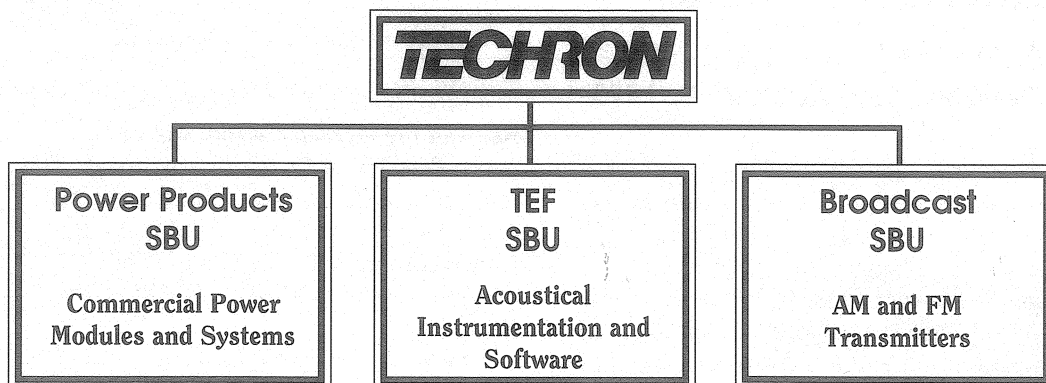


The Techron SBUs

by Ben Dorsey

For July-Oct.
we focus on:

**Engineering
Part 2**
Fabcom and
Techron Divisions



*So I saw that there is
nothing better for a man
than to enjoy his work,
because that is his lot. For
who can bring him to see
what will happen after him?
- Ecclesiastes 3:22*

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We focus much of our attention in this issue on Techron engineering personnel. These folks are not located in one central location or department however. Techron has taken on an organizational structure which will help meet the needs of its varied product lines and customers. That organization places technical individuals in various departments.

The big picture is illustrated in the accompanying graphic. Techron Division Manager, **Don Eger**, has formed three strategic business units (SBUs) within the division. These SBUs are Power Products, TEF, and Broadcasting. Each has an associated SBU Manager.

The Power Products SBU is headed by **Larry Stevens**. The business of Power Products is providing clean, controlled

power based on a customer's input waveform. To do so, the SBU provides single amplifiers and power module systems for numerous applications worldwide.

The TEF SBU Manager is **Dave Menges**. TEF Products consists of acoustical instrumentation and software which are used in the installed and performance sound, architecture, automotive, industrial, and research markets, nationally and internationally.

The Broadcast SBU is Techron's newest unit, and its leader is **Don Spragg**. This SBU manufactures AM and FM transmitters in association with strategic partners such as HCJB World Radio.

As articles in this issue illustrate, each SBU requires the technical competence of engineering personnel.



Training 2000 Grant Status

Jennifer Juroff, Crown Int'l grant coordinator, announced that two checks totaling \$61,198.14 were received in August from the Indiana Department of Commerce. The grant will reimburse Crown Int'l for up to \$303,000 spent to train employees in particular skills and programs. Claims amounting to \$104,000 are being processed toward the balance of \$208,000 which remains to be claimed by December 22, 1993.

Tom Brown, Human Resources Manager/Internal Training Consultant, wrote the grant application which became effective as of December 22, 1991.



Word from the President

Assembly Announcement Wednesday, August 18, 1993

Change is a part of business. When asked, "What do we make at Crown?" **Glenn Ryman** (our first Vice-President of Manufacturing) responded, "Changes!" Our aggressive response to change has allowed us to maintain our position in the marketplace for 40 years.

My commitment is to keep our corporation on the leading edge of paradigm shifts, whether that shift is technology oriented or market oriented.

Today, we have another opportunity to change. Since the fall of the Berlin wall and the iron curtain, we are seeing a paradigm shift from a national focus for professional audio marketing to an increasing international focus. For example:

- U.S. dealers are selling and installing products in Korea, Saudi Arabia & Russia.
- Consultants from England are determining the sound specifications for New York theaters.
- Third world people are traveling to major cities in other countries to buy high-tech equipment to take back to their countries because that level of dealer sophistication and product variety is not available in their countries.
- U.S. magazines are now read throughout the world as the pacesetters against which local designs and activities occur, just as the English language has become the basis for most business activities.

As President, I have established the definition of a division as the largest group that can serve a uniquely defined market. With the paradigm shift, the reason for having two separate divisions, Crown and Amcron, is disappearing. Uniqueness between U.S. and global markets is rapidly diminishing, and by 1998 will probably not exist at all.

As I discussed this paradigm shift with **Bill Goheen** and **Gil Nichols**, Amcron and Crown Managers, **it became evident that to be in the lead we must merge the Crown and Amcron Divisions into one market-focused group.** By doing this we can take advantage of the new emerging global marketplace. We can increase our impact and reduce our costs. We can maximize our strengths and improve our efficiency.

As a result of several months of work, I am now ready to announce the following changes:

- First, there will be only one division. **The name of the merged division will be the Audio Division of Crown International.** This will eliminate the confusion that currently exists between the Crown division and the Crown corporation. The names of our divisions now are: AUDIO, TECHRON and FABCOM.

