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THE FIFTYFIFTH ANNIVERSARY OF THE FOUNDATION OF CROATIAN METALLURGICAL SOCIETY (CMS) 1952 – 2007

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ABSTRACT – The goal of this article is to give an overview of the foundation and development of Croatian Metallurgical Society (CMS) from the Society of Engineers and Technicians of Željezara Sisak 1952. – 2007. With monitoring of the condition of Croatian Metallurgy, goals and tasks of CMS, the main activities of the Society are also set out: publishing of the magazine Metalurgija, international symposiums “Materials and Metallurgy”, and productive cooperation with an array of institutions in Croatia and abroad. The data were also given that the total production in Croatia in 1990 was 2,500,000 tons of various metallurgical products (without cast iron products), and only 230,000 t in 2007, i.e. at the level below 10%.

The overview includes also several futile press notices to the public made by the members of the Society of their own initiative, in order to sustain and revitalize the Croatian metallurgy.

Key words: Society, tasks, metallurgy, publishing activity

INTRODUCTION

Achievements in metallurgy had a great impact on the development of civilization, which proves that the stages of mankind were named after the type of metallurgical production.

9000 years of metallurgy in the world, and over 6000 years on the territory of today's Croatia is the evidence that metallurgy (as profession) is one of the oldest human activities [1, 2].

On the territory of Croatia, at the location of Gradac – Vučedol, there was registered a metallurgical workshop from ancient times with the first serial production of metal, the first one of a kind for now in Europe (3000–2200 B.C.). Metallurgical activity had its great boom and it spread from Vučedol over a large part of Europe. With other nations, it is important to point out metallurgy developed with the Celts, and afterwards with the Romans.

At the Roman time, Sisak (Siscia) and its wide environment become one of the biggest metallurgical centres of the entire empire (metallurgical workshops for making of arms and tools and coin mints) with established waterways and road communications for delivery of ingots and transportation of final products.

After the fall of the Roman Empire, metallurgical activity dies out to be renewed by the end of 10th century upon arrival of the Saxons. This is the development period of metallurgy with the Croats. In the Middle Ages, the first coin foundry and mint can be pointed out again on the broad territory of Sisak and Banovina, when iron, lead, copper and silver ore was being used. The count Petar Zrinski, whose metallurgical plants were in Banovina and in Gorski Kotar (Čabar), made a great contribution.

With penetration of the Turks this activity dies out, to live up again in 18th century. Then, high furnaces for steel production are being built, cooper foundries etc. Bell (and canon) casting was especially developed. Putting a foundry in Rijeka in operation in 1853, aluminium production and foundry in Lozovac in 1937 and high furnaces in Caprag in 1939 can be considered the first metallurgical plants on the territory of today's Croatia, in the industrial sense of the word.

In the period after 1945 until 1990 Croatia had several metallurgical companies and acceptable production. In ex-Yugoslavia Croatia was the only manufacturer of seamless pipes among 34 countries in the world – Željezara Sisak/Steel Works, Sisak, with an annual production of about 150,000 t. It was an important manufacturer of welded pipes of over 200,000 t per year, in addition to cold processing (drawing, pilgering) about 10,000 t per year [3]. Steel production (2 Siemens-Martin furnaces) and 1 electric furnace together with 2 high furnaces (of 150 m³) was about 360,000 t per year, and up to 850,000 t of coke per year were produced in Koksara/Coke Plant Bakar.

Željezara Split was specialized in production of rolled reinforcing steel. On 2 electric furnaces the steel production was up to 120,000 t per year. In warm rolling mill there were processed up to 80,000 t/year, in addition to almost 30,000 t/year of cold processing.

Steel rolling mill Kumrovec (rolled reinforcing steel) was also active processing up to 40,000 t/year, and welded pipe rolling mill Podpičkan with a production of up to 12,000 t/year.

Up to 500,000 t/year of steel in total were produced in Croatia and processed into final products (welded and seamless pipes, and concrete steel) of these 500,000 t/year (actual total steel consumption in Croatia about 700,000 t/year).

In Tvornica lakih metala (TLM)/Light Metal Factory Šibenik there were used capacities for alumina electrolysis over 80,000 t/year and moulding by aluminium deformation also over 80,000 t/year. The production of castings was substantial, up to 120,000 t/year. Ferro-alloys were also produced in the Factory of Electrodes and Ferro-Alloys Šibenik and the Factory of Ferro-Alloys in Dugi Rat (over 150,000 t/year with additional 10,000 t electrodes).

During the war 1991-1995, several companies are being closed and the production is drastically falling. Thus, e.g. in 1994 the production of welded pipes was in Steel works Sisak about 28,000 t/year and seamless below 70,000 t/year and cold processing about 2,000 t/year. Koksara Bakar gets dismantled afterwards, both high furnaces with agglomeration, both SM furnaces, strip and billet rolling mill with 2 continuous type furnaces with production of billets and strips of over 250,000 t/year, light section mill of welded pipe rolling mill (21-100 mm diameter, production up to 35,000 t/year). It was twice privatized without success (TRUBOIMPEKS and MECHEL). In 2007 for the third time – Commercial Metals Company.

Both ferro-alloy factories were blown down, in Šibenik and Dugi Rat. Rolling mill Kumrovec stopped with its production, too.

In TLM during the war there was destroyed aluminium electrolysis, and in 2007 moulding by deformation was 55,800 t. There were several attempts of privatization, the last one by the Croatian consortium (several companies).

In Željezara Split, the steel plant was reconstructed (1 electric furnace with a pot furnace with production of up to 190,000 t/year), and a rolling mill (continuous track) with equal capacity of up to 190,000 t/year. By the end of 2007 it was privatized – the Zlomreks company.

Steel production in Croatia (it refers to Željezara Sisak and Split) in 2007 lies about 80,000 t/year (earlier about 500,000 t/year) and final products (seamless pipes – 18,500 t and welded 16,000 t/year, cold processed pipes 2,500 t, rolled reinforcing steel 62,000 t) i.e. steel production in total about 100,000 t (in relation to about 500,000 t/year before the war).

The production of castings is slowly recovering and today it is at the level of about 65% of the one pre-war. Welded pipe rolling mill Podpičan is successfully operating with 100% capacity utilization of 12,000 t/year, as well as Vatrostalna Sisak d.d.

Unlike other transition countries (Slovenia, Czech Republic, Slovakia, Poland etc.) where metallurgy was restructured very quickly and efficiently, this happened very late in Croatia. Namely, as late as in 2007 the restructuring plan and program of the Croatian black metallurgy was accepted via European Union.

Comparing today's condition of metallurgy in Croatia with the world achievements, great lag in development of thirty years and more can be perceived.

Many countries that, like Croatia, have no natural resources for metallurgy development pay huge attention to metallurgy (Austria, Switzerland, Hungary and many other). After several unsuccessful restorations, Croatia privatized metallurgical companies again. The future of the Croatian metallurgy depends exclusively on intentions of mostly foreign owners.

All the professions are followed also by development of associations with an aim to promote professional and scientific activity, popularization, development of profession, education of members etc. This refers to the profession of metallurgy as well. The history of development of a metallurgical association is connected to the joint development with associations of technical professions in Croatia.

