

JULY, 2003

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Slot Tech Editorial

Happy summer, everyone. Now that the "June Gloom" is gone from the skies over San Diego, things are finally starting to heat up a bit here at Slot Tech Magazine. In more ways than one, actually. It seems that the JCM press release that we ran in the May 2003 issue has lit a fire under a few people. Rather than go over it twice, I'll simply direct you to the back of the magazine and invite you to read "Press Release Ignites BV Controversy" beginning on page 36.

This month, Canada's own Kevin Noble pays homage to the Fab Four with his look at "A Day in the Life" of an OLGC slot tech. Turn to page four.

Herschel Peeler turns from technician to mathematician this month as he explores the power of the PAR sheet. By building a little PAR sheet in Microsoft Excel, you can noodle around with the numbers and gain a some insight into what the math geeks at IGT do all day. Turn to page 10 for "Putting a PAR Sheet in Excel."

Have you ever been to Fallon, Nevada? This little town, about 60 miles east of Reno is home to a half-dozen small casinos. Slot Tech Magazine was invited to hold a training class in monitor repair at the Fallon Nugget Casino. It was a great class, especially because we had a special guest instructor, Ramiro Limon from Ceronix. Ramiro has spent the last 17 years with Ceronix (virtually his entire adult career) so he knows these monitors inside and out. He gave us a day of monitor repair tips that made troubleshooting a snap. I've printed a few snaps and a class photograph on page 14 but the real cool stuff begins on page 31 with an illustrated spare parts guide for Ceronix monitors.

In addition to that, I recorded Mr. Limon's presentation so that I might transcribe it for a future series here in the pages of Slot Tech Magazine. Look



for Ramiro's Repair Roundup coming as soon as I can find the time to write it all down (it was around four hours of lecture, so this project is gonna take a while to complete).

Part two of our discussion of vertical deflection is presented this month, with a look at the vertical oscillator, vertical drive and vertical output circuitry. Turn to page 26.

For many people, summer is a time to kick back and relax. This year, I actually get to join them. In fact, as soon as I finish this editorial, I'm off to France (I know. I know but I don't want to hear about it. I booked this trip long before the war in Iraq began) for two weeks floating down the river in a canal boat. Do you think they'd get pissed off if I brought along a nice bottle of California wine and asked the Maitre D' to open it for me and serve it with dinner?

That's all for this month. See you at the casino.

Randy Fromm
Randy Fromm - Publisher

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A Day in the Life

By Kevin Noble

Now that the “Big Project” (all 180 games) the Williams video EPROM upgrade (155 EPROMS) and the Williams video hopper harness upgrades (over 100 games) are complete, the shop has returned to normal until the next projects are scheduled.

When the smoke cleared, we settled back down to our normal routines that include service reports, M00 codes, yellow cards, preventative maintenance on the gaming floor, manual jackpot reports, and even AGCO with their random machine inspections. We again have time to take note of the inventory, order parts, and complete shop projects.

