HIGH-POWER MACHINES AND SMART PROGRAMMING SAVE TIME AND MONEY

At present main production branches like metallurgy (i.e. castings and forgings), engineering production with focus on forming machines and scrap processing equipment continue to be the most important within the large ŽĎAS a.s. metallurgy-engineering complex based in ŽĎÁR nad Sázavou. And of course, also Tool Works as one of company's three divisions focused on production of supplies of big press tools particularly for automotive. Mr. Miloš Janeček, Tool Works Manager, accepted invitation for the interview.

New owner has acquired the company recently - Chinese CEFC - China Energy Company Limited replaced Železiarne Podbrezová, the former owner in 2016. Has anything changed for you by this turn?

Definitely yes, and in a very positive manner. After long months of certain doubts related to sale of ŽĎAS accompanied by unfavourable development within staff stabilisation, whether with technical positions like designers, technologists, programmers, foremen and particularly with production staff - with entry of the new owner the situation started to stabilise gradually. The company has been restructured into three production sections: Metallurgy Division, Machines Division and Tool Works Division with that within this Division we provide - except some centralized activities like service, material procurement or quality control - all activities independently, i.e. we manage our Division on our own. However, meeting of planned company economic output remains the main priority of all of us. This change was also very positively reflected in planned investments, wage development, product strategy, production staff stabilising and other activities related to company's business.
Even though we are the smallest of the mentioned divisions, we come out of the tradition when tool shops used to be show-cases of any company and where the most capable employees worked and advanced and state of the art technologies were always applied. In this connection we can say that we stand-in our extinct development shop, when within out portfolio we check and subsequently introduce batch production of certain atypical products like parts for power industry, mining platforms and sometimes we take part even in the development of entirely new equipment for which I would like to mention the previous year realized manufacture of 2 pieces of bladeless turbine invented by doc. Miroslav Sedlacek.
Most people probably relate ŽĎAS with engineering production of large forgings and presses; however, the company is successful also as a supplier of turbines which represent engineering hi-tech.
At present the company is heading to power industry, especially to the segment of supplies for hydraulic power plants. This is also our company objective and key product strategy. And Tool Works Division is important part of this complete production. Casts and forgings are provided by our metallurgy whereas our colleagues from Engineering Division care for assembly and other activities related to eletrotechnical operating in hydraulic power plants in addition to runners so it is actually an intensive cooperation of all three production sectors within this field.

Your long-term cooperation with Iscar in the field of tools is not any secret for our customers and partners. Since when has it been dated from?

The beginnings fall with 2007 when the tool shop started to realize a supply of Francis turbine reverse runners for India produced for ČKD Blansko Engineering for which we provide majority of such supplies. Since a very tough material (14% Cr and 4% Ni) is used for casts from which such runners are produced, we contacted Iscar specialists with requirement for technical support during machining of such parts. From that time a closer cooperation developed which then continued even through other projects - especially supplies for Vltava cascade like Francis turbine runner for Lipno.

By the way, it was machine processing of hydraulic channels at that time when even 90% of surface was milled - and this is an unique scope considering the runner size and channel shapes because in the past this kind of production was finalized by manual grinding according to templates so runners geometric accuracy and its subsequent output was rather as a lottery bet. In close cooperation with Iscar, who supplied not only special tool for runner production but also its specialist – a programmer who prepared programs for our 5D machining centre - we could afford to machine the above specified surface area which I consider to be a unique performance up to present.

Francis reverse turbine runner supplied to India

Kaplan turbine blade for ČKD Blansko Engineering

It was really brave decision at that time. So you believed in Iscar so much?

We could afford to offer this project within the said machining scope just on the basis of the experience and knowledge acquired with Iscar - when our initial cooperation was in its start and when the solution of mentioned runners of Francis reverse turbine was indeed atypical - just due to the requirement for 100% machining of hydraulic channels the runner had to be designed as divided from very beginning of the production and was welded into one unit after final machining. In our own way we moved from simple producer or supplier of mere machining or rough grinding of hydraulic power plant turbine components to a position of supplier of complete assemblies, Kaplan turbine runners in particular. First complete delivery was realized in 2014 for Swedish power plant in Gavunda. Frankly, in the beginning the Swedes did not believe in us for 100% probably, because before the very start of the production they came to check our machine equipment level and implemented production system, but final supply was on its first good. The complete runner assembly of Kaplan turbine was accepted without comments and even after the two-year test operation in the power plant no technical problem was registered. Last similar realization is production of two Kaplan turbine runners for Brandýs nad Labem hydraulic water plant which was realized in two phases. Nowadays, a refurbishment of Kamýk hydraulic power plant first machine unit is assigned at ŽĎAS while in forthcoming days also the order for the second machine unit is expected.

The cooperation on supplier's part concerns also new technology development, new types of tools, machining methods - is this also your case?

