



**International Science Group**

**ISG-KONF.COM**

**IX**

**INTERNATIONAL SCIENTIFIC AND PRACTICAL  
CONFERENCE "INNOVATIVE TECHNOLOGIES IN SCIENCE  
AND EDUCATION"**

**Jerusalem, Israel**

**March 04 - 06**

**ISBN 978-1-63732-147-8**

**DOI 10.46299/ISG.2021.I.IX**

# **INNOVATIVE TECHNOLOGIES IN SCIENCE AND EDUCATION**

Abstracts of IX International Scientific and Practical Conference

Jerusalem, Israel  
March 04 – 06, 2021

Library of Congress Cataloging-in-Publication Data

UDC 01.1

The IX International Science Conference « Innovative technologies in science and education», March 04 – 06, 2021, Jerusalem, Israel. 332 p.

ISBN - 978-1-63732-147-8

DOI - 10.46299/ISG.2021.I.IX

EDITORIAL BOARD

<u>Pluzhnik Elena</u>	Professor of the Department of Criminal Law and Criminology Odessa State University of Internal Affairs Candidate of Law, Associate Professor
<u>Liubchych Anna</u>	Scientific and Research Institute of Providing Legal Framework for the Innovative Development National Academy of Law Sciences of Ukraine, Kharkiv, Ukraine, Scientific secretary of Institute
<u>Liudmyla Polyvana</u>	Department of Accounting and Auditing Kharkiv National Technical University of Agriculture named after Petr Vasilenko, Ukraine
<u>Mushenyk Iryna</u>	Candidate of Economic Sciences, Associate Professor of Mathematical Disciplines , Informatics and Modeling. Podolsk State Agrarian Technical University
<u>Oleksandra Kovalevska</u>	Dnipropetrovsk State University of Internal Affairs Dnipro, Ukraine
<u>Prudka Liudmyla</u>	Odessa State University of Internal Affairs, Associate Professor of Criminology and Psychology Department
<u>Slabkyi Hennadii</u>	Doctor of Medical Sciences, Head of the Department of Health Sciences, Uzhhorod National University.
<u>Marchenko Dmytro</u>	Ph.D. in Machine Friction and Wear (Tribology), Associate Professor of Department of Tractors and Agricultural Machines, Maintenance and Servicing, Lecturer, Deputy dean on academic affairs of Engineering and Energy Faculty of Mykolayiv National Agrarian University (MNAU), Mykolayiv, Ukraine
<u>Harchenko Roman</u>	Candidate of Technical Sciences, specialty 05.22.20 - operation and repair of vehicles.

74.	Чубіна Т.Д., Коротяєва Л.М. ПРОБЛЕМИ ДЕЗАДАПТИВНОЇ СОЦІАЛІЗАЦІЇ	304
TECHNICAL SCIENCES		
75.	Bushmanov V., Kohut V., Khmelnyuk M. THE FILTER ON THE BASIS OF THE EJECTOR OF THE HEAT EXCHANGER FOR PURIFICATION OF HARMFUL SUBSTANCES FROM FLUE GASES USING HEAT EXCHANGER AS COMBUSTION GAS FILTER	308
76.	Bushmanov V., Kohut V., Zhykhareva N. DEVICE FOR CLEANING FLUE GASES OF SHIP POWER PLANTS	311
77.	Olkhovskiy I., Fursov A. HIGHLY STABLE MICROWAVE GENERATOR FOR TELECOMMUNICATIONS SYSTEMS	313
78.	Pitsenko I., Muradian L. MODEL OF THE RISK OF FAILURE OF AXLE BOXES OF FREIGHT CARS	315
79.	Shchukin O. SELECTION OF OPTIMAL PARAMETERS OF ION-PLASMA COATING ON THE SURFACE OF MOTOR GRADER BLADES	318
80.	Мірзак В.Я., Сіса О.Ф., Пух Є.В. УДОСКОНАЛЕННЯ КОМПЕНСАТОРА ПОХИБОК СИСТЕМИ «ПРЕС-ШТАМП»	321
TOURISM		
81.	Дорожко В., Чуб А., Пшенична Є. СУЧАСНИЙ СТАН ТА ПЕРСПЕКТИВИ РОЗВИТКУ ІНДУСТРІЇ ГОСТИННОСТІ В УКРАЇНІ	327
VETERINARY SCIENCES		
82.	Грищенко В., Білокур Д. ОРГАНОЛЕПТИЧНІ, ФІЗИЧНІ ТА БІОХІМІЧНІ ПОКАЗНИКИ СЕЧІ ЗА БАБЕЗІОЗУ СОБАК	330

# DEVICE FOR CLEANING FLUE GASES OF SHIP POWER PLANTS

**Bushmanov V.**  
graduate student

**Kohut V.**  
Associate Professor

**Zhykhareva N.**  
Associate Professor  
Odessa National Academy of Food Technologies, Odessa

## Introduction

This text is devoted to the problem of discharging emissions of ship propulsion systems into the environment. The MARPOL Convention sets emission levels for ships built at a certain time. In order to reduce the cost of purchasing fuel with a high degree of purification and at the same time not to pollute the environment, it is possible to use a method of gas purification that will be implemented in a compact and reliable device, which can be offered by us.