The goal of the article is to give an account of the foundation history of Croatian Metallurgical Society (CMS) and to contribute to its growth, development and achievements during the past 55 years.

FOUNDATION AND DEVELOPMENT OF METALLURGICAL SOCIETY

In the second half of the 19th century when Europe and the world underwent the Industrial Revolution, echoes of technological progress also reached Croatia within the framework of the Austro-Hungarian Monarchy. Being aware that advancement requires invested effort, a group of patriotic and progressive technical experts began preparations for an organization of engineers and architects in 1875. When the Territorial Government granted permission, the Club of Engineers and Architects was founded on March 2, 1878.

Thus in 1878, a worthwhile and farsighted idea was realized which directed our technical and technological development toward progress, accelerating development to the extent permitted by material and political conditions.

The Club of Engineers and Architects changed its name after the First World War into the Engineer Associations Union of the Kingdom of Yugoslavia. During the Second World War it was called the Croatian Engineers Society.

The Society of Engineers and Technicians of Croatia (DITH) was founded at the Foundation Assembly in 1946 in Zagreb by restoring the work of individual sections.

At that time, it comes to large economic activities and industrialization with erecting various facilities and plants in all professions. This is followed by the need and foundation of corresponding professional associations.

Let us mention several examples [4]:

- Croatian Mining Engineers Association (today's name) originated from the miners section of DITH in 1948
- Croatian Geological Society founded in 1951
- Croatian Geodetic Society in 1953
- Electro-Technical Society of Croatia was founded from the electricians sections of DITH in 1953
- Croatian Foundry Association (today's name) was founded in 1953
- Croatian Welding Technique Society (also today's name) in 1953 as well
- Etc.

Since several independent societies were founded, the Society of Engineers and Technicians of Croatia (DITH) changes its name in 1953 into the Societies Union of Engineers and Technicians of Croatia (SDITH), and as early as in 1956 into the Union of Engineers and Technicians of Croatia (SITH). This name was retained until 1992 when today's name of the Croatian Engineers Union (HIS) was adopted [5].

As for the profession of metallurgy, it needs to be pointed out that the plan realization of rapid industrial development of Croatia after the Second World War was unthinkable without metallurgy. As early as in 1947 it was planned to build an integral Željezara Sisak with the main final product "seamless pipes" near the existing Foundry Caprag.

All the major infrastructural and production facilities were anticipated to be finished by the end of 1952. Planned dynamics of construction was partly realized, so that only the Light Section Mill (pipes of 21-100 mm diameter) of seamless pipe rolling mill was put into operation in 1952. [6, 7]

Difficulties referred primarily to the lack of financial resources, investment equipment, technical documentation and they were marked by deteriorated political relations with USSR. The lack of experts of all profiles was felt in particular.

Few experts of Željezara Sisak then, engineers and technicians, made a wise estimate of the importance of organized professional work, so the Foundation Assembly was held in 1952 and the Society of Engineers and Technicians of Željezara Sisak (DITŽS) was founded.

A detailed overview of further activities of the Society can be found in the Report for the Subsidiary Assembly of DIT, Željezara Sisak Complex for 20th Anniversary of DIT". The report was presented by the president of DIT ŽS then, Dž. Đozić, on 22 April 1972 at the Assembly of DIT ŽS for 20th anniversary of foundation. [8, 9, 10]

Here are the quotes of some excerpts from this report. [8]

„The Society of Engineers and Technicians Željezara Sisak was founded in 1952, in the time when the blast furnaces, steelwork and seamless tube rolling mill were in construction, i.e. light section mill was just about to be put in operation.

Technical staff, i.e. engineers and technicians of that time were insufficient but although small in number they started with organized social work, first of all wanting to enable professional training for technical staff in the Steel Works Sisak.

Every year there were held several professional lectures, mostly to familiarize the members with metallurgical processes, and the lecturers used to be foreign experts or some experienced members of the Society. Attendance rate at the lectures was good.

F. Knežević, V. Logomerac, J. Gradišar, D. Kunstelj, M. Kirinić. T. Viličić, Đ. Lončar, Z. Selenec and some other distinguished themselves through their active work during the first several years.

As early as 6-7 years after its foundation, thanks to sudden expanding of steel works, i.e. upon arrival of the growing number of engineers and technicians and the work of the Managing Board then, there came to an increased social activity.

In the period from 1959 to 1960, one professional lecture was read every two months on the average and a good audience response was usually noted.

The lecturers were mostly experienced engineers from our Society. The Society was active, which can be seen in the documents. No less than 98% of experts working in Željezara Sisak in 1960 were members of the Society of Engineers and Technicians. The Society had 199 members in total, including 58 graduate engineers, 124 technicians and 17 other members.

After this dynamic and relatively successful period, there came a period of work regression, so the anniversary assembly could not be held in 1962.

Since then the Society has existed as a subsidiary of the Society of Engineers and Technicians – Sisak, which was established just in the same year.

Still, in 1962, the subsidiary initiated for the first time one professional magazine to be published. Then, the subsidiary started to publish the magazine of Metalurgija with the aid of Željezara Herald editorial board.

In 1962, the year of foundation, only one issue was published, in which the Editorial Board gave a short review (quote) [8, 11]:

“Today, when the very first issue of the periodical for technical and social affairs of Željezara Sisak is coming out of the print, and when this issue presents contributions of experts from Željezara Sisak, so that in every issue there will be a number of articles varying by the way of treating a subject – we can claim to have a formed expert figure who in his endeavours is committed to the further successful operation of his company. The journal Metalurgija is published exactly with the purpose to develop and support the apprehending of certain issues on its pages.

Now that we are facing huge tasks of expanding our company and have managed as a whole to increase production rates, as well as introducing new methods in all forms, the pages of Metalurgija shall be dealing with technical issues of iron and steel making, as well as with all other technical and economic sciences that this periodical shall discuss issued from the fields of metallurgy, mechanical engineering, electrical engineering, energy, chemistry, organization of work, economics, market analysis, activities of social and political bodies of Željezara Sisak, etc.

Employees of the Sisak iron and steel works may use the journal to present their experiences, their studies and solutions that may be useful for its development and contribute to the improvement and formation of the industrial character of the company members.

We believe that this journal will be accepted by all our members, and that their contributions will help the Metalurgija to build its specific character and thus become a technical journal worthy of its publishing.”

Further activities of the Society of Engineers and Technicians of Željezara Sisak are quoted again [8]:

“However, in 1962 the publishing of bibliography was initiated. Some specially entrusted members of the Subsidiary followed professional journals in reference library; compiled short extracts, which were delivered as bulletins to engineers and technicians in order to inform them with the contents of the Journal.

The period from 1962 to 1967 was rather bad regarding our Subsidiary, and was reduced to some lectures and collective trips. Earlier, in looking for a system of function of the society, and especially thanks to the circumstances that the integrated works was in a rapid development and experts' inflow rather increasing, we tried to work in sections. In 1967, the Society successfully founded 4 sections, and two of them – the civil constructors' section and especially metallurgists' section increased their activity, so these two sections

should be given due credit for achieved success through their work in our Subsidiary in the course of last 3-4 years.” (unquote)

An important role in organization and intensified actions of the Metallurgists' Section of DITŽS was played by leading metallurgists then: D. Stambolija, J. Krajcar, I. Đukić, S. Kovačić, I. Mamuzić (became a member of DITŽS as early as in 1962, which means that he celebrates 45th anniversary of membership) and others.

