



COURSE DATASHEET

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| Semester: | 2012/13/2 |
| Course: | Industrial Furnaces and Driers I. (Unit Operation in Silicat Industry I.) |
| Code: | VEMKMU4144G |
| Responsible department: | Department of Chemical Engineering Science |
| Department code: | MKMU |
| Responsible instructor: | dr. László Szokonya |

Course objectives:

Widening and deepening the knowledge of silicate engineers about unit operation.

Course content:

1. Operational units. Continuity line 2. Convection, management, resource. Transfer, transfer theories. Scales of Unit operations 3. Characterization of operational units in the residence time on the basis of density. Problem solving "current" topics 4. Heat transfer theory. Drying. The basic parameters of moist air 5. The humid air entalpiadiagramja. The dry mass and heat balance. The drying air and heat needs 6. Drying rate. Task performance 'dry' topic 7. Driers. Characterization of energy. Properties of gaseous fuels 8. Fuel combustion reactions, a perfect burn. Incomplete combustion 9. Combustion temperature. Combustion simulation 10. Combustion simulation. Special features of combustion processes of fuels (solid, liquid) 11. Special features of combustion processes of fuels (gas) 12. Mid-term paper 13. Ovens 14. End-term paper

Requirements, evaluation and grading:

1st Concept of Operations Unit, intermittent, continuous operational units 2nd Currents of the operational units: components, temperature, pulse currents 3rd Scales of operation units 4th Steady-state units, transmission units 5th The characterization of the operational units of the density based on length of stay 6th The state diagram for moist air 7th The transport of moisture in the drying body: external diffusion, pore diffusion 8th The kinetics of drying, drying rate 9th The drying process material and heat balance 10th Multi-stage dryer, recirculating dryers 11th Description driers 12th Fuel combustion reactions. Air volume, gas composition 13th Combustion of theoretical calculations, the combustion temperature is determined 14th Pirometrikus efficiency, combustion efficiency 15th The combustion process is characterized in the excess air factor, flue gas carbon dioxide content, based on experience chart 16th Fuel combustion characteristics 17th Solid, liquid or gaseous fuel burners 18th Cement kilns 19th Glass, tile kilns 20th Heat recovery procedures: recuperative, regenerative, solid-phase

Required and recommended readings:

Benedek László: A vegyészmérnöki tudomány alapjai, Kaszatkin: Alapműveletek, gépek és készülékek a vegyiparban, Imre László: Szárítási kézikönyv