1. Introduction Refractory materials are the pottery work, capable to stand temperature from above 1500 °C. Refractory products of a various size and the form apply in many industries at exhaustion of a steel, pig-iron, cement, to exhaust, glasses, ceramics, aluminium, copper, on petrochemical manufactures, in furnaces for incineration of rubbish, on power stations, in systems of household heating, including boiler-houses. These products are necessary at high-temperature processes and are capable to resist to any kinds of voltage (mechanical, thermal, chemical), for example, to erosive deterioration, a creep strain. The basic source of air pollution by manufacture ceramic and refractories are emissions of a smoke from furnaces in the course of roasting. Contaminants are formed because of the maintenance of impurity in raw materials. Their composition can vary depending on raw materials source, and also depend on type of used fuel. The problem is created by emissions of fluorides (containing in mineral ore), and also sulphur oxides (containing in minerals and sulphates). If glaze it is put in the course of roasting is used. Glaze is possible to a vaporous state and is put on a surface of a finished product for formation of a glossy surface. The bulk of steams of glaze is taken out in an aerosphere. If in the capacity of fuel for furnaces fuel oil or coal level of emissions of a dust and sulphur oxides raises is used. 2. The general description of a flow process Ceramics make of various raw materials, burn in furnaces of different types, finished articles have the various form, sizes and colour. The general process of manufacturing of ceramics is equal to all its aspects though by manufacture of a facing and low-ground tile, ware and ornamental products (economic-household ceramics), engeneering ceramics roasting often spend to some stages. Roasting of refractory materials conduct at temperatures 1250 - 1850 °C. The stand-up temperature depends on composition of a product and can attain the beginning of a temperature interval of deformation. At factory the gas-cleaning installation the cyclone separator is installed. Separation efficiency of a waste-heat under the theoretical data should make 94 %. However under the fact sheet of check separation efficiency does not exceed 70 %. The smoke fumes which are selected from the furnace at a high temperature, contain a lot of dust, resinous substances, chloride of metals and are unsuitable for swapping by gas compressors as presence of impurity in it and an at a high temperature lead rapid corrosion and to an abrasive wear of the expensive equipment - gas compressors and to formation of the adjournment consisting of resinous and other substances [1]. For raise of efficiency of clearing of gas refire kiln redesign has been made. It has allowed to increase efficiency of process of clearing of gas emissions by 15-20 %. 3. Laboratory Facility And Technique Of Conducting Of Experiment Dynamic gas washer, according to fig. 1, contains the vertical cylindrical case with the bunker gathering slime, branch pipes of input and an output gas streams. Inside of the case it is installed conic vortex generator , containing [9]. Fig. 1- The laboratory facility Dynamic gas washer works as follows. The Gas stream containing mechanical or gaseous impurity, acts on a tangential branch pipe in the ring space formed by the case and rotor. The liquid acts in the device by means of

an axial branch pipe. at dispersion liquids the zone of contact of phases increases and, hence, the effective utilization of working volume of the device takes place more. The Invention is directed on increase of efficiency of clearing of gas from mechanical and gaseous impurity due to more effective utilization of action of centrifugal forces and increase in a surface of contact of phases. The Centrifugal forces arising at rotation of a rotor provide crushing a liquid on fine drops that causes intensive contact of gases and caught particles to a liquid. Owing to action of centrifugal forces, intensive hashing of gas and a liquid and presence of the big interphase surface of contact, there is an effective clearing of gas in a foamy layer. The water resistance of the irrigated apparatus at change of loadings on phases has been designed. Considered angular speed of twirl of a rotor and veering of twirl of guide vanes of an air swirler. The stream dustiness z was defined by a method of an external filtering. Tests of a dusty stream were selected with observance of a principle of the isolated kinetics. Efficiency of a dust separation h was defined in the mass way. For definition of dispersion composition of a dust mesh analysis was used. Experimental efficiency of a dust separation ε has made 89,3 … 93,6 %. Fig. 2 - Relation of efficiency of clearing of gas to criterion StK In a fig. 2 results of an experimental research of efficiency of of clearing of a dust are shown. For a various size of a dust the increase in general efficiency of a dust separation with increase in number of Stokes is observed. 