POLISH ACADEMY OF SCIENCES - COMMITTEE OF MATERIALS SCIENCE
SILESIAN UNIVERSITY OF TECHNOLOGY OF GLIWICE
INSTITUTE OF ENGINEERING MATERIALS AND BIOMATERIALS
ASSOCIATION OF ALUMNI OF SILESIAN UNIVERSITY OF TECHNOLOGY

Conference Proceedings

12th INTERNATIONAL SCIENTIFIC CONFERENCE
ACHIEVEMENTS IN MECHANICAL & MATERIALS ENGINEERING

Application of SKJ COS program to quality assessment of COS ingots

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Within the scope of this work there has been presented the description of the SKJ COS System, whose purpose is to record the essential material parameters of the process of COS ingot casting. To this aim the procedures of assessment of internal quality have been adopted as regards COS ingots in accordance with BN-76/0601-10 Norm and the requirements of quality in Steelworks Katowice.

The research done within the frameworks of this paper had as its target the analysis of internal quality classification procedures as regards continuous ingots in Steelworks *Bankowa.* On the basis of the two classification systems, which are presently used, there has been invented the pattern and afterwards the program whose purpose is to collect information describing the quality of ingots in connection with the essential technological parameters as regards mill feedstock casting. The system that has been worked out enables us to use data collected during the process of monitoring of the mill feedstock produced. The system is also of help as far as documentary delivery evidence is concerned. Date received with programs responsible for the quality control of COS mill feedstock in relation with customers' requirements as regards blooms and billets designed for forges and mechanical companies, constitute the set of input quantities for the system of production surveillance and quality control in Steelworks *Bankowa.* The analysis carried out in assignments [1,2,3] as regards classification procedures in use and statistical research concerning the frequency of internal faults in continuous ingots processed in Steelworks *Bankowa* into mill feedstock for forges and mechanical companies. It has been demonstrated that the present system of internal quality data collecting based on BN-76/0601-10 as well as on quality requirements by Steelworks in Katowice are insufficient. Due to badly organized procedure of data storing on input quality there are frequent instances of absence of identity as regards control quality research and its verification in material laboratories in Steelworks *Katowice* and *Bankowa.*

Later on in this paper, there will be described the basis of efficiency for programming in the case of Steelworks *Bankowa* and computer assisted data collecting system as regards the quality of COS mill feedstock. The SKJ COS program has been built on relation data base. While doing it the instrument RAD (Borland C ++Bulder) has been used. The program has been worked out in klijet-server architecture and operates in windows environment.