In particular, extreme contribution to the entire development and activity of DITŽS, DIT Sisak, as well as metallurgical society later on was given by Branko Markušić, BS. As early as in 1958 he was elected secretary of DITŽS, and later secretary of DIT Sisak, and this function he still holds today. B. Markušić celebrates 50 years of loyalty to our associations.

Many years of activity and contribution to the development of metallurgical society and more by Vladimir Ferketić M.S. need to be pointed out as well. Having started since 1967, he was president of DITŽS later, representative in Republic societies, and in addition to several functions he was also elected the first secretary of Croatian Metallurgical Society in 1992. Over 30 years he dedicated to the activity of metallurgical association.

In the meantime at the Croatian level there exist (former names of societies) the Society of Mining Engineers and Technicians of Croatia, the Society of Geological Engineers and Technicians of Croatia, and the Society of Engineers and Technicians Sisak (DIT Sisak) – the metallurgists' section joined the Union of Mining, Geological, Metallurgical Engineers and Technicians of Croatia (SRGMITH). Our Union was also a member of the Union of Mining, Geological, Metallurgical Engineers and Technicians of Yugoslavia (SRGMIT Ju), and our roof organization was the Union of Engineers and Technicians of Croatia (SITH).

Since there were mining, geological and metallurgical engineers and technicians (employed outside of Željezara Sisak) who were not members of the Metallurgists' Section of DIT ŽS, or DIT Sisak, prof. Ilija Mamuzić initiated the foundation of the Society of Metallurgical, Mining and Geological Engineers and Technicians Sisak (DMRGIT – Sisak). This was realized as early as in 1978. Prof. I. Mamuzić was elected president of the Society, and V. Ferketić, BS, secretary. This Society became a member of both SRGMITH, and SRGMIT Ju, and prof. I. Mamuzić in his mandate 1988-1990 was president of SRGMITH and vice-president of SRGMIT Ju.

Our society DMRGIT Sisak was very active. At the symposium „Education for the Own Technological Development“ organized by SITH Zagreb in 1985, I. Mamuzić presented a report called „Education in Metallurgy“. It was a period of large preparations for the construction of a new welded pipes rolling mill of the Metallurgical Complex “Željezara

Sisak”. Regarding critical reviews in Print about this project, prof. I. Mamuzić published an article in the magazine Danas, 7 (1988) 332, 28-29 “Both Computers and Pipes – We Need a Modern, Economical Production Managed by Computers”. In 1988 12th International Mining Fair was organized and in 1990 also 13th Fair. At the symposium „Improvement and Rationalization of Technological Processes in Mining, Geology and Metallurgy“ organized by SRGMIT of Yugoslavia, I. Mamuzić presented a report again „Education in the Function of Rationalization and Improvement of Technological Processes“ Belgrade 1990. Regarding difficulties experienced by MC “Željezara Sisak” on behalf of DMRGIT Sisak, prof. I. Mamuzić presented to the Business Board of the Complex a detailed written material “Consideration: Perspective Development of MC “Željezara Sisak” in 1990” (After a few years, this letter proved to be justified, but nothing was realized thereby, and former difficulties have multifold increased).

Starting from world achievements, status of metallurgy, and democratic changes in Croatia in 1990/1991, prof. I. Mamuzić strongly initiated again the foundation of independent metallurgical society at the level of Croatia. This was realized as early as on 06 April 1992 at the Foundation Assembly held in the premises of DIT Sisak. [12]

9 members (alphabetically) were elected to form the Management Board of Croatian Metallurgical Society (CMS):

1. Marijan Balenović MS – Holding „Željezara Sisak“ – Metaval
2. Petar Didović BS – „Đuro Đaković“ holding Research and Development Centre ltd.
3. Vladimir Ferketić MS – Metallurgical Faculty Sisak – secretary
4. Antun Glavanović BS – Holding „Željezara Sisak“ – Metaval
5. Drago Jakšić BS – holding „Light Metals Factory Šibenik“ – vice-president
6. Marijan Malina MS – Holding „Željezara Sisak“ – ltd.
7. Ilija Mamuzić PhD – Metallurgical Faculty Sisak – president
8. Vladimir Plazzerianov BS – Coke Plant – Bakar
9. Đuro Ščrbak MS – Unikonzum - Zagreb

Since SRGMIT of Croatia ceased to be active in 1992, CMS became a member of HIS only.

Although those were the hard war times, president I. Mamuzić initiated the arrangement of its own office premises. Based on agreement with the Association of Croatian Mining Engineers that it shared office premises with, the room No. 7 was annexed in HIS, Berislavićeva 6, Zagreb, by self-finance. Thus, CMS obtained its own office premises.

GOALS AND TASKS OF THE SOCIETY

The goals of the Society are to encourage professional and scientific activity in the metallurgic professions, develop metallurgy, organize activities for spreading metallurgic knowledge, popularize metallurgy as well as promote the professional and scientific continued education of Society members and realize their common interests. [9]

In realizing the goals for which the Society was founded, the following are some of its activities:

- consolidating and organizing graduate engineers and technicians in the field of metallurgy as well as other professional personnel and scientists who are theoretically or practically engaged in the problems of metallurgy,
- participating in the establishment of public scientific and professional positions and opinions regarding essential technical, economic, production and other problems of metallurgy,
- devoting constant attention to the continuing education of its members, stimulating and recognizing the initiatives of members in production as well as scientific research work in the field of metallurgy,
- organizing and maintaining collaboration with all the organizations and associations engaged in questions of interest to metallurgy whose interests and goals are those of the Society,
- cooperating with international organizations engaged theoretically and practically in the problems of metallurgy, as well as with national organizations of engineers and technicians outside the Republic of Croatia,
- organizing professional lectures, seminars, symposiums, round table discussions and other professional and scientific meetings,
- stimulating the publication of scientific-professional works,
- fostering and developing the ethics of the engineering-technical calling in accord with the specific nature of the work.

Changes in the political and economic system in the Republic of Croatia have necessitated the expansion of our responsibilities and the adaptation of the activities of the Croatian Metallurgical Society to the actual needs of metallurgy as well as Croatia as a whole. Active, concrete and practical orientation is required in daily activities. The primary tasks are as follows:

1. The Croatian Metallurgical Society must become a member of world professional organizations and metallurgic societies, especially in Europe. It must actively participate in the activities of all international organizations.

2. Active long-term engagement is necessary for solving the most pressing questions concerning the development of metallurgy in Croatia. This includes continuing activity on stabilization, correction, quality production and especially the coordination of science and manufacturing, improvements in the educational system etc.

3. The consolidation and stimulation of metallurgic engineers and technicians are vital to the development of creative initiative as are the publication of scientific and professional opinions on all important questions of development and metallurgic production in Croatia. Constant activity is required to advance the organization based on scientific foundations and new knowledge.

4. There is also constant activity on the affirmation of technical advancements and innovations as well as close collaboration with related societies.

