

Cool Solution for Hot-plate Production



The reliability and throughput on a hot-plate production line at Slovenia's leading high-tech foundry has been improved with the installation of 36 axes of servo control – six four-axis SCARA robots and four three-axis bending machines – provided by Control Techniques' local drive centre, PS Logatec.

The bending and welding production line at ETA Cerklno was suffering with reliability problems and unacceptable levels of downtime. Breakdowns meant that bending or welding had to be carried out manually, a costly exercise and taking labour away from other areas of production. Availability of spare parts was a further issue, yet the prospect of replacing the six machines with new ones was prohibitively expensive.

"The mechanical side of the machines was fundamentally good, with some minor replacements," says Marko Vrabl, Manager of PS Logatec, "and so ETA brought us in to upgrade the electrical control system."

In four of the six production cells, there is a three-dimensional wire bending machine and a four-dimensional SCARA robot for assembling and welding the wire contact onto the heating plate. Two other cells have just a SCARA robot. Before the retrofit, the program was written in a low-level programming language and was loaded from a PC that was wheeled between cells as required.

Now, the system is much easier to program and to use. Each cell has its own control cabinet complete with seven Unidrive SP AC drives, working in servo mode (two cells have just four Unidrive SP servo-drives) and complete with a position controller and touch-screen terminal. To program a bending machine is now a simple matter of programming in a set of parameters. The robot is programmed using a teach-in feature.

Each motor was also replaced, the majority with UM servo Unimotors from Control Techniques Dynamics. Programming is very much easier and is consistent throughout.

All of the panels were designed and built at PS Logatec in Kalce in Slovenia and PS Logatec was responsible for the installation, programming and commissioning of each cell controller.

Each cell has a high-level of security and safety, with power immediately turned off if the door is opened. One feature that has proved very popular with ETA is the 'teach-in' mode on the Unidrive SP drives. An operator is able to safely go into a cell, with the mains power turned off and, using just a 48 volt power supply, drive through all of the robot axes using a hand-held control unit rehearsing the movements and actions that are needed – grasp, weld, release, etc. Then, when the operator is out of the cell and the door is secured, the full power can be restored and the robot is ready to go!

Unidrive SP is the world's most advanced 'solutions platform' AC drive, configurable into five operating modes – open and closed loop, vector, servo and regenerating modes - connectivity to most industry standard networks, configurable for all types of AC motors, including linear motors, and accepting 14 position feedback protocols.

ETA Cerklno has a close working relationship with PS Logatec using Control Techniques drives, particularly servo-drives. The company is a medium-sized foundry with an annual capacity of 12,000 tones and is the most advanced in Slovenia. The products are grey iron castings up to 800x800-mm in size and up to 30kg in weight. This production line produces classic iron heating plates.

KEY BENEFITS

- IMPROVED RELIABILITY
- INCREASED THROUGHPUT
- SIMPLIFIED PROGRAMMING
- HIGH LEVEL SECURITY & SAFETY



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AUSTRIA Linz Drive Centre T: +43 7229 789480 controltechniques.at@emerson.com	GERMANY Bonn Drive Centre T: +49 2242 8770 controltechniques.de@emerson.com Chemnitz Drive Centre T: +49 3722 52030 controltechniques.de@emerson.com Darmstadt Drive Centre T: +49 6251 17700 controltechniques.de@emerson.com	ITALY Milan Drive Centre T: +39 02575 751 controltechniques.it@emerson.com Reggio Emilia Application Centre T: +39 02575 751 controltechniques.it@emerson.com Vicenza Drive Centre T: +39 0444 933400 controltechniques.it@emerson.com	SPAIN Barcelona Drive Centre T: +34 93 680 1661 controltechniques.es@emerson.com Bilbao Application Centre T: +34 94 620 3646 controltechniques.es@emerson.com Valencia Drive Centre T: +34 96 154 2900 controltechniques.es@emerson.com	UNITED KINGDOM Telford Drive Centre T: +44 1952 213700 controltechniques.uk@emerson.com
BELGIUM Brussels Drive Centre T: +32 1574 0700 controltechniques.be@emerson.com	GREECE* Athens Application Centre T: +0030 210 57 86086/088 controltechniques.gr@emerson.com	KOREA Seoul Application Centre T: +82 2 3483 1605 controltechniques.kr@emerson.com	SWEDEN* Stockholm Application Centre T: +468 554 241 00 controltechniques.se@emerson.com	USA California Drive Centre T: +1 562 943 0300 controltechniques.us@emerson.com Charlotte Application Centre T: +1 704 393 3366 controltechniques.us@emerson.com Chicago Application Centre T: +1 630 752 9090 controltechniques.us@emerson.com Cleveland Drive Centre T: +1 440 717 0123 controltechniques.us@emerson.com Florida Drive Centre T: +1 239 693 7200 controltechniques.us@emerson.com Latin America Sales Office T: +1 305 818 8897 controltechniques.us@emerson.com Minneapolis US Headquarters T: +1 952 995 8000 controltechniques.us@emerson.com Oregon Drive Centre T: +1 503 266 2094 controltechniques.us@emerson.com Providence Drive Centre T: +1 401 541 7277 controltechniques.us@emerson.com
BRAZIL Emerson do Brazil Ltda T: +5511 3618 6569 controltechniques.br@emerson.com	HOLLAND Rotterdam Drive Centre T: +31 184 420555 controltechniques.nl@emerson.com	MALAYSIA Kuala Lumpur Drive Centre T: +603 5634 9776 controltechniques.my@emerson.com	SWITZERLAND Lausanne Application Centre T: +41 21 637 7070 controltechniques.ch@emerson.com Zurich Drive Centre T: +41 56 201 4242 controltechniques.ch@emerson.com	
CANADA Toronto Drive Centre T: +1 905 201 4699 controltechniques.ca@emerson.com Calgary Drive Centre T: +1 403 253 8738 controltechniques.ca@emerson.com	HONG KONG Hong Kong Application Centre T: +852 2979 5271 controltechniques.hk@emerson.com	REPUBLIC OF SOUTH AFRICA Johannesburg Drive Centre T: +27 11 462 1740 controltechniques.za@emerson.com Cape Town Application Centre T: +27 21 556 0245 controltechniques.za@emerson.com	TAIWAN Taipei Application Centre T: +886 22325 9555 controltechniques.tw@emerson.com	
CHINA Shanghai Drive Centre T: +86 21 5426 0668 controltechniques.ch@emerson.com Beijing Application Centre T: +86 10 856 31122 ext 820 controltechniques.ch@emerson.com	INDIA Chennai Drive Centre T: +91 44 2496 1123/ 2496 1130/2496 1083 controltechniques.in@emerson.com Pune Application Centre T: +91 20 2612 7956/2612 8415 controltechniques.in@emerson.com Kolkata Application Centre T: +91 33 2357 5302/2357 5306 controltechniques.in@emerson.com New Delhi Application Centre T: +91 11 2 576 4782/2 581 3166 controltechniques.in@emerson.com	RUSSIA Moscow Application Centre T: +7 495 981 9811 controltechniques.ru@emerson.com	THAILAND Bangkok Drive Centre T: +66 2962 2092 99 controltechniques.th@emerson.com	
CZECH REPUBLIC Brno Drive Centre T: +420 541 192111 controltechniques.cz@emerson.com	DENMARK Copenhagen Drive Centre T: +45 4369 6100 controltechniques.dk@emerson.com	SINGAPORE Singapore Drive Centre T: +65 6468 8979 controltechniques.sg@emerson.com	TURKEY Istanbul Drive Centre T: +90 216 4182420 controltechniques.tr@emerson.com	

