The Present Forms of Mining Education at VŠ B - Technical University of Ostrava and Their Expected Development

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Abstract: A brief view over the history of mining education that began in Jáchymov in 1716, continued as university education in Pøíbram and then was transferred to Ostrava in 1945. The present forms of education of mining engineers at the Faculty of Mining and Geology of VŠB-Technical University of Ostrava. It is especially the five years' full-time study (Ing.), six years' part-time study (Ing.), retraining study intended for engineers of other technical fields of study and post-graduate doctoral study in the field of Mining (PhD) that can be ranked among them. Possibilities of graduates of mining under the conditions of the Czech Republic.
Considerations on the suitability of a transition to the two-stage form of education of mining engineers, when successful students of the first stage are awarded a degree of Bachelor (Bc) and even after completing the second stage a degree of Engineer (Ing.), or Mgr.
The author is the guarantee for the field of study Mining Engineering at the above mentioned University.

Keywords: mining, history, forms of education, development in education

1. A short history overview of former educational system in connection with mining.

Czech educational system which deal with mining has a long year tradition. It was in 1716 when a mining school (in German Bergschule) was founded. It had to educate professionals for up-and-coming mining and metalurgy manufacture.

In 1849 originates famous Mining Academy in Pøíbram, within its vicinity were exploited mainly lead-zinciferous ores, argent ores included. Above mentioned academy acquired in 1894 high school statute with adjective law for promotion. In 1904 it was renamed to Mining University (VSB). With this title it was transfered in 1945 to Ostrava town. Ostrava of those days was center of our mining and metalurgy industry [1].

In a school year 1949/50 arised within this school first two faculties. Those were Faculty of Mining and Faculty of Metalurgy. Faculty of Mining was renamed in 1959/60 to Faculty of Mining and Geology (HGF). No sooner then in 1952 arised Faculty of Mechanical Engineering and much later on other faculties. Those previously mentioned had no relationship nor to mining nor to metalurgy.

At present days VSB-Technical University consists of 6 faculties.

2. Development of mining branches between 1950 and 1989 years.

Abrupt development of mining professions within this period was fun with reality, that in former Czechoslovakia existed effort in maximal economizing of domestic raw materials. Mining was donated by state. Up to 25 milions tons yearly was mined of bituminous coal and 100 milions bower coal and lignite. Ores were mined in former classic fontal fields (shoots) and evenly in those new fields submitted to previous successfull geological prospect and paralelly investment development was finished (for instance mining plant Horní Benešov for Pb-Zn-Ag ore type). Crop of non-metalic-ores and uranus was evenly high.

To this situation was adjusted education of mining engineers, which were specialized at deep-mining extraction of deposits, open pit mining, building up of mines and later on evenly prospecting and extracting uranous deposits. Student's interest was considerable. Situation, when after 5-years study finished their studies 60 and more graduates, was not exception.

An important fact was the reality that all those students found within mining industry versatility and soon they were charged with commissionary functions in practise, research and design of projects.

3. Changes in education of mining engineers after 1989 year.

In october 1989 came in former Czechoslovakia to changes related to former regime. After this year the state stopped donation of mineral ores mining. It came to abrubt mining deppresion.

Gradually many of mining fields lapsed. With stopping of Zn-Pb-Cu-Ag-Au ores mining on deposit Zlaté Hory-west in 1993 it came to situation of stopping crop of all sorts of ores within Czech Republic.

In accordance with breaking of mining mineral ores gradually lowered interest of secondary school graduates in mining engineering studies on HGF (Mining and Geological Faculty) VSB.

It was necessary to reduce the branch Mining Engineering, formerly divided into 4 study profiles Deep Ground Mining, Open pit mining Engineering, Ventilation, Air Conditioning and Mining Security and Mining Surveying. From the very beginning 1993/94 school-year is branch divided to two only study-profiles. Those are Ground Mining and Mining Surveying. After common base education attendants are profiled into Deep Ground Mining or Open Pit Engineering with help of compulsory selected topic and diploma-work theme. According to a such plans a teaching was realized in daily and distant regime of studies. It was realized in state of much lowered level member of attendants in comparing with 1996 year when a credit system was established and fully adopted.

4. Present forms of mining education.

Present forms of mining education within Mining and Geological Faculty VSB-TU, which is the only in Czech republic to assure it, can be characterized in brief as follows :

4.1. Daily and distant study within the branch of Mining Engineering

Both 5-year daily and 6-year distant is study of Mining Engineering realized in the form of credit system. As a rule is taken into account that a one credit equals 1 week's hour education. Within all-study period a student has to acquire 300 credits. At closure, after having finished studies, students cover and sustain diploma-work in a theme are put to them to elaborate and pass oral state examination. After successfull finishing of studies they acquire title Ing.

It is in student's possibilities, to seemingly adjust schedule of studiing programs from compulsory topics (P), compulsory selectable topics (VA) and not compulsory selectable topics (VB). Those topics are related to, within curriculum for any individual year in the such a way, so as to acquire a number of credits required. Further on a student has oportunity in specializing to branch it suits to him. Practise, excursions and field training are compulsory, but no credits are given. A system here is documented within curriculum plan for 4-th year of daily studies regime (see table no #1). Branch of Mining Engineering at present amendments fully respects requirements as for universality and versatility at utilization of mining engineering, which is at actual state of Czech mining industry necessary.