4. Numerical Simulation And Calculation Of Clearing Of A Dust In The Apparatus The algorithm of modelling of process of separation of a dispersoid in a gas stream with irrigation by a liquid has been developed. The carried out calculations allow to define potential possibilities of a dynamic scrubber at its use in the capacity of the apparatus for clearing of gas emissions. Verification of the data gained by calculation, and also an estimation of the parametres defining possibility of separation of a dispersoid on drips of an irrigating liquid, is modelled as process of a current of a water gas stream in a packet of computing hydrodynamics Ansys CFX (fig. 3). Numerical research of work of a scrubber will allow to analyse its work for the purpose of decrease of power inputs at conservation of quality of gas cleaning [6]. The developed model helps to simulate traffic of a dusty gas stream sweepingly and visually. The model can consider modification of geometry of the apparatus. Thus, the model can be applied to optimisation of a design of a dynamic scrubber. Fig. 3 - Geometrical model of a scrubber Quality gained on the basis of conducting of computing experiment of results directly depends on quality of the builted desing grid. Preprocessor GAMBIT allows to create and process sweepingly geometry of investigated processes. Ansys Mesh possesses the powerful oscillator of the grids, allowing to create various types of grids: the structured hexahedral grid, automatic (not structured) hexahedral and a grid tetrahedron (fig. 4) . Besides, in it there is a possibility of creation of boundary layers with the combined grids [7]. After construction of a grid the user has possibility to muster its quality on various parametres (displacement of elements, a relationship of sides). Fig. 4 - Typical desing area, a desing grid and a surface of the interface of a twirled vortex generator In Ansys CFX possibility of reception of integrated parametres of calculation, including typical for dedusters is realised also: the hydraulic resistance, a pressure, an input, efficiency of clearing, swirling flow, and is possibility to edit the formula on which these parametres are computed. 5. Clearing of gases of a dust in the industry The had results have been almost implemented in manufacture of roasting of refractory materials at conducting of redesign of system of an aspiration of smoke fumes of refire kilns. The devised scrubber is applied to clearing of smoke fumes of refire kilns of limestone in the capacity of the another echelon of clearing. Temperature of gases of baking ovens in main flue gas breeching before a the exhaust-heat boiler 500-600 °C, after exhaust-heat boiler 250 °C. An average chemical compound of smoke gases (by volume): 17%C02; 16%N2; 67 % CO. Besides, in gas contains to 70 mg/m3 S02; 30 mg/m3 H2S; 200 mg/m3 F and 20 mg/m3 CI. The gas dustiness on an exit from the converter reaches to 200/m3 the Dust, as well as at a fume extraction with carbonic oxide after-burning, consists of the same components, but has the different maintenance of oxides of iron. In it than 1 micron, than in the dusty gas formed at after-burning of carbonic oxide contains less corpuscles a size less. It is possible to explain it to that at after-burning CO raises temperatures of gas and there is an additional excess in steam of oxides. Carbonic oxide before a gas heading on clearing burn in the special chamber. The dustiness of the cleared blast-furnace gas should be no more than 4 mg/m3. The following circuit design (fig.5) is applied to clearing of the blast-furnace gas of a dust. Gas from a furnace mouth of a baking oven 1 on gas pipes 3 and 4 is taken away in the gas-cleaning plant. In raiser and downtaking duct gas is chilled, and the largest corpuscles of a dust which in the form of sludge are trapped in the inertia sludge remover are inferred from it. In a centrifugal scrubber 5 blast-furnace gas is cleared of a coarse dust to final dust content 5-10/m3 the Dust drained from the deduster loading pocket periodically from a feeding system of water or steam for dust moistening. The final cleaning of the blast-furnace gas is carried out in a dynamic spray scrubber where there is an integration of a finely divided dust. Most the coarse dust and drops of liquid are inferred from gas in the inertia mist eliminator. The cleared gas is taken away in a collecting channel of pure gas 9, whence is fed in an aerosphere. The clarified sludge from a gravitation filter is fed again on irrigation of apparatuses. The closed cycle of supply of an irrigation water to what in the capacity of irrigations the lime milk close on the physical and chemical properties to composition of dusty gas is applied is implemented. As a result of implementation of trial installation clearings of gas emissions the maximum dustiness of the gases which are thrown out in an aerosphere, has decreased with 3950mg/m3 to 840 mg/m3, and total emissions of a dust from sources of limy manufacture were scaled down about 4800 to/a to 1300 to/a. Such method gives the chance to make gas clearing in much smaller quantity, demands smaller capital and operational expenses, reduces an atmospheric pollution and allows to use water recycling system. Fig. 5- Process flowsheet of clearing of gas emissions: 1 - bake roasting; a 2 - water block; a 3 - raiser; 4 - downtaking duct, a 5 - centrifugal scrubber; a 6 - scrubber dynamic; a 7 - forecastle of gathering of sludge, a 8 - hydraulic hitch, a 9 - chimney 6. Conclusion 1. The basic source of air pollution by manufacture ceramic and refractories are emissions of a smoke from furnaces in the course of roasting. Contaminants are formed because of the maintenance of impurity in raw materials. Their composition can vary depending on raw materials source. The special problem is called by emissions of fluorides. 2. For the first time research of hydrodynamics and dynamic spray scrubber separation in bundled software ANSYS, on the laboratory and trial installation, allowed to study character of interconnection of the basic aerohydrodynamic parametres from design features of the apparatus is conducted. 3. On the devised trial installations the results which have been had during mathematical modelling of process of motion and separation of dispersion particles from a gas stream are experimentally confirmed. 4. The ecological result of implementation of systems and recommendations consists highly clearings of a waste-heat and betterment of ecological circumstances in a zone of the factories.