5. Professional symposiums are held and organized. The Croatian and international public is informed of the results achieved by our professionals and organizations.

6. The education and specialized training of personnel requires modernization and adaptation to the revolution in technology and informatics. It is necessary to organize the professional training of metallurgic engineers and technicians, including cooperation with international institutions. It is especially important to improve interdisciplinary knowledge and cooperate with Croatian and foreign experts.

7. Particular attention should be devoted to research activity as well as the publication of the activities of the Society. There should be intensive assistance such as the co-publication of the journal *Metalurgija*, and if possible participation in the printing of manuals, proceedings, books etc. from the field of metallurgy.

Principal activities of Croatian Metallurgical Society:

- publishing of the journal *Metalurgija*,
- international symposiums by the materials and the metallurgy,
- cooperation abroad and in Croatia.

PUBLISHING OF THE JOURNAL METALURGIJA

Forty six years have passed since the foundation and the first publishing of the journal Metalurgija. This is important for all scientists and experts in the field of metallurgy and other relevant branches of science from Croatia and abroad, as well as for all authors and readers whose investigation results and ideas have been examined and found on the pages of this journal. [9, 13]

The proof that the journal Metalurgija has truly justified its existence is continuous publication of 150 volumes or 178 issues, 1090 scientific (and technical) papers and 121 contributions during the last 46 years.

In recent years the participation of the authors from abroad is above 80%. Today, authors from over twenty countries publish in Metalurgija, which means that Metalurgija occupies an important place in middle and east Europe (and beyond), where it belongs to leading journals of this branch. It is interesting that scientists from all the new states established after the break-up of Yugoslavia have recognized the magazine Metalurgija as the leading magazine from this territory, which is recognized in their countries as well for a choice of adequate professions. The scientists from Slovenia in particular take the lead in both the number and quality.

It is published quarterly, extraordinarily regularly (up to two months before deadline), which is very rarely when the journals in Croatia are in question, also in the world. It is published in Croatian and English, but more than 98% articles are in English.

If analysed according to categorization of scientific papers (including preliminary notes, reviewed papers) and professional articles, participation of scientific articles increased today over 90%. It means that the journal is a completely scientific journal.

The articles published in Metalurgija are referred now to in over 30 international secondary publications and databases.

The proof of journal's achievement is the fact that it is included in the ISI publications in 1995. Three technical journals from Croatia and Metalurgija are cited in ISI secondary journals, what is an extraordinary success not only for the journal, but also for a prestige of Croatia in the world.

“To be represented in existing data base is a thing of a reputation. Croatia, as a small scientific community and a transition country with all the attributes that accompany these facts may be only presented in the ISI publications with a limited number of journals.”

(Quotation from the article of M. Jokić: “Journal as a means of communication”, University Herald 44 (1998) 2-3, 63-72)

In Croatia the journal is also levelled with world journals regarding the quality. Good acceptance in scientific circles is affirmed through the exchange of the journals (over 30 in Croatia and abroad) and delivering of the journal into the most prestigious world libraries. Up to 150 articles are received per year on the average, 1/3 of which is published. The International Editorial Board has 14 members (5 from Croatia and 9 from abroad) – all of them scientific advisors. Reviewers are equally recognized Croatian (9- 2007) and foreign (59-2007) scientists. This journal’s edition is of 600 copies.

It is obvious that Croatia in its national journal Metalurgija, which is world-recognized and prestigious, has an effective and up-to-date media for rich international collaboration and presentation of Croatian science in this field of researching. The journal, not only by its diversity and richness of topics, but as well by a great number of authors and their scientific profiles from more than 20 countries has justified its serving the purpose.

The members of its Editorial Board provided an important contribution to the continuous and successful publication of Metalurgija. Although they work on voluntary basis, their efforts and endeavours have made it possible to overcome numerous technical, organizational and financial difficulties in the time past.

In conclusion, we would like to express the wish of us all: may this journal keep achieving even bigger and better results in the future. We also wish to thank to authors, all members of the Editorial Board and especially the Ministry of Science, Education and Sports of the Republic of Croatia for their modest financial support to the journal. We also thank many other people for their assistance and for they have done for the successful publication of the Metalurgija in the course of 47 years.

Each number of journal Metalurgija as a whole can be found in a written form on:

- <http://public.carnet.hr/metalurg>
- <http://hrcak.srce.hr>
- <http://www.doaj.org>

Also on CD-ROM.

INTERNATIONAL SYMPOSIUMS BY THE MATERIALS AND THE METALLURGY [14-49]

Croatian Metallurgical Society held the first symposium “Materials and Metallurgy” in Zagreb, February 16-18, 1994. Over 88 lectures, a half of which was attended by more than 250 scientists and experts from several European metallurgical associations.

Croatian Metallurgical Society held the second symposium “State and Development of Plastic Metal Processing” in the town of Split on June 22-22, 1996.

150 lectures (105 by participants from abroad and 45 by Croatian participants) were read at the symposium, and more than 300 people from twelve countries were attending.

At the 3rd International Symposium “State and Development of Plastic Metal Processing” (Šibenik, June 25-27, 1998) 300 participants from 15 countries were present. There were read 192 reports. Symposium activities proceeded through plenary sections (plenary lectures and round table sessions “Metallurgy Today, Tomorrow – State in Croatia”) and four sections (posters):

- Section A – Plastic Processing,
- Section B – Physical Metallurgy and Materials,
- Section C – Process Metallurgy,
- Section D – Metallurgical Thermotechniques and Protection of Environment.

Croatian Metallurgical Society held the 4th symposium “Materials and Metallurgy” in Opatija, June 25-29, 2000. There were 333 reports from 29 countries, 700 authors and co-authors registered.

380 participants from 19 countries were present at the symposium. Symposium activity took place through plenary lectures and three sections (poster):

- Section A – Materials,
- Section B – Process Metallurgy,
- Section C – Plastic Processing.

The 5th International Symposium of Croatian Metallurgical Society “Materials and Metallurgy” was held in Šibenik, June 23-27, 2002. There were 375 reports from 30 countries, 700 authors and co-authors registered for this symposium. 300 participants from 20 countries were present at the symposium. Symposium activity took place through plenary lectures and four sections (posters):

- Plenary lectures,

- Section A – Materials,
- Section B – Process Metallurgy,
- Section C – Plastic Processing
- Section D – Metallurgy and Related Topics.

At the time of the 5th symposium there were also held:

- meeting of International Editorial Board of the journal *Metalurgija* with promotion of Bibliography 1962-2001 (June 25, 2002),
- Assembly of Croatian Metallurgical Society (June 24, 2002).

More than 100 participants were included in a round table session on the achievements, conclusions and closing of the 5th International Symposium “Materials and Metallurgy”.

The 6th International Symposium of Croatian Metallurgical Society “Materials and Metallurgy” was held also in Šibenik, June 20-24, 2006. 35 countries participated in the 6th symposium. There were 368 reports from 28 countries, 660 authors and co-authors registered. 250 participants from 23 countries were present at the symposium. Symposium activity took place through plenary lectures and four poster sections (all the same as for the 5th symposium).

At the time of the 6th symposium there was also held the meeting of International Editorial Board of the journal *Metalurgija*.