- Second, our professional audio products are known worldwide as "Crown" even when they are labeled "Amcron". Therefore, **all products will now move toward using the common name "Crown."** We will phase out "Amcron" as a product name.

- Third, **Gil will be Director of Sales & Marketing for the Audio Division and Bill will be Director of Engineering & Manufacturing.**

- Fourth, **reporting relationship changes, which are all horizontal moves, will be effective today.** Implementation of all paperwork, procedures, etc. should be completed by August 30, so that as we move into Corporate Planning for 1994 we can take full advantage of the new structure.

I am calling for a new commitment on the part of this group to teamwork. We want to put competition behind us because it will only divide and reduce our effectiveness.

Bill and Gil now form a unique team leadership for the Audio Division. I believe God has prepared them well, with very unique strengths in the areas where they will lead this new divisional focus. Let's pray for them, encourage them and give them our full support as they move to ride the crest of the wave that will keep the Audio Division on the leading edge for the future.

(Clyde then closed by presenting the directors and the managers reporting to them.)

Clyde W. Moore

Your Parts, Your Way, Right Away

by Libby Marshall



Dan Lutz

"Your Parts, Your Way, Right Away...FABWAY," **Dan Lutz**, Fabcom Engineering Manager, said at the Fabcom luncheon meeting in February. "Fabway" was a slip of the tongue as he compared Subway's promise to make quality sandwiches to Fabcom's efforts at quality production. But Fabcom's purpose is clearly stated with the first part of that phrase. Fabcom's departments, Board Room, Fabcom Engineering, Fabrication, Modules, Paint Line, Transformers and Wire Prep supply Crown Int'l with etched circuit boards, amplifier chassis and heatsinks, painted metal parts, transformers, prepped wires and other components.

Dan began his career at Crown Int'l as Supervisor of the Fabrication Department. After he became Manager, Plant 2 was built and the Paint Line installed in the late 1970s. He managed the first manufacturing engineering group and expanded it until the engineers were assigned to specific divisions in the early '90s.

Fabcom was organized to bring together the diverse manufacturing operations in 1991. Dan accepted the position of Fabcom Engineering Manager to form a bridge between the variety of technologies of Fabcom and the divisions.

The challenges are many. The main function of Fabcom Engineering is to support the Fabcom Division. The group also evaluates the designs of production prototypes. The feedback they give to the divisions' design engineering groups helps improve manufacturability and quality. This preparation for production is an important time and money saver.

Dan Lutz likes to be outdoors and especially likes to climb in the Colorado mountains. At home he does woodworking and at church, serves on the board and teaches a class of 45 people, among other things.

A recent example was the redesign of the D-75 brought about by the obsolescence of one component. **Tom Szerencse**, **Richard Putz** and **Craig Hunter** developed changes which allow auto insertion of components. This simplifies testing procedures and reduces assembly time from 58 to 12 minutes per unit and labor costs by 20%.

Capital investment and safety are two other concerns of Fabcom Engineering. Since Fabcom is the most capital intensive department of the company because of the machinery, Dan endeavors to make it "...the best possible steward of funds."

They must constantly address safety and environmental issues. For example, **Craig** and **Wayne** have researched and made recommendations for replacing the chlorofluorocarbons (CFCs) in the vapor degreaser operation in the Modules Department.

The Fabcom Engineering Team consists of the following people:

- **Wayne Blakesley** was a design engineer for tape recorders and automation systems when first hired in 1959. He began his retirement by going on a part-time basis in June of 1990. He focuses on process control in the Board Room and Fab, and keeps UL listing up-to-date for Board Room, Modules and Transformers.

- **Craig Hunter** is responsible for implementing PCB module assembly. Craig's goals are process and quality improvements to the printed circuit boards (PCBs), which are designed by customers in other engineering departments. He recommends new technologies, process changes, and equipment purchases. Craig also trains employees in Board Room procedures. Fabcom Engineering has helped lead a focus group on wave solder techniques, periodically evaluates quality improvements and updates training.

- **Tom Pettifor** is the test engineer assigned to Fabcom. He programs the Zehntel automated test equipment (ATE), and procures tooling and other test fixtures. Depending on complexity, most PCBs are tested before shipping. Tom develops systems for data collection on Module quality.

Continued page 12

A Chat with Techron Power Products Engineering Manager, Ron Reynolds

by Ben Dorsey

Power Products Engineering represents the largest engineering sector in the Techron division. Heading up this department of engineers, technicians, and support personnel is Ronald R. Reynolds.

Though he carries three R's in his name, his management style is one of three T's:

- teamwork
- timing
- technical competence

Ron, who joined Techron at the end of 1991, has an impressive background in engineering and management (BSEE, MSEE, MBA studies and years of top-level engineering management experience). Still, he hesitates to talk about himself. In fact, he even hesitated talking about his department. Ron's concern is that focus on any one department could have a negative impact on his call for teamwork. You see, when Ron talks teamwork, he doesn't mean just his department.

"I am trying to emphasize a team, concurrent-development type atmosphere, involving not only engineering but manufacturing, purchasing, and other corporate services."

That call for teamwork has been demonstrated in the on-going development of a new gradient subsystem for the medical imaging industry. Teamwork was also emphasized at the recent celebration marking a milestone in the project development. (See related article, *A Timely Recognition*.) Ron made sure that representatives from all involved functional groups were present at that celebration.