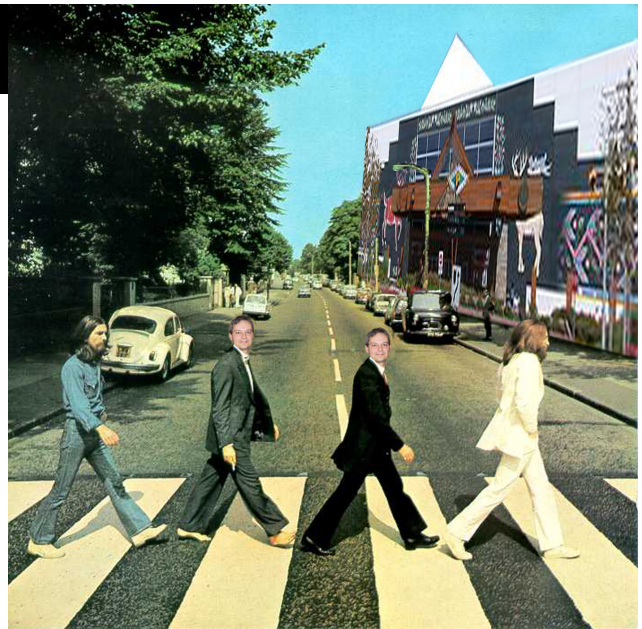
Come Together

Looking up at the project board, the only project pinned to the board is the IGT traditional Game King coin return bracket addition, unofficially scheduled in about 2 weeks. We begin the quest to repair, replace and clean up tasks that were put on hold because of the projects. We built and replaced all drawers in the Cage and Coin redemption area. We cleaned the

shop from top to bottom, submitted sensitive and non-sensitive parts figures and inspected & cleaned a number of complete banks. That included changing out all burned out bulbs, cleaning all optics, the machine floor, and even tightening all the loose screws.

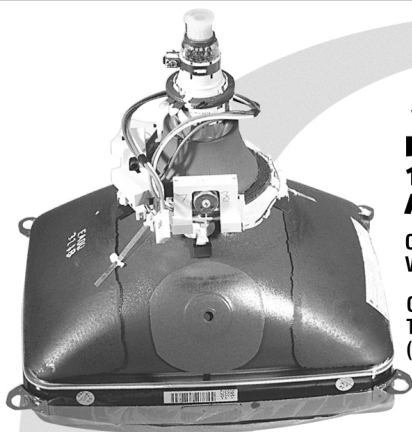
Get Back

There are many daily routines we complete every day before our 9:00 am opening. After receiving our keys and cards and emptying our mailbox in the shift office, we head down to the shop. There, we read the shift reports, take notes on locations that need attention, physically check for M00 codes, replace all burned out or flickering fluorescent tubes, check and repair all yellow cards, tend to all the BV lights out and file all service reports. Usually, by 8:00 am, we are ready to call the AGCO officer down (if needed) to remove any seals to troubleshoot.



With A Little Help From My Friends

Alex, Reggie, Chris, Andrew and I make up the day shift crew. We all know the routine now like clock work. We try to clean the floor before we open. Just recently, I began training Andrew on the transferring documents for the sensitive parts. After all the bugs have been worked out (the “SITS” program has been operational now for around six months) it is now easier to explain after I have grasped the concepts. This is a major responsibility in our duties and needs constant attention. Alex and Reggie are very skilled technicians with whom I work with the majority of the time. Very reliable, knowledgeable, and best of all, hard workers who understand the importance of attaining the goals we set out for each day. It is a pleasure to work with these “clowns” that make my job more enjoyable and relaxing.



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Across the Universe

What I find intriguing is asking technicians from other sites how things are done. How they complete service reports, perform preventative maintenance on machines, what their daily routines are to name a few. This allows me to analyze different aspects of my job duties and see what I could do to improve our department. There are many surprises I have encountered with the policies and procedures other technicians go through to repair a machine and I say to myself "Wow. I guess we do not have it that bad here."

Revolution

Many of the routine responsibilities every morning may seem extremely weird (especially to non-OLGC technicians) but here are some of the duties we perform each and every day:

M00 Codes- these codes tell the Technician that the (Bally reel games only) EGM alarms are not communicating with the Mikohn System. Opening and closing the main door can easily reset them. If the machine does not respond, AGCO is called in to perform a SafeRam clear.

Yellow Cards- these are cards located throughout the gaming floor so that the Slot Attendants can document burned out lights, broken or missing items, or sticky locks (to name a few). These do not affect game play so they are noted for a technician to re-

pair at a later time. These cards consist of the location, problem and a place for the technician to sign off on the completed repair.

Reports- Service reports, Manual Jackpot reports, Coin Flow Analysis reports are just some of the reports for the inspections and testing we do for Auditing. They usually consist of coin and bill testing to ensure all accounted coins and credits increment and go to their correct paths. Any problems found are logged and reported to the Auditing Department.