Alumni can find scope at :

- top and technical functions within coal, mineral both metalic and non metalic ore and uranous mine and open pit mines of all types
- as geomechanic service workers at deep ground mines and open pits mines
- as specialists in area of ventilation, air conditioning and work's security
- as specialists for ground works of wide range
- as professional designers in designing units and organisations
- as research workers in mining branches

In July this year will finish at HGF VSB-TU branch Mining Engineering 10 students of daily and distant studies.

4.2. Doctorand studies within Mining branch.

Doctorand studies within Mining branch is assigned for those graduates of high schools of university type, which successfuly finished Engineer's form of study and covered the rest of criteria required. It is possible to study in internal form with eventual use of scholarship. Maximum duration of study is 3 years, or in case of external form

of study, 7 years. In the period of studies a student passes through rated number of specialistic examinations and foreigner language examination (english, french, german or spanish), further on so called state doctorand's examination at presence of commision, and at presence of commission-board vindicates high-wrought doctorand's thesis. Graduates are given title Ph.D. awarded by VSB-TU Ostrava.

At present time a branch Mining has 23 students in external or internal form.

4.3. Requalification study.

Institute of Mining Engineering (HGF) assures requalification studies within branches Mining Geomechanics and Geophysics, Underground Mining and Open Pit Mining of Deposits. Its graduates, as a rule of Faculty of Mechanical Engineering and Faculty of Electrical Engineering and Informatics VSB-TU, are able to administer and execute within mining plants operational functions. Study is external, in duration of 4 terms. Study is finished with sustaining of final (conclusive) wo rk. Alumni are given certificate of requalification studies.

4.4. Other forms of Mining education.

Other forms of Mining education are assured in accordance with requirements of mining or central aparatus practise. At present it is for instance double-terms covering innovative postgradual study given evenly for chairman or headman of our coal mines.

5. Expected educational development in education of mining engineers.

Present Czech mining pass through complicated development, which not at all signalize its lapse. Further on in future it will output in amount needed bituminous and brown coal, namely also non-metalic ores. For instance gravels-mining, at average crop at 14.6 mil. tons in 1998, are mined at present within 114 plants. Also limestone at 12.2 mil. tons per 1 year is a crop of approximately 20 plants. Also in next year a mining within cathegory underground-mining level of uranous ores will be continued. At much greater scale than up-todays it will be necessary to eliminate consequences of mining activities.

From this experiences downwrited evolves horizon of Mining Engineering within HGF. Nevertheless faculty, and simultaneously also guarantee of Mining Engineering, consider, at present time, with inventing of two-level system of study, which will be comparable with actual-present state in other world .So that this state in a matter of a fact shifts to world' s s mining practise.

Successfull graduates of first degree ought to acquire title bachelor (BC) and later on, after acquiring second degree, title engineer (Ing) eventually Mgr. In relation to mining branch this system means cardinal rebuilding of study system, so as the first-degree graduates will be able to work at mining plants as middle and lower technical workers. In addition they will be fully responsible for their function reliability a function highest performance.

Publications

[1] „VSB-Technical University Ostrava 1849-1999“, En Face Ostrava, 1999
[2] Curiculli (timetables) of Mining Engineering Faculty of Mining and Geology VŠB-TU Ostrava

Tab.1 Actual 4-th year curriculum on Mining and Geological Faculty , branch Mining Engineering. VSB-TU Ostrava within credit system conditions. [2]

Year of Study:4 Type of Study: engineering Form of Study: Internal						
Field of Study: Mining engineering						
Obligatory Subject (P)	**EX**	**CAC**	**AC**	**L-P**	**L-P**	**NCR**
Ventilation of underground and open-pit mining	7			4-3		7
Mining building	7			3-2		5
Mining risks and rescue work	8				4-3	7
Commercial and civil law			8		0-2	2
Mining and environment	8				2-2	4
Practical Training,Excursion,Field Training						
Mining and environment			8	two days		
Field practice at underground and open-pit mines			8	one week		
Field practice at rescue center			8	one week		
Field practice at preparation of comercial minerals (VA)			8	two days		
Subject practice			8	three weeks		
Optional Subject (VA)						
Technology of underground exploitation of dep.	7			4-3		7
Technology of open-pit exploit.of deposits	7			4-3		7
Mining machinery and transportation	7			3-2		5
Surface machinery and plants	7			3-2		5
Mining and raw materials processing tailings	7			2-2		4
Solut.of ventil networks and anal.of emerg. situat.	7			2-2		4
Hydrogeology and drainage	8				3-2	5
Preparation of commercial menerals	8				3-3	6
Automated systems of mining production	8				3-2	5
Automation of open-pit mines	8				3-2	5
Optional Subject (VB)						
Trade with raw materials			8		2-0	2
Quality control			8		2-2	4
Personal intercommunications basics.			7,8	0-2	0-2	4
Optional subjects from the faculty offer						