

## Poročila

### Reports

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Pred meseci se je poslovil od aktivnega dela, pred dnevi pa še čil in zdrav praznoval svojo 80-letnico gospod Günther Schuster.

Poliuretanska kemija in poliuretanske tehnologije so relativno mlade. Poliuretanska kemija začne svojo pot leta 1937. Takrat je nemški znanstvenik prof. dr. Otto Bayer s sodelavci odkril osnovno adicijsko polimerizacijsko reakcijo med diizocianati in alkoholi. Tako nastali polimeri so poliuretani. Od izuma do uporabe je običajno dolga pot, ki terjaja interdisciplinaren pristop. Tipičen primer za to so penasti poliuretani. Ko so Bayerjevi strokovnjaki začeli z razvojem praktične uporabe poliuretanskih izdelkov, to je bilo predvsem po letu 1945, so večkrat naleteli na problem predelave izdelka do končnega izdelka.

Tako je g. Schuster še kot študent strojništva na fakulteti v Aachnu dobil v roke kos mehke poliuretanske pene od dr. Heinza Eisenmanna iz podjetja Bayer, enega izmed takratnih vodilnih strokovnjakov s tega področja. Vprašanje je bilo, kako predelovati ta nov material. G. Schuster je takoj ocenil, da bi se to dalo razrezovati na analognih strojih, s katerimi se razrezuje tekstil.

Te stroje je izdelovalo podjetje g. Bäumerja, sicer tasta g. Schusterja, ki je bilo takrat v Wuppertalu. Pozneje so proizvodnjo preselili v Freudenberg v pokrajini Siegeland. Tako je bila ustanovljena tovarna Albrecht Bäumer s programom izdelave strojev za razrez poliuretanskih pen in sorodnih penastih in tudi nepenastih materialov. To, kar je v zadnjih petdesetih letih pomenilo podjetje Bayer v razvoju poliuretanske kemije in vseh vrst uporabnostnih tehnologij na čelu z g. dr. Günterjem Oertlom, je bilo podjetje A. Bäumer v razrezu in oblikovanju poliuretanskih pen na čelu z g. Schusterjem. Tako so bili prvi, ki so razvili specifičen vodoravni razrez pene, ta je



A few months ago, Günther Schuster said goodbye to active employment, and a few days ago, very much alive and kicking, he celebrated his 80th anniversary.

Polyurethane chemistry and polyurethane technologies are relatively young. Polyurethane chemistry began in 1937. The German scientist Prof. Dr. Otto Bayer and his associates discovered the basic addition polymerisation reaction between diisocyanates and alcohols. Polymers synthesised in this manner are called polyurethanes. The road from an invention to its application is usually long and requires an interdisciplinary procedure.

Foam polyurethanes are a typical example. When Bayer's experts began the development of practical uses for polyurethane products, i.e. especially after 1945, they encountered the problem of product remodelling to obtain a final product several times.

Mr. Schuster, in those times still a student of mechanical engineering at the Faculty in Aachen, obtained a piece of soft polyurethane foam from Dr. Heinz Eisenmann of Bayer, at the time one of the leading experts in the field. The question was how this new material could be processed. Mr. Schuster immediately determined that it could be cut on the analogue machines used to cut textiles.

These machines were manufactured by a company owned by Mr. Bäumer, Mr. Schuster's father-in-law, the headquarters of which were then located in Wuppertal. Later, production was moved to Freudenberg in the Siegeland region. The Albrecht Bäumer firm was thus founded with a programme for the production of machines for cutting polyurethane foam and the related foam and non-foam materials. What Bayer has been in the last fifty years in the development of polyurethane chemistry and all types of application technologies under the leadership of Dr. Günter Oertl, the A. Bäumer company represented in the field of cutting and shaping of polyurethane foams under the leadership of Mr.

bil temelj za poznejšo konstrukcijo horizontalnih krožnih žag. Žage so razvijali s sodelovanjem podjetja Otto-Bock, Duderstadt, ki je za to vrsto razreza začelo izdelovati penaste bloke dolžine 120 m ter jih rezati v tanke folije v obliki zvitkov. Ta oblika razreza je bila podlaga za poznejši razvoj kaširanja, to je poznejšega spajanja penaste folije s tekstilom. Tako spojeni materiali pa so zunanja prevleka avtomobilskih sedežev. Danes skoraj celotna proizvodnja avtomobilskih sedežev sloni na tej vrsti laminiranih materialov.