AGCO Random Inspections- This is one constant we usually do every day with the EGO present. Checking seals, verifying EPROMS, coin tests, options, hopper testing, and IDX inspections are just a few tasks mentioned.

Preventative Maintenance- Cleaning reels and glass, BV heads and transports, changing bulbs, checking locks, tightening loose screws, removing loose coins off the bottom of the machine, vacuuming coin dust, cleaning coin paths and hopper optics, exchanging worn out parts and tidying up all loose wires are just some of the responsibilities of keeping the games in working condition.

The Long and Winding Road

There are also weekly and monthly programs scheduled in our department that our technicians are responsible for:

Mikohn System Preventative Maintenance- Usually done every Wednesday morning during closing time. This allows for the system to run smoothly. We are usually in touch with the Computer room technicians to get the system back up and running before we open.

Non-Sensitive Inventory- This must be counted the last week of every month and submitted to the Auditing department.

Sensitive Inventory and Transfers- The count is done the last week of every month and verified with Jerry Romaniello for any variances, but anytime a sensitive part is transferred to the floor it must be logged on the "SITS" program on the computer in the shop.

Cage & Coin Equipment PM- All the Jet Sorts, Wrappers, and Bill Counters are brought into the shop on the Afternoon shift (each is scheduled on different days) and cleaned, calibrated and tested.

Bi-weekly Inventory- This is usually completed every two weeks, submitted to the warehouse to Rob Jardine. The bi-weekly inventory program automatically adds or deducts inventory and alerts Rob for parts needed at the site to top up our inventory to a set level. Rob is just a phone call away when inventory is needed immediately or when you cannot find a part number for a manufacturer.

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Strawberry Fields Forever

Despite all the preventative maintenance on the machines and equipment, there are still the classic repairs on the floor to attend to. Today started like any other day but like anything else, you cannot predict what will happen next. We started with our set "Routine." Once completed, we started repairs on two bill counters, one wrapper, started a small project that involved using Velcro to attach holders to house the MEAL books to all slant top machines (mounted to the belly door inside the game) replaced the color graphic EPROM (on a game that was out of service) just arrived from the warehouse, completed meters on a Bally Reel for a 83F error code (waiting for AGCO to break the seals) accepted and transferred sensitive parts from the warehouse and the floor, repaired three chairs that were missing on the gaming floor that were in the shop, ran a data cable in the main office, an emergency cashbox drop, packed six boxes of old conversion kit parts to shipped to the warehouse, tried to repair a exchange machine cashbox (too bad of shape) and even drew up and measured a jackpot fill box to be sent out and made. Of course, Reggie and Alex were there, like always.

Penny Lane

Another day arrives. The rou-

tine starts out the same but the outcome is different today. Around 8:30 in the morning we discover the Mikohn system started to display symptoms it was going down. Watching the DCU messages, we discover "poll off" and "IOC down" and instantly call the Computer room and report the system is starting to crash. After about 10 minutes the system recovers, notify the proper personnel, fill out the correct paperwork and continue on. Today AGCO is called in to break some seals for a RAM clear (Bally reel for 83F error) and CPU board swap (IGT CPU blowing 8 amp fuses), transferred sensitive parts, assembled a new sheet metal brake, ran door alarm reports, repaired another wrapper and two bill counters, ordered parts from the warehouse, and spoke to Rob on the phone regarding some part numbers.

Magical Mystery Tour

In an earlier article, I had tried to point out that our job duties consist of just about everything. Now I want to point out the different chores involved that are planned and not expected. There are many other responsibilities not mentioned, including IDX programming, price quotes, AGCO Tech Shift Jackpots, hopper contents inventory, and fill door inventory. This list could go on and on but these are just a few examples that are not done too often.