More than 100 participants were included in a round table session on the achievements in metallurgy and closing of the 6th symposium.

Croatian Metallurgical Society held the 7th symposium “Materials and Metallurgy” again in Šibenik, June 18-22, 2006. 34 countries participated in the organisation. There were 475 reports from 25 countries, 799 authors and co-authors registered. 260 participants from 22 countries were present at the symposium. Symposium activity took place again through plenary lectures and four poster sections (as for the 6th symposium).

At the time of the 7th symposium there was also held the meeting of International Editorial Board of the journal *Metalurgija*, and Acad. I. Mamuzić was re-elected Editor-in-Chief for the period 2006-2010.

More than 150 participants were included in a round table session on the achievements in metallurgy and closing of the 7th symposium.

Based on the agreement from the meeting of World Metallurgical Societies, Düsseldorf, November 2005, and the conclusions of the round table, the next 8th International

Symposium “Materials and Metallurgy” was held in Šibenik, June 22-26, 2008. 44 countries are represented both in organization of and participation in the 8th symposium. As many as 615 reports are registered (plenary lectures – 10; Materials – Section “A” – 291; Process Metallurgy – Section “B” – 133; Plastic Processing – Section “C” – 71; Metallurgy and Related Topics – Section “D” – 110). The activity took place again through plenary lectures and four poster sections. The International Editorial Board meeting of the magazine Metalurgija, Management Board meeting and the Annual Assembly of Croatian Metallurgical Society were held during the 8th symposium.

Based on the agreement from the meeting of World Metallurgical Societies, Düsseldorf, November 2007, the next 9th International Symposium “Materials and Metallurgy” will be held in 2010, June 20-24.

In total, the following conclusion can be made regarding the symposiums of Croatian Metallurgical Society:

The reception of all 9 symposiums of Croatian Metallurgical Society by international and Croatian institutions has shown that the symposiums have become a traditional place for the gathering of the world’s and Croatian experts and scientists of various profiles: metallurgists, physicists, chemists, mechanical engineers etc.

Only a few symposium organisers, not only in Croatia, but in the world as well, particularly for technical professions, can take pride in that many reports registered (over 600) as at the symposiums of Croatian Metallurgical Society.

COOPERATION IN CROATIA AND ABROAD

Croatian Metallurgical Society has an extremely productive cooperation with a number of related associations, companies, professional, scientific and university institutions in Croatia and abroad.

Cooperation Abroad

Cooperation abroad refers to legal entities in over 50 countries, which is really rare among Croatian associations. The cooperation takes place on three levels:

a) World level

The meeting of all of the world associations for steel, and metallurgical societies officially called „International Meeting of Steel and Metallurgical Societies“ organized by

associations of Stahlinstitut VDEh and European Steel Institute Confederation (ESIC) is being held every year by the beginning of November in Düsseldorf – Germany. It is attended by representatives of these associations from about 50 countries. It is discussed about the schedule of world, European and international symposiums in the activity area of these associations, about the status of metallurgy, particularly steel production in the world and individual countries, about development perspectives, and often also about education of experts for metallurgy.

Since 1992, when CMS came to the level of the state, Croatian representatives were invited every year and mostly attended these meetings. This world meeting has always discussed about, approved of and received final reports from all of our 8 symposiums organized so far, and the 9th symposium has been already accepted.

All participants expressed their appreciation regarding organization of Croatian symposiums and detailed reports submitted, especially pointing out the large number of reports at Croatian symposiums (even over 600!).

b) European level

This cooperation refers mostly to five institutions:

- European Steel Institute Confederation – ESIC, where the CMS president I. Mamuzić is a member of the Management Board, and meetings are being held at least once a year.
- European Steel Federation (ESF)
- International Iron and Steel Institute (IISI)

These institutions participate also in the organization of CMS symposiums.

- Central European Metallurgical Co-operation (CEMCO)

This institution is made by representatives of associations from Austria, Czech Republic, Poland, Slovakia, Hungary, Slovenia and Croatia. In this institution too, CMS representative prof. I. Mamuzić is a member of the most immediate body considering decision making.

- European Union

This refers to the project Europ Aid/120977/C/SV Multi, called „Steel Restructuring Technical Assistance for Bulgaria, Romania, Croatia and Turkey“.

The institution of WYG-International (England) is the owner of the entire project, and CMS and I. Mamuzić as the major researcher for Croatia. Unfortunately, this engagement happened to be as late as by the end of 2006 when it was only possible to establish that

Croatian metallurgy has stumbled, and the invitation came from abroad, with our limited possibility to exert influence and make decisions.

c) National (bilateral) level

This cooperation refers to one or more various activities of institutions from 50 states. Let us mention only the major ones that have participated so far and participated now in the organization of the 8th International symposium „Materials and Metallurgy“ Šibenik, 22-26 June 2008. (This symposium is dedicated just to the celebration of 55th anniversary of CMS.) Some of these institutions are also direct members of CMS, and they participate in the work of CMS with responsibility.

- Academy of Engineering Science of Ukraine
- University of Mining and Metallurgy, Faculty of Foundry Engineering, Krakow
- University of Ljubljana, Faculty of Natural Science and Engineering
- Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences, Moscow, Russia
- University of Zenica Faculty for Metallurgy and Materials Science, Zenica
- National Metallurgical Academy of Ukraine
- Technical University of Košice, Faculty of Mechanical Engineering
- Technical University of Košice, Berg Faculty
- Czestochowa University of Technology, Poland
- VŠB Technical University of Ostrava
- Institute of Metals and Technology, Ljubaljana
- Institute of Materials Research of the Slovak Academy of Sciences in Košice
- Moscow State Steel and Alloys Institute
- Physic-Technical Institute National Academy of Science Minsk
- Politehnica University of Bucharest
- Institute of Metallurgy „Kemal Kapetanović“, Zenica
- Pisarenko Institute of Problems of Strength NASU, Kiev
- Dnepropetrovsk National University, Dnepropetrovsk
- Slovak University of Technology in Bratislava, Faculty of Materials Science and Technology, Bratislava
- Kaunas University of Technology, Kaunas, Lithuania
- BERG Akademie Freiberg

- Stahlinstitut VDEh, Germany
- ATS – Association Technique de la Sidérurgie Française
- CENIM – Centro National de Investigaciones Metalurgicas Spain
- ChSM –Chinese Society for Metals China
- CRM – Centre de Recherches Métallurgiques Belgium
- ASMET –Austrian Society for Metallurgy and Materials
- America Iron and Steel Institute, USA
- ISIJ – Iron and Steel Institute of Japan
- JERN – Jernkontoret, Sweden
- SRM – Romanian Society for Metallurgy
- SITPH – Association of Polish Metallurgical Engineers
- HOOGOGENS, The Netherlands
- SHS – Slovak Metallurgical Society, and Department of SHS at Faculty of Metallurgy – Košice
- Sociedade Portuguesa de Materiais
- MVAE – Association of Hungarian Steel Industry
- Steel Federation of the Czech Republic
- Union of Bulgarian Metallurgists
- IBS – Instituto Brasileiro de Siderurgia
- AIM – Associazione Italiana di Metallurgia
- Japan Institute of Metals
- Egyptian Association for Industrial Development
- Institute Argentino de Siderurgia
- Associacao Brasileira de Metalurgia e Materiais
- ILAFA – Instituto Latinoamericano del fierroy el Acero, Chile
- Société Française de Métallurgie et de Matériaux
- Institute of Materials, Minerals and Mining, England
- P.T. Krakatau Steel, Indonesia
- KOSA – Korea Iron and Steel Association
- Amsteel Mills Sdn Bhd, Malaysia
- Philippine Iron & Steel Institute
- NatSteel Asia (S) Pte Ltd, Singapur
- South African Institute of Mining and Metallurgy
- Iron and Steel Institute of Thailand

