STRESZCZENIA

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ГІДРОТЕРМІЧНІ ПАРАМЕТРИ КІНЦЕВОЇ АКВАТОРІЇ ВОДОЙМИЩ-ОХОЛОДНИКІВ ЦИРКУЛЯЦІЙНОЇ ВОДИ ЕЛЕКТРОСТАНЦІЙ

В статті на основі натурних досліджень проведено аналіз температурного режиму кінцевої акваторії водоймищ-охолодників систем технічного водопостачання електростанцій. Отримані відповідні методики розрахунків температури води для даної акваторії.

HYDROTHERMAL PARAMETERS OF EVENTUAL AQUATORIUM OF RESERVOIRS-COOLERS OF CIRCULATION WATER OF POWER-STATIONS

Summary: In this article use investigation temperature processing ending area of water receiver system technical water supply power station. To get according methods calculation temperature of water for this water receiver. Analytical research of temperature condition of eventual aquatorium of reservoirs-coolers of the technical water of power-stations systems is presented in the article. In scientific labours, and also in normatively technical literature the purpose of calculation of reservoirs-coolers (WCR) of the technical water systems TPS and NPS is determination of middle temperature of cooling water and necessary area of WCR. However much requirements absent in relation to determination of optimum sizes of such WCR. In the aspect of optimum of WCR expediently to determine: sizes of eventual area of WCR, where on its considerable aquatorium of decline of temperature is unimportant.

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BADANIA DOTYCZĄCE UZDATNIANIA WODY PODZIEMNEJ ZAWIERAJĄCEJ NATURALNĄ MATERIĘ ORGANICZNĄ

STUDY ON TREATMENT OF UNDERGROUND WATER CONTAINING NATURAL ORGANIC MATTER

Summary: The paper presents a study related to modernization of water treatment station for the Tarnobrzeg town. The underground water used by the water intake there contains some organic matter, mainly humus compounds in complex combinations with compounds of iron and manganese. Potassium permanganate, lime, aluminum sulfate, iron sulfate and poly-electrolytes in various options were used as reagents in coagulation process tests conducted under the study. They served as the basis for proposing an optimum water treatment process setup: aeration + oxidation with potassium permanganate + coagulation with the use of aluminum sulfate and poly-electrolyte added as supporting agent + alkalization + sedimentation + filtration.

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ЕНЕРГООЩАДНІ СПІВВІДНОШЕННЯ МІЖ ВИТРАТАМИ ПОВІТРЯ НА ВИПАРНИКУ І КОНДЕНСАТОРІ SPLIT-КОНДИЦІОНЕРІВ

ENERGY SAVING CORRELATIONS FOR EXPENSES OF AIR FLOWS ON EVAPORATOR AND CONDENSER OF AIR SPLIT-CONDITIONERS

Summary: In this paper it was used the method of the exergetic analysis of one-step freon cooling engines of the local autonomous air conditioners. It was defined the correlation between air flows on the evaporator and the condenser for air split-conditioners. Author has developed an exergetic method of analysis of work one-step freonic refrigeration machines (without effective cooling of compressor) of local autonomous conditioners. The chart of the indicated refrigeration machine and proper construction of processes of its work on p,i-diagram and refrigeration agent R22 is used in this method. Calculations were performed with the computer program Excell developed the author.

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КОНСТРУЮВАННЯ І ДОСЛІДЖЕННЯ МОНОЛІТНИХ ПЛОСКИХ ЗАЛІЗОБЕТОННИХ ПЕРЕКРИТТІВ З ЕФЕКТИВНИМИ ВСТАВКАМИ

Ключові слова: монолітні перекриття, ефективні вставки, зменшення власної ваги

SHAPE AND RESEARCH OF MONOLITHIC FLAT REINFORCED-CONCRETE SLABS WITH EFFECTIVE HOLLOW BLOCKS

Summary: In last years all wider monolithic flat reinforced-concrete slabs, especially in building engineering (habitation, offices and others) are used. There is also a tendency to the increase of such slabs and use them in commercial and exhibition complexes.

The flights of the monolithic slabs are 6 to 9m, and limited by thickness 20 to 30cm. Checking the static calculations show the limit, by the general conditions of deformation and crack resistance. Own weight of such slabs is considerable and 2 to 3 times exceeds an actual useful load.

With the purpose of diminishing own weight of flat monolithic reinforced-concrete slabs it is expedient to put in them effective insertions from relation to easy and cheap materials, dispose in middle part a cut and abandon in slab after his concreting.

In the search of materials for such insertions were performed tests on the fragments of slabs from pipes by hollow and continuous expanded polystyrene insertions. Results of which are given in previous publications.

The results of these researches were taken into account at design and making of a few flat monolithic slabs with the effective insertions of different sizes, forms and charts:

- rectangular sizes in the plan of 7,6×12,1m in the Lviv area, Ukraine (diminishing of own weight of slab 32%);
- round the radius of 9,1м with intermediate radial metallic beams in м. Lviv (diminishing of own weight of slab 47%);
- rectangular uncut sizes in the plan of 12×24m with intermediate metallic beams with the step of 6м in the Zakarpatskiy area, Ukraine (diminishing of own weight of slab 49%);
- collapsible-monolithic sizes in the plan of 12×24m in the Zakarpatskiy area, Ukraine (diminishing of own weight of slab 52%).

Test of fragments of the flat monolithic slabs and model slab sizes to 7,6×12,1 static the features of the tensely deformed state of different type found out loading in cuts with insertions, that it is necessary to take into account at checking calculations and constructing of such ceilings.