A Day in the Life

Our set routine lasts about two hours in the mornings. We try to accomplish all tasks and perform most of the little projects before we open to the public. Throughout the day, other unexpected tasks pop up and need attention. This is the fun part of the job because you never know what to expect. I have given two examples of days where anything can go wrong and they never mirrored themselves. These days were chosen because there were no projects scheduled, there were three technicians on duty, and nothing was planned to make this article more exciting except for the routine. I personally make it a challenge to have the floor 100% up and running before we open and complete the tasks at hand to try and free a couple of us up for floor calls, planned projects, and the unexpected call or repair.

With apologies to John, Paul, George and Ringo . . .

Dedication

To my wife's mother, who passed away May 15th 2003.

I would like to thank you for touching my life, June. You will be missed greatly. Thank you for believing in me.

Love, Kevin.

- Kevin Noble
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Putting a PAR sheet in Excel

By Herschel Peeler

Come on, admit it. You've always wanted to do it. Let's do it. I know you've wondered how much changing a Jackpot Value changes the Hold percentage of a game. Let's take a close look at what is in a PAR sheet and put it in Excel Format and play with it.

In cell A1 we have the number of virtual positions per reel. In cell A2 we have the number of reels. Cell A3 is a calculation that gives us the number of possible reel combinations. (Cell A1 raised to the power of cell A2, in this case, $64 \times 64 \times 64$.) This is one Cycle of the game. Cell A4 is the number of credits that may be bet per game. Cell A5 is a calculation giving us the total number of credits that may be bet, per cycle. $A3 \text{ times } A4$.

We know now how many credits may be wagered in one cycle of the game. Let's see how many of those possible

combinations could result in a win. See how much each win pays. Calculate the total possible "win" in one cycle, and see what percentage that is of the total possible wager.

Looking at the PAR sheet we see 15 possible winning combinations, listed here as "A" through "O". The PAR sheet will list reel symbols sets. I've simplified it here. The PAR sheet will tell you what that win pays, and how many times in one cycle than win should occur. Those values

are listed here in Columns "B" and "C". Column "D" is a calculated value of Column B times Column C, giving us the total win for that symbol set.

Cell D23 is the total of all the wins over one cycle. (Sum of column D values above it.) Cell D24 is the total number of credits that could possibly be won over one cycle. ($A23 \text{ times } A4$) Cell D25 is a calculation giving us the Hold Percentage of the game. Cell D24 "Total credits won" divided by

	A	B	C	D		
1	64	Number of positions per reel				
2	3	Number of reels				
3	262144	Number of possible combinations				
4	3	Credits per bet				
5	786432	Total credits bet per cycle				
6	(Paytable adjusted for Max Bet only)					
7	Win Combo	No. of wins	pay of win	Total win		
8	A	13798	6	82788		
9	B	13798	6	82788		
10	C	13720	6	82320		
11	D	935	15	14025		
12	E	932	15	13980		
13	F	932	15	13980		
14	G	15135	15	227025		
15	H	63	30	1890		
16	I	1663	30	49890		
17	J	314	120	37680		
18	K	383	240	91920		
19	L	26	600	15600		
20	M	1	5980	5980	(\$299 in \$.05)	
21	N	1	11980	11980	(\$599 in \$.05)	
22	O	1	23980	23980	(\$1199 in \$.05)	
23				755826	Total payouts	
25				96.108%	Percentage	

Cell A5 "Total credits wagered".

We have three Jackpot values that only occur once per cycle. Being a Nickel game, the credits won relate to a win of \$299, \$599, and \$1199 in Nickels.

Now that we have a working spreadsheet, let's alter some contents and see what the result is. The example shown does not relate to any real game in existence. I started with a PAR sheet from a simple "3 Coin Multiplier" and modified it. Our example shown is certainly no real game on a casino floor.