Yes, and just at present more than ever before, because particularly in automotive industry which makes substantial part of our activities, the pressure on prices and delivery terms grows with each new project. One of the ways how to cope with growing requirements is to use productive tools and more efficient and productive machining programs. And this is precisely the position in which we cooperate with Iscar today. Leaving the power industry sector we will try to implement these new trends in machining to maximum extent also into our main, most important production represented by tools for pressing of large bodywork components. Majority of operating parts – equipment cutting or shaping pressed parts - is processed to values approaching 60 rockwells, so the final machining within hundredths of millimetres must be carried out in such high quality tooling materials heat-treated to mentioned values.
Even processes which may appear relatively standard within machining priorities or matters not offering much space for searching new solutions may use unconventional approaches. Also, this is part of our present cooperation with Iscar which is documented by thread milling technology instead of orthodox thread cutting. Compared to common conventional way we are able to mill a thread three times more quickly. And certainly, this is really significant movement ahead.

Iscar often accentuates, they are not mere supplier of quality tools, but they emphasize also matters not directly related to that, like technical support. Are you satisfied with this level of cooperation?

This represents our fundamental criterion for selection of tool supplier. At present

there are tens or even hundreds of companies in the market and all of them will affirm that they offer the best tools ever seen. On the basis of historical experience we follow the only way - when we have some new product and we want to test a certain machining technology with it so we can make only if given company supplies not only necessary tools, but they must be able also to set and optimize machine cutting conditions and in the end provide test report of particular tests or production machining. At that point it must be totally transparent with what we machined before, with which we are newly machining and what benefit the given tool means for us. And that is why we are satisfied with this cooperation level, because Iscar has not only salespersons offering assortment in their team, but also qualified engineers/programmers able to apply new tools on our machine equipment in a way they bring real benefit and progress.

So it looks there is nothing to prevent further development with the trustworthy supplier...
This was our objective from very beginning. We do not want our cooperation to function merely on delivery of some product - cutting tool in this case - and when they happen to be around, they will try to sell us another „miracle". It is a purposeful, long-term cooperation when we always tried to meet each other's needs while supplier of tools will help us to implement new technologies during machining of our production which they know very well.
But this works in both ways. We are able to present our knowledge and results from production thanks to supplied tools to tool supplier; so these may serve as reference. It is certainly on mutually convenient partnership and relations that are to develop and move ahead within this sector.

Companies prefer hard data - what it would mean in your case? Is it possible to specify?
Generally, the acceleration and making machining operations more efficient are the benefits; however, money is in the first place, as usually. During machining on biggest equipment, whose operation has the highest priority considering character of our production and therefore also the highest hourly rates, we managed to obtain 2.5 times higher acceleration than originally calculated using new 5-axle machining instead of originally applied 3-axle process and using new Iscar productive tools within more or less same realised times and this means not only significant financial savings but also potential for our competitiveness in new tenders.

You have interesting job orders, also technical capacity for their production, but how does it look with employees when companies have problems to find suitable staff?

Well, this is the most essential and biggest issue we have nowadays trying to cope with every day. We have sufficiently strong owner approaching to our company to enable its further development, prepared to invest, we have enough orders, but sometime there is nobody who can produce them. Staff capacity is the only thing limiting and hindering us at present. And staff in engineering company dedicated to piece production means alpha and omega with absolute priority. We certainly need various professions, capable salesman, experienced designers,

"At present ŽĎAS strongly aims at power sector and tool shop is important part of this entire production" Miloš Janeček says.

Guide blades for Sayan-Sushen power plant.

technologists, programmers, foremen, but qualified operator stands on imaginary top of that pyramid in the case of a company type like we are. To get and keep such people is a very big problem influencing substantially also our further growth possibilities. The situation is now that the existing and top employees are dragged-over between particular firms.

ŽĎAS is traditionally the biggest employer within its sphere of business in this region, in addition to money you offer also a perspective - it is not attractive for employees?

We try to give back people these traditional values, offered by big companies in Vysočina and by ŽĎAS especially - permanent employment, various benefits, social and other advantages. Some former employees who left in the past are coming back or they consider their comeback and now they understand what social sector means. Also polite and dignified working environment belongs to benefits which could help with ensuring of future staff.

Do you cooperate with schools?

We do, of course. Historically, our cooperation with local apprentice training centre and technical college is very good, however, the problem is that engineering sector is not as prestigious as we (and not only we but whole engineering sector) would need. Numbers of pupils preparing for particular specializations - like tool fitters, engineers - setters, tool-makers, locksmiths, electrical fitters and others are so low that cannot absolutely cover requirements of Ždár region. And we offer very interesting scholarship and paid practice directly at future workplaces, but even such benefits do not increase numbers of interested people.
Speaking about young supporting staff enrolment from apprentice training centres, specialized schools like technical colleges or Universities not only for ŽĎAS but generally for industrial companies we can say that these are only negligible numbers. I dare say that this is not only the biggest problem but even a tragedy for entire engineering industry with very gloomy prospects. In our society we have plenty of specialists (officials) for state administration, tourism, political science, social sciences, real estate agents, etc. and in the meantime some of processing machines are put out of service and conserved because we do not have any operators to work on them.
And to make matters worse nowadays other two contradictory trends meet - older generation of skilled and experiences staff is leaving and we are fighting with shortage of young generation able to replace them. And more a good worker matures years and toolmakers even their entire professional life. So today we solve situations when we have state of the art equipment, top technology and tools but some new employees because of their poor experience are not able to take advantage of this potential and produce what their forerunners, older experts were able to make with far more worse machines and tools. ■
Thanks for interview.

Kaplan turbine assembly for Swedish customer.