- Vietnam Steel Corporation

Agreements on Cooperation are made with many institutions. As an illustration, please refer to a part of the text „DRAFT AGREEMENT (minutes of meeting)“ between University of Massachusetts, USA and CMS (original) – quote:

„On April 24th 2000, Professor Mamuzic, President of the Metallurgical Society of Croatia and Dr. Sherif Elwakil, Dean of the College of Engineering at the University of Massachusetts Dartmouth met to discuss possible collaboration in different areas and agreed that there is a good potential in areas of Materials Science and Engineering, Environmental Protection, as well as advanced modern science and engineering.“ Etc.

COOPERATION IN CROATIA

Cooperation in Croatia This cooperation develops in several directions as well:

a)

As a member of Croatian Engineers Union (HIS) CMS was being invited to the Annual Assemblies of HIS, and upon invitation it participates in actions of HIS organized from time to time. Thus, on the occasion of 120th anniversary of HIS in 1998, it published a book “Establishment of Croatian Engineers Union” where I. Mamuzić wrote a chapter on CMS (p. 225-243). Again, on the occasion of 125th anniversary of HIS in 2003, HIS published the MEMORIAL BOOK (HIS 1975-2003) in which I. Mamuzić wrote a chapter on the past, present and future of the Croatian metallurgy (p. 293-308).

b)

It is mentioned that the cooperation in Croatia with several related associations of technical profession was in exchange of magazines, or opinions, joint professional actions etc.:

- Croatian Society of Chemical Engineers and Technologists
- Croatian Society for Fuels and Lubricants
- Croatian Society for Mechanics
- Croatian Society for Welding Technique
- Croatian Chemical Society
- Croatian Foundry Association

- Association of Croatian Mining Engineers (CMS shares office premises with)
- Croatian Machine and Shipbuilding Engineers Union etc.

c)

Croatian Metallurgical Society has a good cooperation also with scientific-educational institutions with four Croatian universities:

- University in Zagreb, Faculty of Machine and Shipbuilding – Zagreb (FSB)
- University in Rijeka, Technical Faculty Rijeka (TFR)
- University in Osijek, Machine Building Faculty Slavonski Brod (SF)
- University in Split, Faculty of Electrical Engineering, Machine and Shipbuilding, Split (FESB)

With the first three faculties CMS even established Cooperation Protocols, and the faculties are direct CMS members. All four faculties participate in symposium organization, their scientists are members of the international Editorial Board of the magazine Metalurgija, they participate in the work of CMS bodies pursuant to the Articles of Association etc.

Many scientific institutions as members of CMS from abroad or Croatia have their personal scientific (selection of employees into adequate scientific and educational professions and/or for defence of their projects) but in addition to economic indicators. It is enough to point out the data for one institution from abroad – Faculty of Natural Sciences and Engineering University of Ljubljana (FNS) and one from Croatia – Technical Faculty of University Rijeka: both members are consistent – they have 25 members each in CMS, they receive 12 copies each of every issue of the magazine Metalurgija free of charge, they can file for symposiums an unlimited number of reports without any fee, abstracts of which are printed in the Collection of Abstracts and integral versions of selected 8 reports/articles, they can publish everything in the magazine Metalurgija, unlimited number of participants can attend a symposium. For two years, 2007 and 2008, they paid individually 1,900 € in total (25 members x 38 € - membership fee x 2 years).

FNS published 8 articles, filed for 29 reports for a symposium, receives 12 copies of every issue of the magazine Metalurgija (4 issues per year – 8 issues in total – 96 copies). At modest prices of CMS (e.g. the fee with Poster of 150 €, at symposiums on equal international/world level over 500 €), the total price for FNS is 9,222 €, and they paid 1,900 € (positive difference for them 7,322 €).

With equal conditions TF Rijeka has filed for 24 reports, the actual price 8,472 €, and they paid equally 1,900 € (positive difference 6,572 €).

This overview has not taken into consideration unlimited participation of their scientist at a symposium free of charge together with receiving the material and attractive accommodation prices (e.g. hotel – 4 stars – half board below 40 €).

There are institutions that file for over 70 reports free of charge which mostly contain their scientific cooperation with other institutions.

CMS is forced to cooperate like this too, because there is a simple question: to be or not to be, the existence of CMS and the magazine or not? Financial support of the Ministry and 1,000 € of Croatian economy do not even cover the publishing costs of the magazine, only one employee's salary, and this is why CMS has none, and all the activities ranging from dispatching to very responsible services are being performed for years exclusively on a voluntary basis.

In Slovakia, their metallurgical society ceased to work when it was denied support by only one company – US Steel, and Slovakia has 50 times stronger metallurgy than Croatia and a support by one company is not critical at all. And Slovenia, with 10 times stronger and very profitable metallurgy than Croatia has even no Society, like all the newly established states in ex-Yugoslavia, except for Serbia by legal succession, which was not disputed by CMS. Scientists from all of these states participate in CMS's symposiums and publish the papers in the magazine *Metalurgija*, that is prestigious and recognized, of the first categories in their countries, too, which they do not have, although some of their magazines are of even older volumes than *Metalurgija* (Serbia and Slovenia). Lead in publishing Slovenia's scientists who publish as many as 1/5 of the total number of published papers of the magazine *Metalurgija*)

Current activists of CMS are proud of and happy with their work, because the results achieved on the world level justify huge efforts made; they love their profession and wish for metallurgy as a profession in Croatia not to experience the total collapse.

Unfortunately, among the number of the mentioned scientific and scientific-educational institutions abroad and in Croatia, this level of cooperation based on CMS's Articles of Association has not been accepted by the only faculty of metallurgy in Croatia – Metallurgical Faculty (MF) of the University in Zagreb, Sisak. Namely, every well-meaning person raises a question of how come that CMS, that has excellent cooperation abroad and in Croatia, has no or has interrupted the cooperation with certain institutions in Croatia?! With regard hereto, brief explanations are given in the text to follow:

At the time when metallurgical society was founded on the level of the Croatian state (CMS) by the beginning of 1992, elected members of the Management Board of CMS, initiators of this action were employees of MF Sisak. I. Mamuzić, elected president of CMS was the dean of MF, and elected secretary of CMS V. Ferketić was a senior lecturer of MF.

MF was a member of CMS, equally as with other institutions there were organized the 1st and the 2nd symposium (the third one in the final stage), the headquarters of the editorial board of the magazine Metalurgija were in the premises of MF etc. All the MF employees were members of Annual Assemblies of CMS, and 2 members are in the Management Board. All the employees selected into an adequate profession were receiving every issue of the magazine Metalurgija, participated in the symposiums of CMS without any fee etc. All the way through to the end of the dean's mandate I. Mamuzić (1990-1997) there was no complaint by MF or any other institution in Croatia or in the world.