Timing, another "T" in Ron's management style, was a big factor in that luncheon celebration as well. The recognition was given to the involved people one day after the system was shipped to the customer. According to Ron, "Timeliness has a major role in celebrating, rewarding, and acknowledging the efforts of employees."

The third "T" comes into play as Ron discusses the challenges of engineering. "I think there are two types of challenges in engineering," he says. "First, the technical challenges of taking creative ideas and bringing them together by turning them into products. Then there are the challenges of

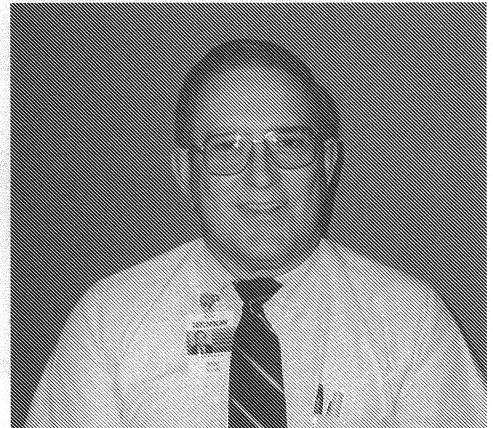
supervision and management which deal with the development of personnel and removing any roadblocks that would keep them from doing their job."

Ron attempts to meet those challenges by first selecting the right people. What does he look for in his technical staff? A strong technical background is number one on his list, followed closely by an attitude of creativity and wanting to be part of a team. Finally, Ron wants his people to want to stay current in their fields. That's where some of the management challenges come into play as he attempts to keep his people up-to-date on trends, technology, and training.

The preparation Ron and his department have made will surely be required. Together they face a challenge which is relatively new to Techron. "Power Products Engineering is in the throes of a major change in focus in the product line—moving from single amplifier development to systems development. In the industrial market, we're seeing the need for more systems sales over single amplifier sales. So, we're looking at how to provide customers with systems for their applications. And how to do so for a diverse number of applications at a cost-effective price."

"To go along with that change of focus," Ron continues, "is the modularity that products require to meet customer needs on a cost-effective basis. We're trying to do that on the new gradient subsystem and on the relay simulator project, and we'll do it on future projects so that we can offer many systems without big changes in the modules."

It sounds as if Ron has his group headed in the right direction. He is on track personally as well. Ron lives happily with his wife, Joyce (a 32-year marriage). They have two grown children: a son who is an electrical engineer in Texas and a daughter who is a chemical engineer in West Virginia. Sadly, for Ron, there are no engineering grandchildren (or any other grandchildren) as yet!



Ron Reynolds

Profile of a Team

by Ben Dorsey

Just to give you an idea of the teamwork required to produce a new product, here's a look at all those in Techron Power Product Engineering (PPE) who are involved in the development of a new gradient subsystem.



Front: **Ken Andrysiak** and **Jim Cauley**; Back: **Jeff Carlson**, **Gerald Stanley**, **Robert Smith** and **George Hernandez**.

(Remember, this is only part of the overall product development team.)

Ross Brady is the engineering program manager for this new gradient subsystem and supervises all mechanical development in PPE.

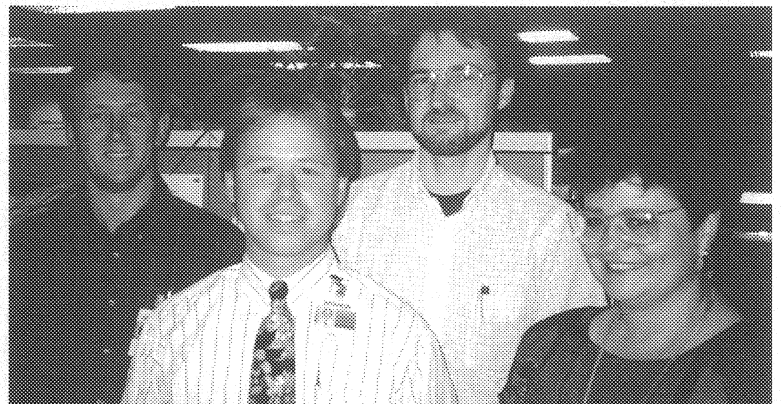
Martin King is a mechanical design engineer. **Rod Growcock** is a computer-aided engineering expert and senior mechanical designer. **Bob Bartels** is the lead mechanical designer in the CAD area. **Pete Lehman** is a mechanical designer in CAD. **Scott Edelman** is a mechanical detailer in the CAD area. **Kenny Hunsberger** is a technician in the prototype shop who handles mechanical parts and assemblies. **Ken Andrysiak** is an electrical/mechanical technician in the lab who handles parts procurement and board building and testing.

Don Boughton enjoys windsurfing, boating and other watersports, backpacking, bicycling, exploring lighthouses, body surfing and beach bumming, writing poetry, going out for breakfast with friends, fishing, ice skating, visiting old friends, raking leaves, cutting firewood, reading by the fire and gourmet coffee. Don is an Electrical Engineer for the Techron Division.

Russell Jones heads the electrical development function of PPE and supervises the electrical engineers and PC board designers. **Don Boughton**, **Jeff Carlson**, **Kheemoy Chung**, and **Dave Evans** are electrical engineers involved in various aspects of the new gradient subsystem development. **Tom Sneddon** is a senior electrical design associate. **Chuck Buerke** and **Juli Mills** are PC board designers working on the CAD system. **John Harris** and **Bob Smith** are electrical technicians working in the lab.