Za razrez zelo zapletenih delov iz penastih materialov so razvili tudi računalniško numerično krmiljene kopirne avtomate, ki lahko režejo v vodoravni ali navpični smeri. Poleg tega so razvili še vrsto drugih strojev za razrez in predelavo ter so s svojimi 350 zaposlenimi danes vodilno podjetje na svetu v tej industrijski veji. Svoje obrate imajo še v ZDA in na Japonskem.

G. Schuster je povezan s Plamo oziroma Plamo-pur že več ko tri desetletja. Tudi drugi izdelovalci poliuretanskih pen v nekdanji Jugoslaviji so imeli pretežno stroje tovarne A. Bäumer. Poleg poliuretanske proizvodnje so z analognimi stroji opremljeni tudi izdelovalci mineralne volne in gume.

G. Schuster je v svoji podjetju uvedel redko intervencijsko pravilo, ki glasi: v primeru nesreče pri svojem kupcu, kar je največkrat požar (poliuretanske pene pomenijo zelo veliko požarno nevarnost), odstopijo prizadeti tovarni strojno napravo, ki je trenutno v izdelavi za sicer drugega kupca. To smo doživeli tudi v Plami leta 1970. Ob katastrofalnem požaru v Plami je podjetje Bäumer takoj dobavilo horizontalno žago iz tekoče proizvodnje, sicer namenjeno drugemu kupcu. To je bila poteza, ki se tudi po 30 letih ne more pozabiti in ki poleg poslovnih stikov prispeva tudi k medčloveškim stikom med podjetjema.

Pred meseci se je g. Schuster poslovil od svojih sodelavcev in prijateljev z vsega sveta na prav poseben način. Za celotno podjetje in vse povabljeni (okoli 400 ljudi) je organiziral poslovilno vožnjo z ladjo po Renu – to zadnje uradno druženje je samo potrdilo širokogruden značaj pionirja predelave penastih poliuretanov, ki je bil tudi zaradi takega značaja tako uspešen v življenju.

S tem prispevkom v Strojniškem vestniku, vodilnem strokovnem časopisu slovenskih strojnikov, se v svojem imenu in imenu sodelavcev iz družbe Plama-pur zahvaljujem g. Schusterju za dolgoletno sodelovanje. Ob njegovi 80-letnici, ki jo je praznoval 12. 10., pa mu želim še na mnoga zdrava leta.

Dr. Ciril Kastelic

Schuster. They were the first ones to develop a specific horizontal method of foam cutting which served as the basis for the construction of horizontal circular saws, which were developed in co-operation with Otto-Bock, Duderstadt; this company began to produce foam blocks with a length of 120 m to be used for this cutting method, and they were cut into thin foils in the form of rolls. This cutting method was the basis for the later development of a backing procedure, in which a textile backing was applied to the foam foil. Such coupled materials are nowadays used for the production of automobile seat covers. Nowadays almost the entire industry of seat cover production is based on this type of laminated materials.

This company also developed CNC-controlled automatic copying machines for the cutting of very complicated parts made of foam materials; these machines can cut in the horizontal or vertical direction. In addition, a series of other machines has been developed for the cutting and processing of foam materials. With 350 employees, this company is now one of the leaders in this branch of industry, with plants in the US and Japan.

Mr. Schuster has co-operated with Plama or Plama-pur for over three decades. Other manufacturers of polyurethane foams in the former Yugoslavia also purchased their machines mainly from A. Bäumer. In addition to polyurethane production, analogue machines are also used by mineral wool and rubber manufacturers.

In his company, Mr. Schuster introduced an infrequently seen rule of intervention that says that in the case of an accident in a client's company (usually a fire, because polyurethane foams are a great fire hazard), they will give the affected company a machine which has just been produced for another customer. This was done for Plama in 1970, when after a catastrophic fire Bäumer promptly supplied Plama with a horizontal saw from their production line which had been intended for another customer. This was a gesture that cannot be forgotten even after 30 years and which in addition to the business connection also contributes to the interpersonal connections between the companies.

A few months ago Mr. Schuster bade farewell to his co-workers and friends around the world in a very special manner. He organised a farewell boat trip on the Rhine for the entire company and invited guests (approx. 400 people). This final official gathering only serves to confirm the generosity of this pioneer in polyurethane foam processing, who as a result of this generosity also led such a successful life.

With this article in the Journal of Mechanical Engineering, the leading professional journal for Slovene mechanical engineers, in my own name and in the name of my colleagues at Plama-pur I hereby thank Mr. Schuster for his many years of co-operation. And on the occasion of his 80th birthday, which he celebrated on 12 October, I wish him many happy returns.

Dr. Ciril Kastelic