What brought this up was some games we were considering that dispenses a prize instead of a dollar value for the Jackpots. This is not a new concept. Las Vegas has been giving away cars and houses for a long time now. The question in my mind was "How much does changing the actual value of the prize change the Hold of the game?"

Any prize, whether it's a car, a house, or what ever, does not have a set value. It may have an appraised value and a tangible value that are quite different. The wholesale value (what they paid for the prize when they, the vendor, bought it) may be considerably less than the Appraised value they list it at on the value reflected in the PAR sheet.

The example shown would reflect the Appraised Value. Let's see what happens when we change that to actually

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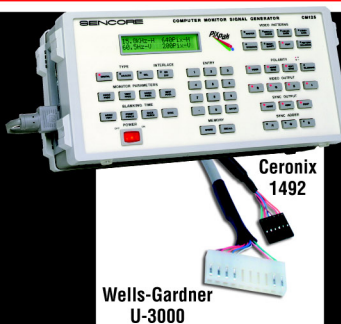
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reflect Tangible Value. Lets go to an extreme and say the Tangible Value (Wholesale price) was only about 10% of the Appraised price. Our three jackpot values are now only actually worth \$30, \$60, and \$120.

Believe it or not, the bottom line of our PAR sheet is only altered by a few percent, well okay, a little less than 5%.

This does not accurately reflect the actual Hold of the game from the Casino's

standpoint. But if I were a vendor of the game wanting to make more money from the games without it showing in the Par sheet, this may be one way of doing it. The casino becomes a sales facility of my product, which I buy for one value, and sell to the casino for another value, quite different from that I paid.

Hmmm? Consider all the possibilities.

Herschel Peeler
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Slot Tech Event - Monitor Repair Class in Fallon, Nevada



Above left: Ceronix's Ramiro Limon covered a wide range of common symptoms in their monitors. Students learned to instantly narrow down color problem, deflection problems, auto-bias problems and a host of others during the presentation.



No class too small! Whether it's a group of 75 at TechFest or just seven technicians from the Nugget Casino in Fallon, Nevada, Slot Tech Magazine is there, spreading the gospel about monitor repair and how fun and easy it can be.

"Most monitor repair can be pretty easy, once you know what you're looking for," said technical instruc-

From left: Randy Fromm, Instructor, Rodney Justice, Anthony Fuqua, Larry Mason, James Doering, Joe Chalker, Calvin Miller and Bob Clay.



tor Randy Fromm. "We were able to get in a couple of good days of 'hands-on' training. Unfortunately, one of the things we learned the hard way is that if improperly installed, a VGA video cable can wrap around the neck board of a monitor. You can't see it with the monitor in its normal operating position in the game but when you pull the monitor out, it snaps the neck of the CRT. Damn!"

Also on hand was special guest instructor Ramiro Limon from Auburn, California based monitor manufacturer, Ceronix. Ramiro drove up to Fallon for a full day to show the class the easy way to troubleshoot Ceronix monitors by making just a few key voltage measurements. Look for a special report on Ceronix in a future issue of Slot Tech Magazine. - **STM**

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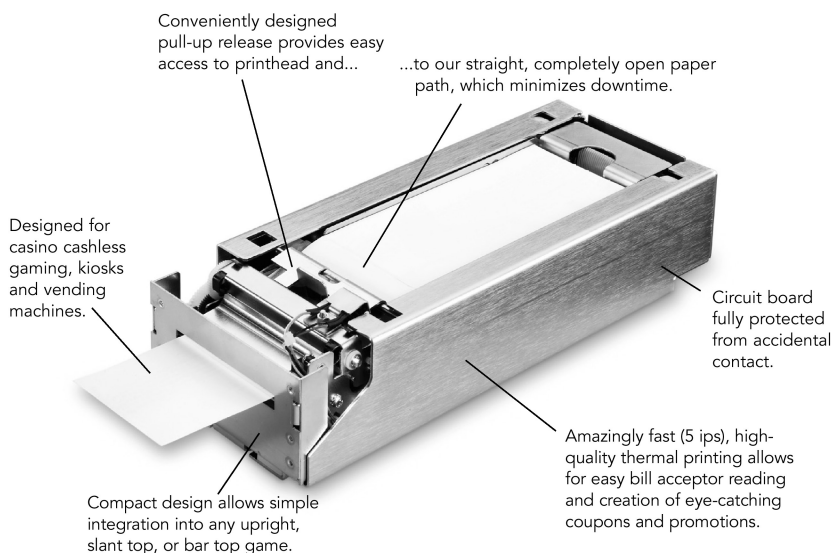
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Southern Gaming Summit 2003