Other Power Products Engineering personnel indirectly support this project and manage to keep other engineering projects moving along.

Milan Shah is a mechanical engineer involved in sustaining current products and interacting with manufacturing. **Steve Reives** is the sustaining engineer for the electrical side of things and also interacts with manufacturing to solve problems on current products. **Bruce Hall** is an electrical engineer on new developments such as the line voltage generator, the relay simulator, and other products. **Ken Blinco** is a relatively new addition to the company and a mechanical detailer on the CAD system. **Jim Cauley** is a recent transfer from Service and an electrical/mechanical technician. **George Hernandez**, also an electrical/mechanical technician, recently transferred from Techron manufacturing. **Susan Whitfield** is the new Safety and Regulatory engineer who was recently promoted from electrical technician. **Kim Laffoon** is the configuration control specialist for the department's many documentation needs. **Kathleen Stout** is the documentation clerk who handles engineering change notices and coordinates drawing releases.



(L to R) **John Harris**, **Don Boughton** and **Bruce Hall** with **Vera Leinbach**, Techron Engineering Secretary.

Engineering Support Par Excellence

by Libby Marshall

From a monthly average of 44 change notices to 4,766 bill of material (BOM) file transactions, **Jan Smith's** numbers are impressive. As BOM Administrator, she deals with details that would try anyone's patience. The fact that the BOM accuracy averages 99.7% for 1993 shows the success of her department.

Simply stated, a BOM is a list of part numbers which go into a product. Engineers turn in a list of parts for each new model. Jan and her assistant, **Patti Harris**, issue part numbers according to a defined code, and then produce a BOM which drives the MRP system and tells the Purchasing Department and Fabcom Division what to buy and make.

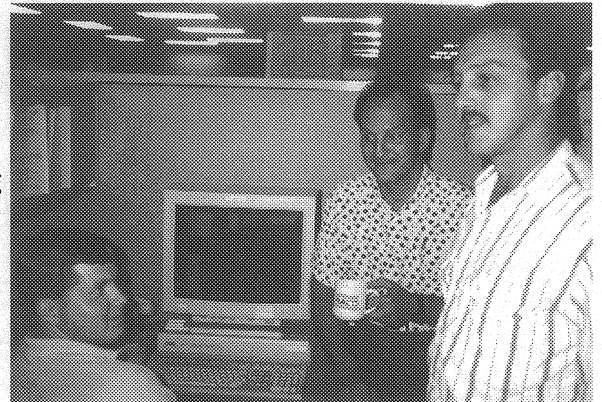
But engineers make changes, and changes effect CAD drawings, blueprints and what is communicated to production areas, as well as what the BOMs contain. This department has it all covered. The Engineer's Packet, a loose-leaf binder, and an Implementation Update, a green sheet from the Drawing Number Task Force, keep key individuals current on procedures, forms to use and who needs to be informed of changes. The BOM Department regularly deletes, adds to, revises and distributes this information to those who need it.

The BOM Department continually checks for parts no longer used, and periodically purges the system of obsolete parts. This is crucial to reducing inventory costs. The dollar value of obsolete parts since 1990 is \$498,490.

Drawings and blueprints require the full time efforts of **Rox Ann Rombke** to control, maintain, distribute, microfilm and archive. The current monthly average of new CAD drawings is 192. These are all microfilmed. The monthly average of new blueprints is currently 2,128 for 1993.

Techron configuration control and preliminary drawings, prints and BOMs are handled by **Kim Laffoon** and **Kathleen Stout**. However, all BOMs and archiving are the responsibility of the Corporate BOM Department.

A final startling statistic underscores the support this department gives to engineering. A total of 9,926 new part numbers have been issued since January of 1991.



Scott Edelman, Russ Jones and Pete Lehman discuss a CAD drawing.

A Timely Recognition

by Ben Dorsey

Approximately 50 Crown International employees gathered at the Matterhorn Restaurant at lunch on August 6 for a timely recognition of their efforts. The event was a celebration of the on-schedule delivery of a new gradient subsystem to General Electric Medical Systems (GEMS). Company President, **Clyde Moore**; Techron Division Manager, **Don Eger**; and Power Products SBU Manager, **Larry Stevens**, congratulated this interdepartmental and inter-divisional group of individuals who managed to pull off this success. In attendance were representatives from Techron Engineering, Techron Manufacturing, other Techron Power Products SBU personnel, Corporate Engineering, Corporate Services, Fabcom, and Purchasing.

The gradient subsystem shipped, as promised, on Thursday, August 5. Though the project is still far from completion, the delivery of this system was a significant milestone. Much of the Techron Power Products Engineering department has been involved in the project for nearly a year and a half—meeting the challenge of evolving customer requirements.

Such a feat would be impossible for any department in isolation, however. Clyde commented to this effect by stating that as he saw the system come together, he gained an appreciation for the teamwork required. That teamwork was evident at the lunch celebration—a timely recognition of meeting a significant divisional and corporate goal.

