AUTOMOTIVE

LT5: THE NATURAL EVOLUTION OF SAWING

APERAM STAINLESS SERVICES & SOLUTIONS TUBES CZ

The Aperam Group is a global player in the stainless steel field, with a portfolio of customers located in more than 40 countries worldwide. “Aperam Stainless Services & Solutions Tubi CZ”, based in Usti nad Labem (Czech Republic) is one of the Group’s company, featuring an historical and significant tradition in the manufacture of pipes and tubes for automotive exhaust systems. The introduction of a Lasertube LT5 system has improved the efficiency of the company’s tube cutting department.

The company was established as Matthey S.r.o. in 1967 and soon became one of the main manufacturers of welded stainless steel tubes to be supplied to the automotive exhaust system market. Matthey joined the Arcelor Group in 2002; two years later, it opened the factory at Usti nad Labem to provide services and assistance to the customers that were moving eastward in the wake of the automotive market.
Since 2008, the company name changed first to ArcelorMittal Stainless Tubes Automotive Repubblica Ceca and, then, to Aperam Stainless Services & Solutions Tubi CZ s.r.o. (Aperam Usti).

We met Mr. Jaroslav Sečanský, the company’s production manager, on his last work day at the company itself, as well as Mr. Lukáš Terč, who replaced Mr. Sečanský within the corporate organization. They both described how the production department has evolved: “At first the work involved cutting to length tubes that were imported from Switzerland and were used only for the automotive exhaust systems,” Mr. Sečanský said.
Then, the tube mill lines (to manufacture welded tubes in-house) were built; next, the service centre unit developed, i.e. the tube fabrication department including the tube bending machines and slotting machines.
Reference is made here to stainless steel tubes with a size of 10-90 mm, intended for exhaust systems. “We manufacture only tubes, not full assemblies, which are instead manufactured by our customers that represent all major Tier 1 companies in the automotive exhaust system field, for instance Faurecia and Tenneco, just to mention two famous companies operating in this field,” Mr. Sečanský added.
At first, the sawing lines (i.e. four automatic sawing machines) had been imported from Switzerland. Today, eleven sawing lines are available, which allow us t**o manufacture about 4 million pieces of stainless steel tube each month: our production rate has increased eight fold since 2005**.

4.000.000
pieces of stainless steel tube manufactured each month

“Our first contact with BLM GROUP dates back to four years ago, in connection with a tube bender to be used in the tube fabrication department”. We spoke to the woman in charge of managing the tube bending department: ù

> *“ We needed to bend tubes with a diameter of 30 to 80 mm and, so, we opted for an ELECT80 machine,” explained Ms. Petra Wiedemannová, the manager in charge of the tube bending department. “This machine was all electric, with no hydraulic actuating components: this was very important to our company. We can manufacture approximately 30,000 parts per week and need to change our production very quickly and easily. We were used to having to change over the old machines manually; today most of the machine control takes place automatically now.*
> *Positioning the tube by means of torque-controlled electric axes and storing the tube bending parameters in the machine control ensure repeated, reliable settings – a feature that has been appreciated so much at Aperam.*
> *Programming is quite simple and the part simulation is highly efficient: a programmer works at our office, yet I am able myself, even when I am abroad, to program parts, simulate them and start the production phase, by sending the company the work plan to be implemented ”*

Ms. Wiedemannová concluded..

Then, Mr. Sečanský started talking: “We noticed that the tube bending machine performed well and had therefore been a profitable investment, so we held BLM in higher and higher regard, until when we became seriously interested in the laser cutting technology. However, all the calculations we had first made showed that the laser cutting technologies were not cost-effective in connection with our needs. The overall process proved to be slower than when operating the sawing machines and, above all, the initial investment for purchasing the system was too costly and we were also convinced that the operating costs would be excessively high as well.
Next, ADIGE presented the new Lasertube LT5 TQR model, a version

expressly developed for straight cut off on round tubes; the new calculations made for this version showed a different result, i.e. they presented quite a cost-effective option.

“The LT5 system was more productive and cheaper. Its main advantage came especially when cutting stainless steel: in this application, the performance achieved by cutting with a saw blade was not enough, owing to the intrinsic features of stainless steel”, Mr Sečanský explained.

All of this took place very quickly: after we had witnessed the actual machine operation at a trade fair, we requested suitable verification tests that confirmed the system’s productivity as well as the quality of the manufactured parts, which eventually led to the decision we made. “Our predictions were confirmed by the system’s real operation: the difference against the initial theoretical calculations amounted to very few percent points. T**he production levels for the LT5 are approximately 30% higher than the fastest sawing machine we had considered**. Moreover, you should consider the reduction in the operating costs of the machine, the electricity consumption of which is lower than a conventional sawing system. Of course, this comparison has been made with a cutting line complete with the measuring, brushing and washing devices”.

+30%
productivity
improvement by the LT5
when compared to the fastest sawing machine

“The LT5 machine is used to a very large extent (i.e. 95%) on stainless steel, which guarantees a higher gain against the sawing machines. We do not only perform straight cutting operations: yet, we are presently restricting the requests we have received for additional machining,” Mr. Terč explained. From the business viewpoint, we anticipate good opportunities of expanding the range of products and services Aperam Usti is able to provide, yet there are two different reasons for which we have so far proceed with the utmost caution.

“First of all, we receive so many orders for straight cutting only: this is the first reason why we have declined the use of this machine for different types of cutting” Mr. Terč said. “The second reason is that we do not have a back up machine: should the only one machine available stop, we would not be able to produce the laser trimmed parts by means of any other machine and, therefore, we would not be able to cope with the job orders”.

-5% saving
by operating a laser system in place of a sawing machine

The most significant advantage we at Aperam Usti have noticed concerns the process as a whole, instead of the individual machining operation. “We simulated the total cost of the cutting department in the event that a new sawing machine was operated, then we compared such cost with the actual cost of the department after the LT5 system had been introduced. The result was quite surprising since **the introduction of a laser system in place of a traditional sawing machine (in a department where 11 more sawing machines are available) amounted to a few percent points (approximately -5%) over the total cost**. A significant portion of this saving results from the operating costs, which proved to be significantly lower in case of the laser option.

The satisfaction found in purchasing the LT5 system is evident, even when Mr. Sečanský reported that the machine laser operations are carried out quite simply. Of course, we are not referring to programming complex operations; on the contrary, the mere straight cutting operation can be easily managed directly from the machine control without the need for special programing.

To sum up, we are glad to reassure Mr. Sečanský and Mr. Terč that a solution to their only problem-the problem of expanding the market opportunities (i.e. the lack of one second system) can be solved!