THE SOCIETY OF AMERICAN MILITARY ENGINEERS: KAISERSLAUTERN POST

The Flyer

April 2002 Edition (10th Issue)

The Monthly Mentor

By Capt. Chris Knutson.

Separate Licensing for Structural Engineers Moves Ahead

Experts maintain that it is not enough to know civil engineering to design structures. This is why representatives of the American Society of Civil Engineers Structural Engineering Institute, the American Council of Engineering Companies, the Council of American Structural Engineers and the National Council of Structural Engineering Associations recently voted overwhelmingly to jointly pursue separate licensing for structural engineers.

The group also voted to continue ongoing work on a certification program for structural engineers as a step towards separate licensing.

Structural engineers seek to strike out from the pack for a number of reasons in addition to recognition for a specific expertise. A separate license recognized by all licensing boards would make comity and testing and qualification requirements more uniform. This would have an added benefit of increasing mobility and compensation.

Leaders of the three organizations must now seek champions of the program in each of the 55 licensing jurisdictions and to involve the National Council of Examiners for Engineering and Surveying, whose members are the state licensing boards. These actions, while not impossible, will take considerable time and require unanimous buy-in from all players.

Upcoming Meetings and Events

APRIL SAME EVENT

24th April 2002

Will be a guided tour of the Kaiserslautern OPEL Factory. During the two-hour tour, we will be shown the Opel press shop and production areas, where approximately 3000 workers are employed. The tour passes through the engine and components plants for the Opel Powertrain. This light alloy engine plant is one of the most modern production sites in Europe.

The tour is scheduled for 24 April **(Wednesday)** beginning at the factory at 09:30. Transportation to the plant will be POV. Lunch will be available at the factory after the tour.

The tour is limited to 30 spots with priority being given to SAME members.

If you would like to attend email: (chad.bondurant@ramstein.af.mil) RSVP latest by Friday, 19 April.

MAY SAME EVENT

Verdun Trip
Program to be Announced

Meetings are normally held the 4th Thursday of every month at the Officer's club on Ramstein. If you need access to the base, please contact

Mr. Franz Pfaffenrath
(06371) 476-233
franz.pfaffenrath@ramstein.af.mil

Ramstein's 50th

Here are two engineering related pictures from the *50 Years of Friendship and Freedom WEB page…*

www.ramstein.af.mil/50anniversary

Keeping tabs on all maintenance and construction projects at Ramstein and Air Force sites throughout Western Germany is Civil Engineering's work control center. The center receives more then 200 orders a day for all phases of maintenance work-from repairing light switches to replacing doors. The charts in the background show what is being done and where.

26 Jun 64

The 7002nd Civil Engineering Flight is trying to complete the shopping center (current Base Exchange) mall by early October.

6 Sep 74

Post Web Site: For the most up-to-date information on the Kaiserslautern Post, visit the post web site at **www.same.org/germany**

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Sustaining Members

Include an article about your company in the monthly Flyer. Send your write-up with logo and/or photos to the editor.

Project Snippets

Ramstein Air Base Utility Infrastructure Plan

URS was the prime contractor for the preparation of the *Ramstein Air Base Utilities Infrastructure Study*. The project team evaluated the utility impacts of the construction or renovation of 100 new facilities on the base's electrical, water, wastewater, stormwater, district heating, and natural gas systems. To evaluate the utility impacts project planners evaluated the existing utility systems, made projections regarding the future utility use of each new facility, and made recommendations about the cost, timing, and sizing of utility infrastructure projects needed to accommodate the new development. Evaluation of existing facilities involved extensive field investigations and testing of the respective utility systems. Projection of future demand involved computer modeling.

To successfully complete the project, the project team worked with representatives from AFCEE, Ramstein Air Base, on-base and off-base utility providers, base CADD and GIS personnel, the Army Corps of Engineers, contractors responsible for individual facility construction, local German building authorities, and several sub-contractors. The types of facilities anticipated for utility services encompassed aircraft hangars, a fire station, a passenger terminal, an air freight terminal, runway realignments and expansions, and numerous operations facilities.

Why not include an article on a successful engineering or related project that your organization has conducted for the US Air Force or the DoD. See advertisement on next page for details.

OPEL POWERTRAIN'S RENOVATED KAISERSLAUTERN PLANT STARTS MASS PRODUCTION OF ALUMINIUM ENGINES

Since April 2001, Opel Powertrain GmbH in Kaiserslautern has been producing aluminium engines from a renovated factory equipped with the latest in manufacturing and automation technology. Included in this, for instance, is a "lost foam" casting technique for the cylinder block and cylinder head, external milling of the crankshaft stroke journals, "laser cracking" of the connecting rods, and completely automated engine assembly and testing. Opel says the new automated techniques allow it to produce 2,000 engines per day or 460,000 engines per year.

Collision Protection

For production of the cylinder heads, there are four special machines, each with up to 20 stations. Workpieces proceed through various assembly and testing cycles in a production sequence that lasts only 23.5 seconds. These sequences are controlled by PowerMate H intelligent servo motor regulators.

Operating at such high speeds, malfunctions can cause engine parts to jam or to block the sequence. In previous systems completely mechanical couplings were used for safety but these have a major disadvantage in that, with a blockage, it is necessary to carry out a manual reset and the drive must be referenced again. Often, two additional encoders must be used for monitoring the actual position of the drive unit. GE Fanuc has developed the collision protection function especially for this type of malfunction, based on the PowerMate H.

The PowerMate H monitors the actual speed of revolution of the servo motor being controlled. In the event of a time-critical, sudden rise of the revolution torque (such as blocking of the cycling rod), the drive is stopped without losing its absolute position. After the blockage has been cleared, the machine or cycle rod starts up immediately. Manual new alignment or referencing is no longer necessary.

Spindle Synchronisation

There are 12 transfer lines for cylinder block machining at Opel's Kaiserslautern plant - a process of milling and boring. A special feature of the transfer lines is Ex-Cell-0's patented process for machining crankshaft bearing bores. In this "line boring" machine, three spindles run with their positions synchronised. In the course of production, the positions of the spindles are changed with reference to each other.

A GE Fanuc Series 16i-M CNC is used to achieve this synchronising functionality. The machine possesses three drive systems which rotate in positional synchronisation during operation. Should a fine adjustment of the tools be required, then the position of a drive is changed, and the two others adjust accordingly.

Laser Cracking

The connecting rods are machined in a transfer line supplied by Mauser. Besides boring and milling, the piece is also produced by laser cracking. In this, a laser is used to make two notches. At this nominal break position, the connecting rod is cut in two and then threaded again. A dual-channel GE Fanuc CNC series 160-MC is used to control up to nine axes of this operation.

The material transport system carries the workpieces between the individual machine tools at a speed of up to 130m/min. The drive and control technology of this system is characterised by a high degree of positioning accuracy at high speed and acceleration cycles.

In total, there are 469 GE Fanuc CNC controls, 147 programmable controllers, 316 operating terminals, as well as the CIMPLICITY PMC (Production Management Control) system in use.

Control Engineering Europe October 2001

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ENGINEERING SUCCESS STORIES

Why not include an article on a successful engineering or related project that your organization has conducted for the US Air Force or the DoD.

The article need not be very long, approximately 200-500 words maximum. If possible include a couple of images/pictures that might enhance to article.

U N D E R C O N S T R U C T I O N

If you have an article you would like to include, please contact Mike Adam at (0631) 340-1457 or email text and/or images to Mike_Adam@urscorp.com

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