Scott Edelman, CAD Detailer for Techron, writes, "During the summer it's time for little league and softball. I am on the Board of Directors at Osceola Little League, currently in charge of the Pee-Wees. I also coach a team of 11 players, all of which are between the ages of 5 and 7 years old. Almost every day from April to June I can be found at the ball park. During the winter my time is filled with bowling on Wednesday and Thursdays. Both teams compete in local, state, and regional tournaments. I help teach kids in junior leagues (ages 5 to 12) on Saturdays.

The Broadcast SBU

by Libby Marshall

Just as some Crown employees leave to go into mission fields, some missionaries have



Clockwise from left: Jane Bontrager, Andy Jacobs, Don Pettifor, Keith Schoolman and Don Spragg.

joined Crown Int'l. **Don Spragg**, Manager of Techron's new Broadcast SBU, is one of these. In fact the SBU stems from many years of association with Christian broadcasting and missions.

Founder **Clarence Moore** dreamed of being involved in the broadcast industry

when International Radio was making tape recorders. He invented the unique cubical quad antenna for short wave radio transmission in the '40s. His yard full of antennae was a landmark. The Elkhart County Radio Association grew out of the Crown Radio Club Clarence established for employees. The 500 foot tower of WFRN, a club repeater site, was erected shortly after his death in 1979.

In 1990 at the National Association of Broadcasters (NAB) Show in Las Vegas, **Don Eger** and **Clyde Moore** talked with **David** and **John Solt** about manufacturing an AM transmitter the Solts designed and were selling through their company, Omnitronix. They had been missionary kids (MKs), and David was recently a missionary in Ecuador. Clyde and Don had the vision and historical perspective to grasp a market opportunity. The Solts had the design, and Techron had the manufacturing capability.

Techron manufactured the first AM radio transmitters for Omnitronix. While Omnitronix was selling these commercially, they discovered there are people in the market for 100W FM transmitters.

At the same time, HCJB World Radio, developed a 10W, self-contained "suitcase" FM

transmitter to be used for setting up radio stations around the world. Like the Solts, HCJB realized that it had the engineering capability but not the manufacturing strength to produce the FM transmitter. Techron's introduction into the broadcast marketplace was to manufacture both the Omnitronix AM transmitter, and the FM transmitter for HCJB.

About this time, Don Spragg returned from HCJB's Quito, Ecuador Headquarters where he was Director of Broadcast. He came in to talk to Don and Clyde about a position with the company. Since they were interested in starting a Broadcast area, they said, "We have these two products we are manufacturing. Why don't you come in, do some study and see if it is feasible to get into the Broadcast marketplace."

A year ago, Don came in for that purpose. As he worked on it he saw the possibilities. In January of 1993 Don Spragg took over the manufacturing area of broadcast products. They began to structure with the idea of expanding the product line.

As things got rolling, and as HCJB developed a 100 watt FM transmitter, they all realized that this had applications for other broadcasters in the industry as a whole. Techron and HCJB got together and drew up a document for a working relationship. HCJB designs the product, Techron does production engineering and manufactures it, and it will be sold as a Crown Broadcast product.

In less than three years a dream of almost forty years has developed into a functioning SBU within Techron, instead of a manufacturing service for others. The written plan was accepted and approved by the Executive Committee of the Crown Board of Directors, August 12. The Broadcast SBU will manufacture Omnitronix AM transmitters and build and market FM transmitters. Common values, goals and commitment to fill a niche in the marketplace are combined in this effort which promises success for Omnitronix, HCJB and Techron.

Broadcast Personnel

Jane Bontrager is the supervisor of the Broadcast Assembly Area which includes **Susan Walker** and line techs **Andy Jacobs** and **Cal Donner**, formerly of Trans World Radio.

One goal for personnel is that technicians **Don Pettifor** and **Keith Schoolman** become capable of working with engineers to solve problems and give field support. When a transmitter goes down, it has to be repaired immediately, as radio stations lose money with every minute down.

Phillip Sandahl, who also worked with HCJB in Ecuador, has been hired as the Marketing Manager.

Mike Haun enjoys golfing, bicycling and cross-country skiing. He recently went white water rafting in Maryland. He intends to go sky-diving this year, climb the Grand Teton Mountain next year and get a pilot's license within two years. Mike is a Mechanical Design Engineer for the Techron Broadcast SBU.

TEF engineering group meets the challenges

by Julie LaFollette

Ron Bennett is a calculating man, that is, his expertise in the world of mathematics is always readily available to be used in his work as well as his hobbies, which include restoring Victorian houses, building cars, cutting gemstones or intricate woodworking. So, it came as no surprise that in only a couple of minutes, he came up with a most extraordinary number regarding our software programming.

"All of the code we have written for the total of all software for the TEF analyzer, if printed out on 8 1/2 by 11 sheets, and placed one on top of another, would produce a stack about five or six feet tall," he said. He continued figuring, when asked how many lines of code that would be. He grabbed a ream of paper, figured 250 sheets per inch, figured each product would be a stack approximately six inches high, calculated that 60 inches (five feet) times 250 would yield about 15,000 sheets total. Looking at a printed sample of code lying on his desk and taking his calculator, he figured about sixty lines of code per page and came up with a staggering near one million lines of code that he and his team of programmers have written over the last four years!