By Bart Holden

This year marked the 10th anniversary for the Southern Gaming Summit held in the Mississippi Gulf Coast Coliseum in Biloxi, Mississippi on May 7th and 8th. It was an exhilarating two days of informative seminars, great new slot machines, a never ending display of everything a casino needs and doesn't need to operate, and of course free food and beer.

The new slot machines were once again dominated by TV shows and board games. There were games based on Battleship, I love Lucy, Life, Clue, The Beverly Hillbillies, Bewitched, and many more.

There were demonstrations for anti-cheat devices that were really interesting. There were several slot base manufacturers with some really great looking bases. And there was no shortage of goodies for everyone who stopped for a visit.

I held back the tears when I found that Bally Gaming didn't have a new Playboy Playmate for me to pose with this year. Damn them. Seems I was the only celebrity in attendance. I could hardly take any pictures for the magazine with all the autographs. OK it's all a lie.

Bart Holden
bholden@slot-techs.com



This is a look at a WMS gaming monitor in their Rich Rooster game. This should be a successful game since WMS has targeted both traditional slot players and video slot fans. They did this by designing a game with the simplicity of a three coin reel machine, combined with the added bonuses and animations only achieved with video games. Notice they even put the old quarter decal on there and this one won't need a light bulb.



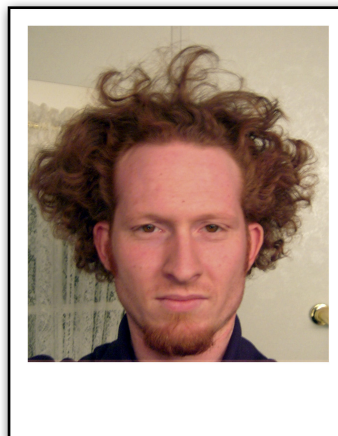
This is Todd Seymour, President of Millennium Gaming, Inc., showing off Skull Island. Look like an old IGT S-Plus? Bingo! That's what it was. Todd was kind enough to give me the inside tour. With some modifications, your old reel game can be a hot new LCD video game for about half the price of a new game. With the exception of the software and a few other assemblies, you can keep this baby running with parts from Radio Shack. Millennium Gaming is located in Colorado and you can take a look at their product at www.mgislots.com on the Internet.



I'm not sure if Rocky just beat Apollo Creed, Mr T, or Ivan Drago but I do know that this machine should be a knockout with players. Konami is the manufacturer of this slot machine based on the forever-popular Rocky movies.



Sigma displayed their slot machine based on the board game Life. They also had a very nice sign over the game to direct your customers to these moneymakers.



Unidesa was showing off their SwampLand 2 game. I was very impressed with the changes Unidesa has made to the inside of their games. They have evolved into a tech friendly game. They also had a sharp new game called Classic '57 at the show. This particular game had an orange cabinet that really fit the feeling of the game. Unfortunately, the picture didn't turn out.

Left: In the end the summit was as usual full of exciting new products, great food, beer, gorgeous ladies, but no barber. All I really wanted was a haircut. Don't worry Randy I didn't look like this until afterwards. I just thought I'd send you a picture of me after a hard day at work for Slot Tech Magazine.

