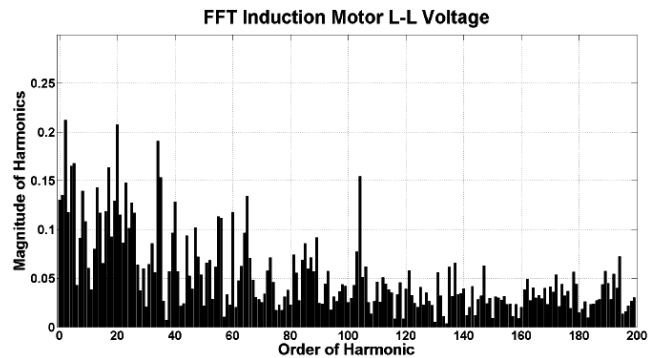


Fig.21. Harmonics of motor line-to-line voltage

## VI. CONCLUSION

It is proposed non-iterative mathematical model of 4-node ship's power system, including 4 generators and electrical propulsion power system, that is used for simulation of different working regimes. The models describe in details (most accurate) the processes in the investigated system, what leads to the opportunity to investigate the processes, to adjust the regulators, to investigate the quality of electricity, to take measures for its quality improvement.

With the use of the quick transformation of Fourier are investigated the frequency spectra of main regime's parameters (currents and voltages) in several working regimes. The received results show that THD is in the admissible limits in the investigated regimes.

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**Nikolay F. Djagarov** was born in Bulgaria. He received the M.Eng, Ph.D and Dr.Sc degrees in electrical engineering from The Saint-Petersburg State Electrical University, Russia, in 1972, 1978 and 1994, respectively. From 1972 to 1975, he worked at Varna Shipyard as ships electrical equipment designer, Associate Professor and Full Professor in the Electrical Faculty of Technical University, Varna, Bulgaria since 1979 to April 2013. He is working in Nikola Vaptsarov Naval Academy Varna since April 2013 as Full Professor. His current research interests include transient process and control of power systems, FACTS - Flexible Altering Current Transmission Systems, Power quality investigation and control, Electrical drive control, Modeling and Control of Renewable Power Sources. Hi is member of IEEE - Institute of Electric and Electronic Engineers

member, Member of Editorial Board of WSEAS Transaction on Power Systems.

**Zhivko G. Grozdev** was born in Varna. He studied at the Technical University of Varna. His employment experience includes the Zodiac Maritime Shipping Agency as Ships Electrical Engineer and Technical University of Varna as assoc. professor. Grozdev received Ph.D degree in Technical University of Varna. His current research interests include transient process and control of Marine Engineering power systems, FACTS - Flexible Altering Current Transmission Systems, Power quality investigation and control, Electrical drive control, Modeling and Control of Renewable Power Sources Now is working in Nikola Vaptsarov Naval Academy Varna.

**Milen. B. Bonev** was born in Bulgaria. He studied at the Technical University of Varna. His employment experience includes the Varna Port as head of Electrical Engineers and Technical University of Varna as assoc. professor. Bonev received Ph.D degree of Technical University of Varna. His current research interests include transient process and control of power systems, FACTS – Flexible Altering Current Transmission Systems, Power quality investigation and control, Electrical drive control, Modeling and Control of Renewable Power Sources. Now is working in Nikola Vaptsarov Naval Academy Varna.

**Dimitar N. Tsvetanov** was born in Bulgaria. He received the M.Eng from Technical University of Varna. Now he worked as Ships Electrical Engineer and he is currently PhD student in Nikola Vaptsarov Naval Academy.

**Georgi I. Enchev** was born in Bulgaria. He received the M.Eng from Technical University of Varna. Now he works as assistant professor in Nikola Vaptsarov Naval Academy where he is PhD student.

**Vencislav J. Varbev** was born in Bulgaria. He received the M.Eng from Technical University of Varna. Now he works as Director of Electricity Distribution in Shumen District and he is PhD student in Nikola Vaptsarov Naval Academy.

**Gabriel Predoi** was born in Romania. He studied and acquired the following qualifications: Master of Business Administration, Le Conservatoire Nationale des Arts et Metiers, Paris, 2009; Master in Enterprise Economic Development, The Academy of Economic Studies, Bucharest, 2009; Management Diploma, The Open University, United Kingdom, 2005; Electro Technical Officer, Unlimited Licensure, The Maritime Academy, Constanta, Romania, 1989. Now he work as Ships Electrical Engineer and he is PhD student in Nikola Vaptsarov Naval Academy.

**Julia V. Djagarova** was born in Russia. She received the M.Eng, degrees in electrical engineering from The Saint-Petersburg State Electrical University, Russia. Now she works as expert informant in the library of Technical University of Varna and she is PhD student in Nikola Vaptsarov Naval Academy.