Ron is Engineering Manager for the TEF Products SBU of Techron, which produces acoustic analysis instruments and accompanying software. TEF analyzers are used in such markets as sound contracting, performance and live sound, loudspeaker manufacturing, automotive component design and education and research.

TEF analyzers transmit and track a known signal (certain frequencies) into an environment or device under test, and "see" any changes that occur during transmission or as the sound fades away. The TEF sends the gathered measurement data to a personal computer for storage, further analysis and display in many and varied ways.

The "TEF" really consists of two related products—the hardware, (which is what we think of when we think of "TEF") and the software which works with a personal computer and the TEF to perform the calculations and display the data. Ron and his team, consisting of four full-time programmers and an electrical engineer plus two part-time consultants, pursue the challenge to make the hardware and software come together in one product.



Don Schwing, Dale Burnett and Ron Bennett

For example, Ron explained that the process of bringing the TEF 20 analyzer into completion really consisted of three processes, all occurring simultaneously: (1) designing the hardware, (2) designing and writing the digital signal processor (DSP) code to run on the hardware, and (3) writing the high level code which runs on the PC to control the hardware, store the data and process it into meaningful information.

DSP technology was a breakthrough for sound analysis design, and when electrical engineer **Dale Burnett** and DSP programmer **Keith Jebelian** successfully designed the DSP-based TEF 20 analyzer, the new portable TEF gained several significant advantages over other analyzer product designs. The DSP is a chip, like a microprocessor in an ordinary computer, except that it is dedicated to processing data and does not have to be interrupted to do other functions. DSP technology allows the TEF to collect and crunch vast amounts of data with great speed.

Most other analyzer products are designed as separate boards to be plugged into a card slot of a personal computer—a design problem because the location of the circuitry within the computer allows it to actually pick up computer noise which pollutes the measurements.

Another TEF design advantage is the built-in professional preamps which are software controlled and eliminate the need to carry extra gear. When compared to competitive products, the TEF is faster, lighter, smaller, more portable, and has the flexibility to work with various computers.

"We have total capacity," Ron explains about the strengths of our engineering functions. "We do all our own software writing as well as

Great Ideas

Selected by P.N. Ochio

On School Administration:

• *Notice to teachers: all teachers seem to have the wrong conception of the course of study about teaching the grades. I say to all teachers that "all grades are to be taught every year." Do not quibble about this with your patrons. It must be as I say.*

The Odd Grades as Major Grades and Even Grades as Minor Grades to be taught in the Even Years. And the Even grades as Major Grades and the Odd Grades as Minor Grades in the odd Years.

- Respectfully, T.J. Leathers, Supt. (from Kentucky notice to teachers, 1924)

hardware engineering. A lot depends on how well we succeed in communicating about our projects and working together. We exchange a lot of code among ourselves."

He described the flexibility among his work group in the development of software. For example, in developing the initial Sound Lab software, Ron and programmer **Don Schwing** shared in writing the high level code for most of the program except for the Noise Level Analysis (NLA) module which was written at a location good naturedly referred to as "Techron East," or **Farrel Becker's** office in Maryland. Farrel, who wrote the Real Time Analysis (RTA) program, finished and fine-tuned NLA.

Don wrote the Speaker Test software, which enables engineers to create tests for loudspeaker manufacturing, and Sound Lab Extras, a program which performs specific tests such as harmonic distortion and impedance. **Brian Flinn** was responsible for writing all of the Sound Lab code for the Macintosh computer.

Work on our second-generation of software (2.0) is being completed and adds mouse-driven capabilities to the programs along with many new capabilities and features. Developing 2.0 has called for the combined capabilities of Ron, Don, Farrel and Brian. Ron explained that "object-oriented" techniques are being used to streamline the common parts of our programs that had to be re-written for each new program. The team developed a base program that can compile, run, communicate with the TEF and load data files—all the functions in common within all our programs. Farrel wrote the object code for menus, and Don wrote the object code for file handling in the base program, while Brian leaps into the DOS world by bringing the NLA module of Sound Lab PC into the 2.0 level.


Ron explained that now, instead of removing unwanted portions from an already-developed program, with the base program

development can begin with what is common among our other programs, and complete a new program more quickly. The end result is a simpler way of assembling a new program, with a time-saving advantage.

"We have total capacity," Ron explains about the strengths of our engineering functions. "We do all our own software writing as well as hardware engineering."

Keith has added capabilities to the 2.0 version of the RTA program that will enhance its usability by our customers. It will feature much better frequency resolution, a differencing mode between two inputs and a long period "pink noise."

With the future right around the corner, the TEF group is preparing to lead the way. The development of Maximum Length Sequence (MLS) software produces impulse response measurements. Based on the work of **Paul Kovitz**, a part time consultant, Ron believes MLS provides the TEF group with a route to new areas of hardware and software sales. The academic world, he explained, is strongly aligned with impulse response measurement methods. "They will pay a lot of attention to it. We expect big things from it."

Dave Menges, TEF SBU Manager, adds a couple of thoughts about the TEF Products group. "One of the strengths of our group is its small size and the way the group works together to solve challenges. Every member of the group is able to have customer contact, and that allows them to perform their jobs in accordance with the customer's requirements. This link to the customer is the drive behind our customers' satisfaction with our products, and will continue to be our way of doing business as we develop into new instrumentation markets." 