## Main part

We propose to solve this problem by installing a supercharger connected to a shell-and-tube heat exchanger, which acts as a pre-cooling gas, connected to a mixing chamber connected to the confuser of the first ejector heat exchanger (TOE), and through the exhaust pipe from the power plant on ships. (gases leaving after combustion in the power plant) - with the environment. The first TOE comprises a series-connected confuser, inside which at the outlet is a first nozzle connected to a container for refrigerant, and a diffuser. The output of the diffuser of the first TOE is connected to the confuser of the second TOE. The second TOE contains a series-connected confuser, inside which is the outlet of the second nozzle, combined with a water tank, a mixing chamber and a diffuser. The output of the mixing chamber of the second TOE is connected to a suitable diffuser connected to the liquid separator. Figure 1 shows a diagram of our device

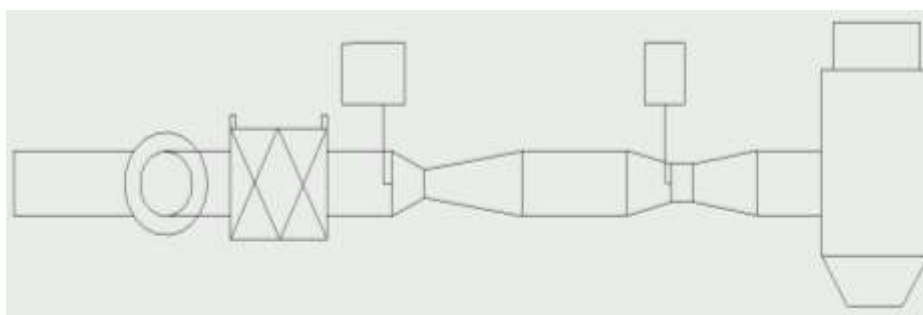


Fig.1 Scheme of the flue gas purifier

The flow of flue gases, after passing the standard filters, enters the shell-and-tube heat exchanger through which the fuel of the power plant passes. What is needed to reduce the density of the fuel before injecting it into the installation where it is mixed with air is blown by a fan from the environment and sent to the first ejector heat exchanger, in which water is injected for further cooling in the form of fine droplets. The stream is cooled and saturated with water vapor, in some cases the chemical compounds of sulfur react with water. Then the flow enters the second ejector heat exchanger, which is injected with refrigerant (liquid nitrogen or carbon dioxide). The stream cools instantly. Water vapor first condenses and then freezes, turning into fine ice crystals, which are the centers of crystallization for sulfur chemicals.

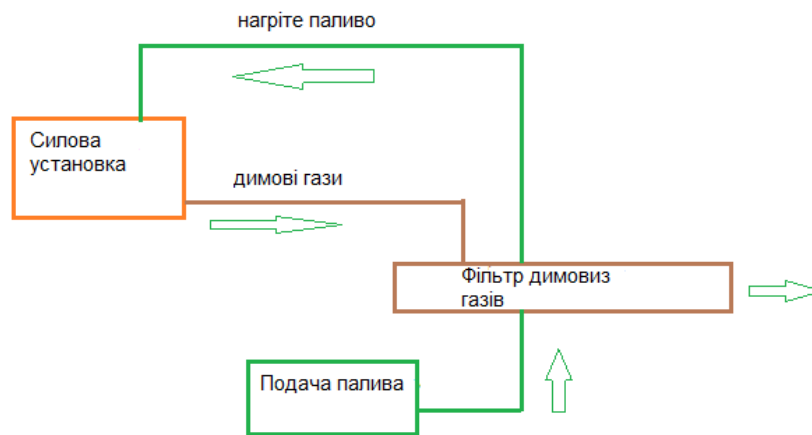


Fig. 2 Scheme of flue gas heat use for fuel heating

The shell-and-tube heat exchanger which pre-cools the flue gases has the fuel of the power plant as a heat carrier. Since the fuel has a number of properties that change with temperature, the fuel undergoes special training before submission to the installation. By removing heat from the flue gas, the utilization of secondary heat sources is realized. The scheme of this process is shown in Fig. 2.

### Conclusions

The maritime transport sector is very relevant today, and work on emission treatment is an important area. Our proposed device has the ability to provide a high degree of purification, some utilization of secondary energy sources, and reliable operation. Patent applications are being prepared for this device.

# INNOVATIVE TECHNOLOGIES IN SCIENCE AND EDUCATION

Scientific publications

Materials of the IX – the International Science Conference «Innovative technologies in science and education», Jerusalem, Israel. 332 p. (March 04 – 06, 2021)

UDC 01.1

ISBN – 978-1-63732-147-8

DOI - 10.46299/ISG.2021.I. IX

Text Copyright © 2021 by the International Science Group(isg-konf.com).

Illustrations © 2021 by the International Science Group.

Cover design: International Science Group(isg-konf.com)©

Cover art: International Science Group(isg-konf.com)©

All rights reserved. Printed in the United States of America.

No part of this publication may be reproduced, distributed, or transmitted, in any form or by any means, or stored in a data base or retrieval system, without the prior written permission of the publisher.

The content and reliability of the articles are the responsibility of the authors. When using and borrowing materials reference to the publication is required. Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighboring countries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

The recommended citation for this publication is: Liubych V.,

Baking properties of spelt wheat // Innovative technologies in science and education.

Abstracts of IX International Scientific and Practical Conference. Jerusalem, Israel 2021. Pp. 12-14.

URL: <https://isg-konf.com>.