General static chart of work of slab, form and sizes of insertions it can be simple and difficult uni- and the biaxial tensely deformed state, entailed to combination of general and local (in cuts with insertions) power factors.

Monolithic reinforced-concrete slabs with effective insertions are very useful in buildings on seismically active territories. They have substantially (to 35…50%) diminished dead weight and at the same time keep the continuous disk of slab as whole.

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FALE SPRĘŻYSTE W BADANIACH KONSTRUKCJI: I. PRZETWARZANIE SYGNAŁÓW

ELASTIC WAVES IN STRUCTURE TESTS: I. SIGNAL PROCESSING

Summary: The paper presents an idea of elastic waves application in the field of structure test and health monitoring. Smart technology used for this purpose can lead further to autonomous systems that may operate in real time providing information about the structure state or even remaining operational life. However, the analysis of the elastic waves signals, assuming reflections from structure boundaries, connections, cracks, delaminations, etc., may be rather clear or pretty complex. Due to this fact advance signal processing techniques were used here for a purpose of signal de-noising and features extraction. The proposed system performs two levels of structure diagnosis: novelty detection and damage prediction. The developed procedure of signal processing has been studied for the elastic waves signals measured in various laboratory specimens. It has been proved that the application of those techniques improves the accuracy of the designed diagnosis system. Trained neural networks were able to detect damage and predict its size with reasonably well accuracy.

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FALE SPRĘŻYSTE W BADANIACH KONSTRUKCJI: II. DOŚWIADCZENIA LABORATORYJNE

ELASTIC WAVES IN STRUCTURE TESTS: II. LABORATORY EXPERIMENTS

Summary: The paper presents an idea of elastic waves application in the field of structure test and health monitoring. Laboratory experiments were performed for several laboratory specimens made of various materials. In this paper strips elements and plates were analyzed. The main components of the used equipment and the laboratory setup were discussed. The obtained results of preliminary tests have shown that such the approach can be successfully used for the purpose of diagnosis systems since it provides good indication about damage appearance and predicts its size with reasonably well accuracy.

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KSZTAŁTOWANIE DOMÓW WIELORODZINNYCH O KONSTRUKCJI STALOWEJ

THE SHAPING OF MULTIFAMILY BUILDINGS WITH THE STEEL STRUCTURE

Summary: The shaping of multifamily buildings with the steel construction. Multifamily buildings spread in XIX century. Nowadays habitable buildings have very folded arrangements. The arrangement of flats in such buildings influences on constructional solutions. The steel skeleton construction gives the large possibilities of formation of the planning out internal of habitable buildings. Such buildings are durable, elastic, susceptible on later changes during its exploitation.

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ОЦІНЮВАННЯ ЕФЕКТИВНОСТІ ВИКОРИСТАННЯ ПРИРОДНОГО ГАЗУ В ПРОМИСЛОВИХ ПЕЧАХ

INCREASING OF NATURAL GAS USING EFFICIENCY IN HEATING ENGINEERING AGGREGATES

Summary: In connection with considerable losses due to the warmth of products of incineration the temperature in many cases arrives at to 1000 OC|. A thermal output-input of thermal technological aggregates ratio does not exceed 30 %. Therefore in the conditions of power crisis there is an urgent problem of incineration products warmth using with the purpose of increasing of efficiency of natural gas.

In this paper an analysis of burning products for air heating heat utilization devices constructions and parameters is carried out. Technical and economical advantage of burning products heat recuperation is confirmed.

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АКУСТИЧНІ ХАРАКТЕРИСТИКИ ПРИПЛИВНОГО ПОВІТРЯНОГО ПОТОКУ ПРИ ВЗАЄМОДІЇ СТРУМИН

AIR DISTRIBUTION AND AIR JET’S ACOUSTIC PROPERTIES

Summary: In this article relation between such factors as a noise level, air flow rate and incoming hole size were considered. The aim of investigations is to obtain the chart and analytic equations for determination of the necessary incoming hole size (diameter or width and height) under condition of the necessary amount of air satisfaction at the rated noise level. In this paper there are presented results of investigations with interaction of opposite non-coaxial of air jet’s acoustic characteristics, which give possibility to make a control of air supply devise choice at air distribution calculation. Dependence of noise level from jet’s leakage velocity and size of air supply devise has been investigated.

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РОЗПОДІЛ ТИСКІВ НА ВХОДІ ЛОКАЛЬНОГО ВІДСМОКТУВАЧА З КІЛЬЦЕВИМ ПОВІТРООБМЕЖНИКОМ

КЛЮЧОВІ СЛОВА: місцева витікальна вентиляція, локальний відсмоктувач, повітрообмежник.

PRESSURE DISTRIBUTION ON INPUT OF LOCAL HOOD WITH CIRCULAR AIR DISTINCTOR

Summary: The systems of local exhaust ventilation of existing industrial enterprises, as a result of their construction elements imperfection, work with large air flow rate that causes considerable power and financial expenses.

It is possible to increase efficiency of pollutants output hood, e.g. by set of its construction by circular air distinctor.

A purpose of work is determination of distributing of the field of surplus pressure in the suction zone of cylinder hood with circular air distinctor and also optimization of its diameter.

Investigations of hood with circular air distinctor has been carried out on an experimental installation at isothermal conditions. The diameter of air distinctor **a** was varied within the limits of (0 ÷ 2,0) diameter **D** of hood inlet chink.

The analysis of the obtained epures of surplus pressure certifies:

- due to application circular air distinctor, which is located in plane of output apperture in the hood construction area of hood sucktion increases;
- zone of sucktion and vacuum value are maximum at attitude of diameter of air distinctor toward the diameter of hood inlet chink a/D = 1,75.