"I love Apple computers," says **Don Keele**. He was instrumental in getting the first Macintosh Computers™ into Crown Int'l in 1987. (There are now 40 MACS and 130 PCs here.) The MACs are important to Don's career and business, DBK Associates. Don was former Manager of Software Development in Techron and now is TEF software consultant. He uses the TEF Analyzer for measurements and the Crown Macro Reference to test (and listen to) home loudspeakers as Senior Editor for *Audio Magazine*. His byline appears monthly on loudspeaker reviews.

Personnel on the Move

• **Christine Brooks** is the new Compensation Manager for Human Resources. Chris comes to Crown with extensive experience in the preparation of total compensation packages, including job evaluations, performance appraisals, bonus



programs and wage and salary administration. Chris' prior professional experience includes four years with United Technologies Automotive in Detroit, and over 17 years with Sheller-Globe Corporation of Toledo, Ohio, as Director of Compensation. Chris will receive a B.S. Degree in Business Administration from Heidelberg College, Tiffin, Ohio, this Fall. She is a member of Zonta International and the American Compensation Association.

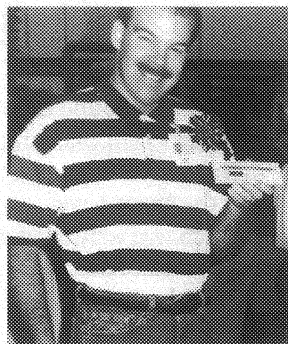
• **Dawn Carpenter** was hired as a Buyer in the Purchasing Department in July. She will purchase packaging, hardware, screws and literature. Dawn recently received an Associate's Degree in Marketing from Southwest Michigan College. She has worked with NIA and GM in Nappanee. Volleyball is her favorite sport!

• **Marcia Gall** is now Secretary to Audio Engineering. Her new office is located next to Mike Rockwell's in the Audio Engineering Department, Plant 1.

• **Patti Harris** assumed responsibilities in the Bill of Material/Document Control Department July 12. Patti formerly was part of the Techron manufacturing line.

• **Dallas Lehmann** became supervisor to the Board Room and Paint Line July 19. Dallas and his wife, Judy, come from Wheeling, West Virginia, where he managed multiple shift painting and chrome and tin electroplating

operations in a large steel company. In addition to more than 20 years of supervisory and technical experience, Dallas has worked in a VOP environment. He is eager to contribute to the Fabcom team.



***Vince Manchow** shows one of his birthday gifts from his staff, a pen. The other was pie in the face. He is a good sport!*

• **Vince Manchow** is Modules Supervisor as of April 26. Vince and his wife, Cheryl, live in Elkhart. Vince was Purchasing Agent for a Canadian RV manufacturer, ABI Leisure, before coming to Fabcom. His second home is Lake Michigan, where he frequently spends weekends as First Mate for his brother-in-law who pilots a charter salmon fishing boat. Vince does the navigating and helps the fishermen catch big salmon. He also enjoys his morning runs and an occasional 10K race, such as the Welch's Grape Stomp in August.

• **Lois Spragg** is the new Techron Power Products SBU Secretary. Lois replaces Rhonda Chapman who left Techron for a full time home business with new daughter, Renee Elizabeth and Rhonda's Resume Service.

• **Shelda Jensen** and **Bob Price** assumed the positions of Operations Coordinators for the Audio Division in August. Shelda works with **Jerry Stutzman** and Pacific Rim customers. Bob works with **Peter Christensen's** European customers and **Eric Hruza's** accounts in other parts of the world.

Congratulations!

To **Pam Williamson** (Night Modules) whose first grandchild, **David Scott**, was born June 10 to parents, **Scott and Laurie**.

To **Kay Haas** (Fabcom) whose daughter **Theresa** gave birth to Kay's first grandchild, **Austin Lane**, August 10.

To **Diane** (Accounting) and **Tom Lutomski** on the birth of **Katelyn Michele**, August 6.

To **Mitzi** (Techron) and **Frank Hill** on the birth of **Robert Elliot Franklin Hill**, August 13.

Best Wishes!

To **Jennifer (Weidenhaft)** and **Scott Geist**, who were married July 17.

To **Karen (Moore)** and **Tim Hoover** who were married at Beulah Missionary Church, August 21.

Randy Secor Answers a New Call

by Sue Ramsby



Randy Secor

"I've made many friends here at Crown Int'l," commented **Randy Secor**, former Stockroom Coordinator. "God allowed me to work at Crown Int'l to prepare me for the future. I was going to work here only one or two years, and now I have been here nine!"

More urgent preparation began in January when Randy was accepted at Mid-American Nazarene College in Olathe, Kansas. In September he began to study toward a B.A. degree in Agricultural Missions. God opened so many doors that Randy was sure of the calling that God laid on his heart when he was 14 years old.

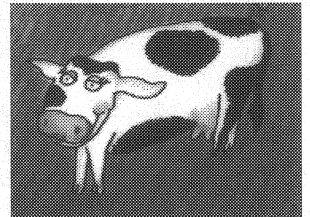
Randy worked with his father, John, who was a farmer all his life, to keep the family farm going. In 1988, John was going to sell the farm to him to make sure the business could continue. On the way to the bank to start the paperwork, John suddenly felt that the decision to sell the farm to Randy was not the thing to do, and they turned the car around and went back home. Randy feels that this was a sign from God. He would have had the responsibility to sell the farm before moving out to Kansas.