Control Techniques Distributors

ARGENTINA Euro Techniques SA T: +54 11 4331 7820 eurotech@eurotechsa.com.ar	CROATIA Zigg-Pro d.o.o T: +385 1 3463 000 zigg-pro@zg.htnet.hr	INDONESIA Pt Apikon Indonesia T: +65 6468 8979 info.my@controltechniques.com	LEBANON Black Box Automation & Control T: +961 1 443773 info@blackboxcontrol.com	NEW ZEALAND Advanced Motor Control. Ph. T: +64 (0) 274 363 067 info.au@controltechniques.com	SERBIA & MONTENEGRO Master Inzenjering d.o.o T: +381 24 551 605 master@eunet.yu
BAHRAIN Ifitikhar Electrical Est. T: +973 271 1116 ieepower@batelco.com.bh	CYPRUS Acme Industrial Electronic Services Ltd T: +3572 5 332181 acme@cytanet.com.cy	ISRAEL Dor Drives Systems Ltd T: +972 3900 7595 info@dor1.co.il	LITHUANIA Elinta UAB T: +370 37 351 987 sigitas@elinta.lt	PHILIPPINES Control Techniques Singapore Ltd T: +65 6468 8979 info.my@controltechniques.com	SLOVENIA PS Logatec T: +386 1 750 8510 ps-log@ps-log.si
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CENTRAL AMERICA Mercado Industrial Inc. T: +1 305 854 9515 rsaybe@mercadoindustrialinc.com	FINLAND SKS Control T: +358 207 6461 control@sksf.fi	KUWAIT Saleh Jamal & Company WLL T: +965 483 2358 sjceng@almullagroup.com	MEXICO MELCSA T: +52 55 5561 1312 melcsamx@iserve.net.mx SERVITECK, S.A de C.V T: +52 55 5398 9591 servitek@data.net.mx	PORTUGAL Harker Sumner S.A T: +351 22 947 8090 drives.automation@harker.pt	URUGUAY SECOIN S.A. T: +5982 2093815 secoin@secoin.com.uy
CHILE Ingeniería Y Desarrollo Tecnológico S.A T: +56 2741 9624 idt@idt.cl	HUNGARY Control-VH Kft T: +361 431 1160 info@controlvh.hu	LATVIA EMT T: +371 760 2026 janis@emt.lv	MOROCCO Leroy Somer Maroc T: +212 22 354948 lsmaroc@wanadoo.pro.ma	PUERTO RICO Powermotion T: +1 787 843 3648 dennis@powermotionpr.com	VENEZUELA Digimex Sistemas C.A. T: +58 243 551 1634
COLOMBIA Sistronic LTDA T: +57 2 555 60 00 sistronic@telesat.com.co	ICELAND Samey ehf T: +354 510 5200 samey@samey.is			SAUDI ARABIA A. Abunayyan Electric Corp. T: +9661 477 9111 aec-salesmarketing@abunayyanguroup.com	VIETNAM N.Duc Thinh T: +84 8 9490633 infotech@nducthinh.com.vn