Upon electing prof. DSc Ante Markotić (1997-2001) the dean of MF, there was immediately filed a complaint on non-transparency of cooperation with CMS and a request to take over a part of the activity of CMS contained in the Articles of Association of CMS: organization of symposiums and editing the magazine of Metalurgija. Although this complaint was filed by only one out of about hundred cooperative organizations, the leadership of CMS took very seriously this message on non-transparency i.e. on transfer of its activities to MF. This was a precedent and none of the Croatian faculties has requested this from their associations, independent of their being active or not. Everything was forwarded even to the Election Assembly of CMS (in 1999) attended by MF representatives, too, where the new leadership in CMS's bodies was voted for.

Many participants in the discussion at the Election Assembly stressed exceptional achievements in CMS's activities:

- foundation of the Society on the national level, which even Slovenia did not succeed in (and it has not been founded so far);
- excellence of the magazine of Metalurgija, that is now, having stumbled down, being quoted in about 30 world bases, even in SCI, that it is among 4 magazines of technical sciences in Croatia of the first category, that it is regularly published etc. Such level of a magazine do not have countries with many times larger metallurgical production than Croatia, e.g. Hungary, Czech Republic, Slovakia, Poland, Ukraine, not even Slovenia;

- organization of international symposiums with an array of the world and Croatian institutions, large number of participants and reports, which is rare not only in Croatia but in the world as well;
- possibility of gaining insight for all the interested ones into the work of CMS's bodies: development plans and programs, report on the work, financial report etc.
- activities performed by CMS are in compliance with the Articles of Association and they are supported by all the institutions except MF. While other professions have a dozen of professional associations (e.g. chemistry, machine building etc.), the profession of metallurgy has only one, established far earlier than MF. It is desirable that the scientists of MF organize new associations in their activity area, which would be a great contribution to the complete development of metallurgy in Croatia - branches of process, physical and mechanical metallurgy.

As a conclusion, at the annual Election Assembly of CMS, the attitude regarding non-transparency in the activity of CMS was rejected and former leadership was re-elected (the secretary V. Ferketić stepped away for health difficulties). After that, MF ceased to be a member of CMS, even the headquarters of the Editorial Board of the magazine Metalurgija moved to Zagreb, with a statement by the leaders of MF: Metallurgy does not reside here anymore. The membership of MF in CMS has not been renewed later either. As according to the information of a newly elected MF dean prof. J. Črnko, PhD (2001-2005 as a Dean First responsible) the MF Board is not interested in membership of MF in CMS. Independent thereof, the Management Board of CMS, that is a scientific society in the same field of science as MF 2.08 Metalurgija has one-sidedly retained its attitude as towards its other official members of Croatian faculties, that pay a membership fee (but in another field of science): delivery of the magazine Metalurgija free of charge, participation without any fee with reports in the first 7 symposiums of CMS (from 1992-2008 MF paid only 2 fees – 750 Euro in total), placing its printed material at MF's disposal during their manifestations (e.g. Review of University in Zagreb) etc. There are the data mentioned too that CMS members (with a membership fee paid) from Faculties in Croatia (FSB Zagreb, TF Rijeka, SF Slavonski Brod) publish in the magazine Metalurgija only a small percentage of own articles published in all magazines in total. At the 2nd regular session of the MF Faculty Council (16.11.2005) the final report on three-year scientific projects of MF 2002-2005 was adopted. Out of 108 articles published in total in all magazines in the world and in Croatia, 48 or as

many as 44.4% of all reports of MF scientists were published in Metalurgija for this period. These data as well represent evidence of CMS's contribution as a publisher of the magazine Metalurgija and of the Croatian science assessment in the field of Metallurgy.

d)

There is a small number of metallurgical companies in Croatia now:

- Željezara Split
- Vatrostalna Sisak
- Željezara Sisak (former name)
- Tvornica lakih metala (TLM) Šibenik
- Foundry companies became members of Croatian Foundry Association

With the first two companies, that are members of CMS for many years now, the cooperation is good, and the companies have their representatives in the Management Board of CMS and depending on the number of members they have up to 4 representatives at the annual assembly of CMS. They were co-organizers at all the symposiums.

Unfortunately, the relations over many years since 1952 with Željezara Sisak (the name was often changed depending on the ownership structure, the one before the last one Pipe Rolling Mill Sisak, now CMC – Commercial Metals Company), the mother of metallurgical society that gave rise to the society, were interrupted in 1995. There were two privatizations before (Truboimpeks, then Mechel), but the cooperation was always excellent: from membership in CMS, several representatives in CMS's bodies, both co-organization and hosting of symposiums, exchange of professional opinions, delivery of 50 copies of each issue of the magazine Metalurgija, etc.

Unfortunately, upon arrival of prof. Ante Markotić to the position of an advisor in Pipe Rolling Mill Sisak, the cooperation was immediately interrupted.

This was also the case with Tvornica lakih metala by electing the mentioned professor advisor. When he left TLM and I. Koštana was elected director, longstanding earlier cooperation TLM-CMS was again continued in co-organization of CMS symposiums etc.

There is a question raised about how the Croatian metallurgy was brought to collapse, and both CMS and Metallurgical Faculty have recognized metallurgical scientists and experts among themselves and who is responsible for that as much as now as in the future, too? The answer is a simple one. Unlike other transition countries that were undergoing the same difficulties in metallurgy, but took the strongest experts for restructuring (e.g. a team of experts in Slovenia was led by prof. Franc Vodopivec, PhD and Slovenian metallurgy is even

stronger today than it was in the times until 1990 and it is very economical), this was not the case in Croatia. After 1990, the state authorities have never asked for either an opinion, or help, or cooperation from CMS or MF.

It was only the appointed prof. Anto Markotić, PhD, who participated or was leading “ad personam” and upon invitation of the state authorities in a number of the Croatian metallurgy restructuring projects: Ferrous Metallurgy Restructuring Project (1992-1992), an expertise for ferro-alloys factories (Šibenik, Dugi Rat), especially in TLM (by the beginning of 1995). E.g., the results for TLM can be seen both in practice and in daily press: Thus e.g. in *Nedjeljna Dalmacija/Sunday's Dalmatia* on 17 March 2000, there is published an article “Effects of Technical-Technological Study of the Condition in TLM by Expert Team of prof. Ante Markotić, PhD – Expert Spending of Money”. Among other things, there is mentioned the following (quote): “If effects of expert team are measured by the results of TLM business operation, then they are really crushing ..., there are measures specified in 26 items that are indispensable for the company's revitalization, but only two of them have been realized in these four years.”