Randy and his wife, Judy, met Dave and Sandy Allison of Compassionate Ministries in Canada when the Allisons visited Randy's church in 1991. When Randy became interested in the Ag Missions teaching program at Mid-American Nazarene College, Dave wrote a letter of recommendation for Randy to one of the professors there. After much prayer, and an invitation from the professor, Randy felt that he and his family should visit the college.

Randy and his family made the 11-hour trip to Kansas and stayed with Dr. Fell, the Ag Missions professor with whom Randy had corresponded before the trip. Randy's children made friends with some children they met, who were the same ages. It was a happy experience for the whole family and God gave them the strong impression that they should return there.

Randy's father, who suffered for two years with cancer, passed away in May. In the hospital, a few hours before he slipped into unconsciousness, John turned to his son and said, "Randy, I know, and you know, what God wants you to do. I know that you will do well!" His dad, according to Randy, had told him that he knew ten years ago that God wanted Randy to do more than milk cows in Baugo Township!

Randy is encouraged that he is doing God's will, because of the way things have worked out.



In applying for educational financial help, two-thirds of this first year in college will be covered by federal financial assistance. Also, Randy has a reliable renter for their house, who only wants to rent for a short time and will show the house to prospective buyers. The Secor family was able to go to Kansas the last week in August. The doors of opportunity have opened wide as he enters the world of agricultural missionary outreach. 

Successful Students



Clyde Moore congratulates Brenda Gill

- **Mathews Abraham** has completed a Masters in Business Administration from I.U.S.B. On June 1 he assumed responsibility for Audio Quality Assurance in addition to Production Management.

- **Brenda Gill**, Modules, accepted congratulations and a bonus check, upon completion of her Associates Degree in Accounting from Davenport College in May.

- **Steve Peer** was also awarded the bonus check for completing a B.A. in Organizational Management and Human Resource Management from Bethel College in May, 1993.

- **Jon Yoder** graduated with a Bachelor of Science Degree in Electrical Engineering from Rose Hulman Institute of Technology in Terre Haute. He is a Manufacturing Engineer for the Audio Division.

She told It the Way She Saw It!

Tippecanoe Place in South Bend was the site for **Johnny Bryant's** retirement dinner given by friends in Purchasing and Administrative Resources, June 15.

Johnny was hired by founder, Clarence Moore. She "...told it the way she saw it," when asked some pointed questions during her interview in 1967. Clarence liked her straightforwardness. She spent nearly 26 years in various positions such as snipping wires, assisting **Wayne Blakesley** in the Board Room and typing for **Arline Bontrager**. However, most of those years were devoted to processing the paperwork of the Purchasing Department.

She adapted to computerization. "She did not anticipate liking it," **Clyde Moore** reminded during his assembly presentation, "but she was a loyal, dependable and conscientious employee through it all."

The Purchasing Department presented her with a bird feeder and a book of Norman Rockwell art. Her comments: "Wowsa! He's my favorite dead person!...(except for my husband, of course!)"

Oh, Johnny!

Patti Smith said, "You are special to us," on the video **Jo Shreiner** recorded of some of Johnny's friends, their comments and the dinner party.



Pictured are (front) Jo Shreiner, Johnny Bryant, Sue Kurtz, Patti Smith and (back) Jim Downs, Greg Neff, Mary Ihnken, Vicki Eichorst and Donna McBrier.

Your Parts, Your Way, Right Away, continued

- **Melinda LeCount** assists with documentation of detailed procedures for PCB assembly. She writes the set-up sheets for prepping components and determines the number of positions on the slide line for each type of module. There are 500-600 components on each PCB.

- **Jacki Miller**, Taylor University student engineer in her second summer with Fabcom, does research and cost analysis on a variety of projects such as the CFC replacement.

- **Alan Wigent** does the art work preparation on film for use in Fabcom and Divisions for PCBs and labels for silkscreens. Alan also works with Corporate Services and Purchasing about 50% of his time. His work area is in Plant 1. He supports Board Room and Paint Line screening with fixtures design. He is the bridge between operators, tool engineer and design engineers.

- The design team moved to Plant 3 last fall. **Dennis Pierce** is the tool and fixture designer for all divisions. **John Flanagan**

"unfolds" customers' designs from the 3-dimensional CAD design in the mainframe to determine the "bend factors" for flat patterns for Fab. **Kevin Matthews**, the computer numerical control (CNC) machine programmer, retrieves layout for flat sheet metal and uses punch press computer aided manufacturing (CAM) modules from Unigraphics software to create multi-part CNC programs.

- Secretary **Cathy Lehman** provides clerical support for all of these people and Fabcom supervisors, as well as others in the Manufacturing Office Complex. Cathy coordinates Fabcom's bi-monthly business luncheon meetings.

"It has been an ongoing battle for the Fabcom Engineering Department, no matter how much expansion is accomplished, to keep up with the growth of the divisions," to use Dan's words. However, this group regularly faces battle head-on, and mans many fronts.

CROWN CRIER

The Crown Crier is the newsletter for Crown International employees. Its purpose is to be informative, inspirational and entertaining.

Your involvement is highly prized. Please contact a CC Reporter with any material you would like to see in future issues.

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