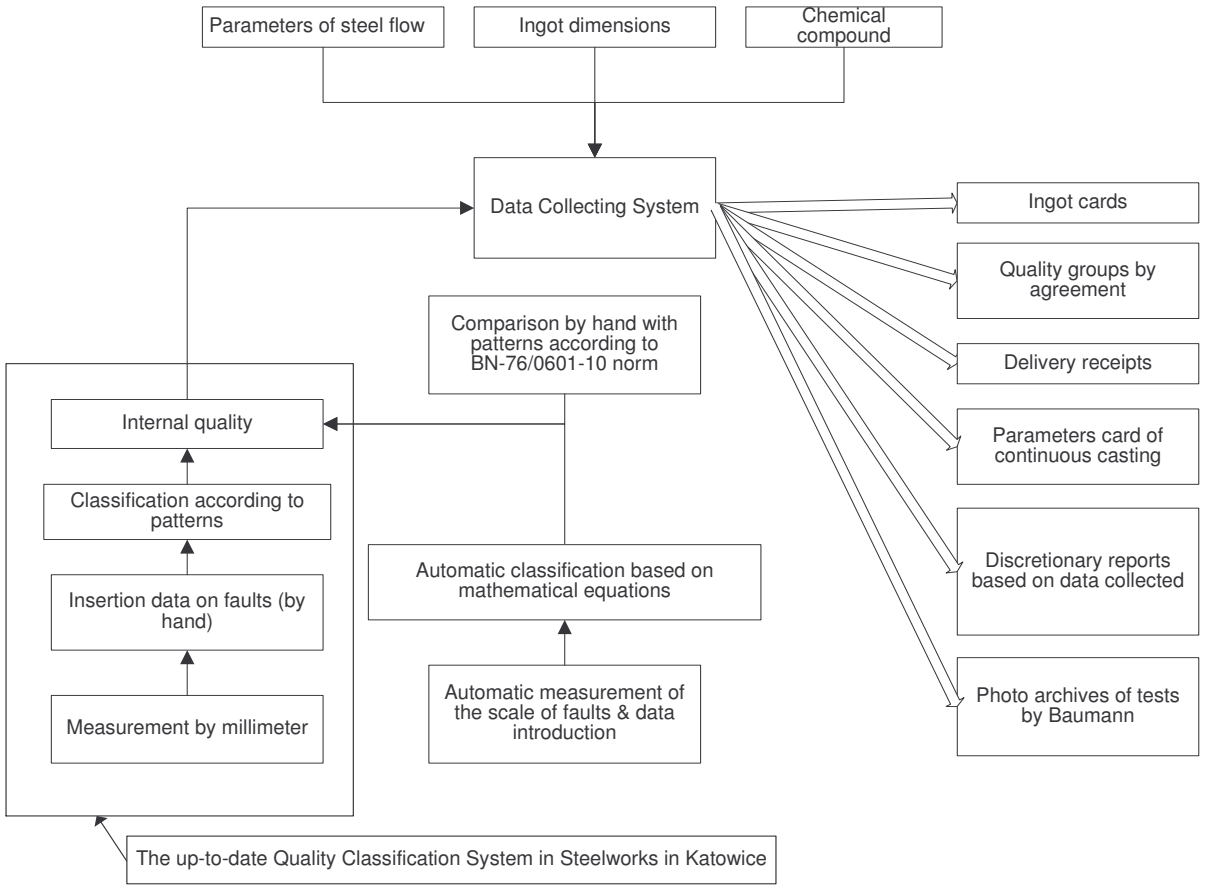

Fig.1 Bloc pattern of SKJ COS System

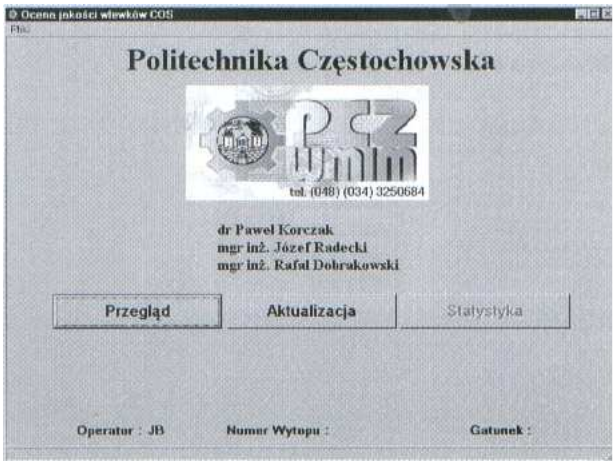

Fig. 2. Begining screen of program

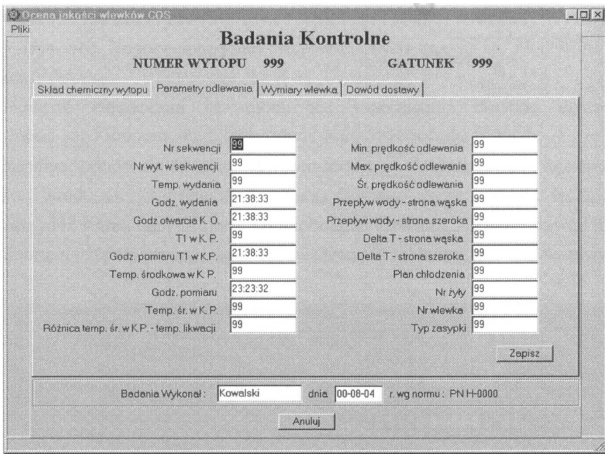

Fig. 3. Window editions continuous casting parameters

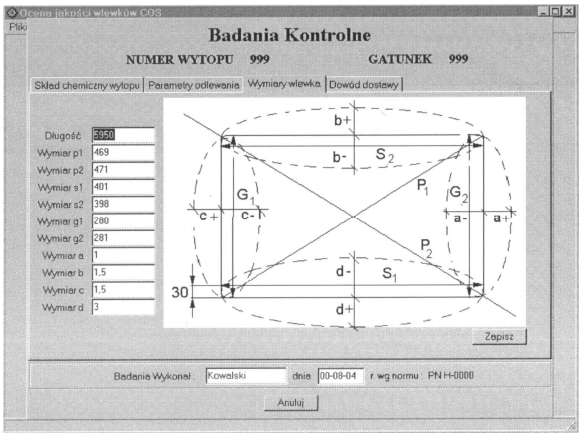

Fig. 4. Edition dimensions of ingot

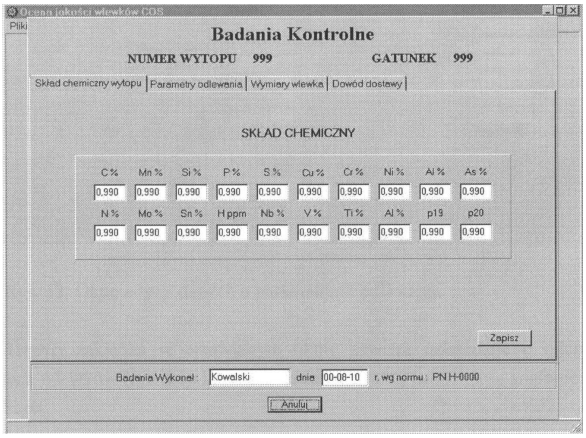

Fig. 5. Chemical composition

The efficiency of the SKJ_COS System comprises the following three fields of activity:

1. The up-date includes recording of data as regards chemical compound, casting parameters, recorded ingot parameter, data necessary to generate documentary delivery evidence and to asses the quality of COS ingots. In chart 2,3 there has been presented the process of data recording as regards casting parameters and outcomes concerning the measurement of geometrical dimensions for COS ingots. In chart 4,5 one can see the assessment process for the quality of COS ingots according to catalogue of norms in Steelworks *Katowice* and according to BN-76/0601-10 Norm used in Steelworks *Bankowa.*
2. Screening activity it allows to generate reports concerning the level of delivery, the general assessment of COS ingot quality and detailed research.

It makes possible the cross-sectional statistical analysis as regards the frequency of drawbacks in relation to essential material parameters and parameters concerning of casting.

The statistical analysis of the frequency of faults drew our attention to the relation between the casting conditions and the state of internal quality, what let us analyze the reasons for faults as well as was one of the premises to build up the system for data collection about the quality of mill feedstock. The computer program SKJ_COS V1 (Quality Control System) that has been established is useful in identifying faults as regards continuous ingots, let us systematically collect data concerning the quality of mill feedstock and casting parameters.

The above computer system also generates documents for collecting of documentary reception evidence concerning mill feedstock. This program eliminates subjective methods of assessment based only on visual comparison of an examined sample with the pattern.

When electronic system of date transmission is used between the deliverer and receiver of mill feedstock, the program enables the integration of computer systems in the case of the deliverer of mill feedstock and its receiver.

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