Regarding construction of an automated warm rolling mill plant in TLM under the newspaper's motto “New Rolling Mill Triples the Production”, president of CMS I. Mamuzić gave an interview for *Slobodna Dalmacija/Free Dalmatia* (29.07.2002) “There is No Future Without a Strong Industry in Croatia”, which sporadically expressed doubt in TLM's economical production and prof. Ante Markotić's competence regarding aluminium. The answer came very quickly. In *Slobodna Dalmacija* (10.10.2002) grad. eng. Slobodan Mačukat writes about “TLM entering a modern technological world”, it indicates an increase in production from the current 28 to 100 tons per worker, and finally he concludes “Mamuzić obviously hasn't got a clue about all of this. On the other hand, it doesn't bother him obviously to read us lectures from above his scientific level, at the moment that might be the most sensitive one in 65 years of aluminium industry in Šibenik. One cannot help asking him/herself, who pays such people and in whose interest they appear in public” (unquote).

The answer to Mr. S. Mačukat about who pays him, his followers and principals was given by the Croatian Government, *Slobodna Dalmacija*, 20 June 2004 “The Government's Rescue Rope for TLM” quote: “Šibenik aluminium in TLM received a financial injection of support as a re-programme of receivables from the preceding years in the total amount of 130 million HRK, and as a national guarantee issued to HBOR/Croatian Reconstruction and Development Bank to provide for the execution of production and export plan for this year in

the amount of hundred million HRK and additional 7.7 million HRK to finalize modernization of aluminium foundry.” This was amended in Daily News, on 10 December 2004, page 5 “TLM can recover only with help of the state” – mentioning that “the planned increase in production and decrease of the loss next year can be realized only with a new financial help of the state of about 250 million HRK” – the statement by the president of the new Management Board of TLM, Ivo Koštana.”

On the other hand, after unsuccessful privatization and waiver of Mechel from Željezara Sisak, an expert team was appointed again with prof. A. Markotić, PhD, as the major expert. The “Concept of Ferrous Metallurgy Restructuring Program of the Republic of Croatia” was prepared for the Croatian Privatization Fund (Zagreb, 03.11.2004). In an inadmissibly superficial study there is offered a “life-saving solution” on Željezara Sisak and Željezara Split merger into “Cro Steel”.

On this occasion too, president of CMS recognized himself as responsible and gave an overview – an interview published in Daily News, on 10 December 2004, page 5 titled “Željezaras Merger Will Ruin Split, and It Won’t Save Sisak” amended by an article “In the Ferrous Metallurgy Analysis from 1992 and 1993 the Same People Were Against Merger”. Supported by employees and the Union of Željezara Split, Željezaras merger was not brought about. Despite hereof, prof. A. Markotić, PhD, as a specialist for steel production/high furnace operation, became a chief advisor for pipes rolling, as well as he was advisor for aluminium in TLM. The care of CMS for existence of its profession was given in the interview of I. Mamuzić to Šibenski list No. 2217 from 1 July, 2006 “Metallurgy is Unprofitable Only in Croatia” mentioning among other things (quote): “Believe it or not, Croatia invested in repair of its metallurgy more money than some countries, that register now the growth in steel production. Some calculations mention a billion dollars spent for this. However, the money was not invested in new technologies but in buying social peace, in managers’ salaries and studies none of which, unlike other countries, gave any concrete results” (unquote, and the statement has never been refuted).

Only a few of these examples clearly show both for the present and the future generations whose profession will be metallurgy and for the condition of technical branches in Croatia in general, that experts and scientists of CMS and MF Sisak are not responsible for the collapse of the Croatian metallurgy. Responsibility of prof. Ante Markotić, PhD, who participated in all unsuccessful studies of the Croatian metallurgy restructuring, can partly be alleviated, and as a recognized expert and scientist for iron production – high furnace operation he was always a chief advisor for various metallurgical production, except for his

specialty – pig iron production/high furnaces. He was always personally invited and engaged on behalf of the state authorities. Someone needed a title, political credentials, obedience, and not knowledge.

It is a matter of one's own conscience if e.g. an recognized ophthalmologist would accept an invitation to perform complex surgeries, independent of how alluring financial support is or other privileges, business Card, etc.

In general, problem issues of metallurgical production in Croatia influence the activity of CMS, too. While some professional associations obtain favourable money donations from the economy, for CMS this remains on the level of 1.000 Euro, as a membership fee.

All of these comprehensive and extremely regular activities (connections, maintenance of the activity of CMS, symposiums, cooperation with a large number of scientific and professional institutions and companies abroad and in Croatia) are being performed by the members of CMS, especially the president I. Mamuzić, who also performs the function of the editor-in-chief of the magazine Metalurgija since 1984, without any permanent employees, on a completely voluntary basis i.e. without any compensation or honorarium. The evidence lies in a datum that since CMS was raised up to the national level in 1992 until now – 2008 there has never been paid one honorarium.

Financial support by the Ministry of Science, Education and Sports to the CMS association covers the publishing costs of the magazine, which is only a small part of the total costs both for the magazine and the activity of CMS. In order to exist and permanently raise the quality of the magazine Metalurgija (proven by its being prestigious in the world), in addition to his 45-year-old work in metallurgical society free of charge and 23 years as editor-in-chief, prof. I. Mamuzić also paid (with the Ministry's consent) over 20,000 € from his scientific project in the period 2002-2006, instead of travelling to congresses in Croatia and abroad, like his colleagues do.

CONCLUSION

Croatian Metallurgical Society celebrates 55th anniversary of foundation 1952-2007 in an extremely difficult situation of Croatian metallurgy. Out of about 2,500,000 t of various metallurgical products per year in 1990 until 2007 plants of about 2,000,000 t of products per year (about 850,000 t of coke per year, 200,000 t of iron per year, 300,000 t of steel per year, 150,000 t of ferro-alloys per year, 250,000 t of strips and billets per year, 35,000 t of seamless

pipes per year, 400,000 t of concrete steel per year, 10,000 t of electrodes per year, over 80,000 t of aluminium electrolysis per year etc.) were torn down or put out of operation.

Croatian Metallurgical Society is founded and responsible for development and future of Croatia, with the purpose to base the contribution to its progress on promotion of metallurgy. Unfortunately, CMS has never received an inquiry nor was its professional opinion requested by official bodies of Croatia regarding restructuring and future of Croatian metallurgy. CMS had a possibility to be only a bystander to the collapse of Croatian metallurgy. Thus, an opinion has never been even requested by experts and scientists of the Metallurgical Faculty of the University in Zagreb, Sisak.

The remaining activities within competence of the Articles of Association were successfully performed by CMS: from acknowledgement for achievements by related world associations proven by cooperation with up to 50 countries, printing and regular publishing of a prestigious scientific magazine *Metalurgija*, to organization of world symposiums “Materials and Metallurgy” where over 600 reports are filed to be presented etc.

The intention of the Croatian Metallurgical Society is to neither secure advantage nor display our successes but to establish the conditions for work and creativity, for better living conditions and spiritual peace. Therefore, it shall foster knowledge, trust, self-reliance and dignity among its members. We want to be respected and we shall respect the rights and opinions of others.

Members of CMS, lovers of their profession – metallurgy to which they remained loyal and consistent throughout their lives, are aware that metallurgy in the history went up and down, but it never stopped. There is a wish to pay attention to metallurgy also in Croatia as it is in many other states.

We also wish to express our admiration, honour and great respect to all the individuals and generations of engineers and technicians of Željezara Sisak (and beyond, later on), who established our association and contributed to its growth through the past 55 years. Many of them died. May their memory live with gratitude.

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