Slot Tech Visits 3M Touch Systems



As regular readers of Slot Tech Magazine know, factory tours are always high on my list of Things That I Want To Do, so when the folks at 3M Touch Systems (formerly known as MicroTouch) asked me to drop in and tour their plant in Methuen, Massachusetts (a suburb of Boston) I was happy to comply. Unfortunately, Boston is a long way from San Diego, California so the tour had to wait until I was going to be in the area. Happily, I was able to stop in Boston on my way to Germany (see Aaaarmy Training, Sir! In last month's Slot Tech Magazine) and take them up on their offer. The stopover didn't even cost anything extra, so that was good news.

The bad news was that although I was invited on a tour, much of what I wanted to know about was proprietary (read, "company secret"). I was even prohibited from taking any photographs inside the plant. As a sort of "snap happy" guy, that put a severe crimp in my ability to report to you what I saw going on inside. 3M Touchsystems provided the photos that you see here. They can only touch (no pun intended) on the amazing things that I saw at the plant.

The process begins with the glass itself. Naturally, there are glass screens of various sizes and with different radii, to cover all of the different sizes and shapes of the displays we use in the gaming industry, both flat and curved.

The company does not actually manufacture the raw glass screens. These come from another company that manufactures the glass to 3M's specifications. The optical-quality glass comes to 3M with the ITO (indium tin oxide) coating already applied. It is the ITO layer that conducts electricity.

The first thing that 3M does is inspect the incoming glass. The conductivity of the ITO layer is tested with a digital multimeter (notice the Fluke DMM). The inspector is also



We had to wear "Bunny Suits" in the clean room. Since I wasn't able to take photographs inside the building, this is not a real photo but rather an incredible simulation of me in a bunny suit.

looking for any slight imperfections in the ITO coating. A high-contrast background display made with alternating white and black bars helps zero in on any imperfections. The thin ITO layer is completely unprotected at this point so great care is taken when handling the glass. This care extends throughout the entire manufacturing process.

In order for the touchscreen sensor to work properly, the electric field must be evenly distributed across the face of the glass. This is accomplished by a screen printing process that lays down an electrode pattern around the border of the sensor. This linearizes the field. Small imperfections are then further linearized by using the data stored in the NOVRAM (non-volatile RAM) that lives in the cable that is attached to the sensor.

Later in the process, the ClearTek coating is applied to protect the delicate surface of the sensor. To quote the company line: "ClearTek capacitive touch technology provides accurate and sensitive response to the user's touch while offering outstanding durability. A ClearTek capacitive touch screen provides scratch-resistance and contaminant-resistance to dirt, liquids, and harsh chemicals. A ClearTek sensor with Industrial Etch has been tested in a laboratory environment to withstand over 225 million Slot Tech Magazine

mechanical touches without noticeable degradation to the surface."

Quite frankly, the manufacturing process was a lot simpler than I thought, with the touchscreen sensors moving seamlessly from one giant machine to the next. What I mostly saw was quality control and inspection, with more inspection thrown in. Add to that an additional stage of inspection and quality control. Did I mention inspection?

In one case, I was shown a sensor that had been rejected because it had been scratched. Stickers in the shape of small arrows are used by the inspectors to

point out the location of the scratch. I picked up the touchscreen and looked at the tip of the arrow. I saw absolutely nothing. No scratch. No smudge. No fingerprint. No imperfection of any sort. The inspector had to point it out to me. If you held the sensor just so, in exactly the correct light, at exactly the correct angle, you could just barely perceive the slightest hint of something that might just barely qualify as *something*. I wouldn't call it a scratch. This thing was 90% complete and yet it went into the trash heap. I asked them if it was likely that the screen would actually still work properly. They said that it was very likely that it would still be 100% functional but that for



Rath Chhoeun
Incoming raw glass inspection, prior to printing.

CAPACITIVE

Capacitive technology offers durability, reliability, and optical clarity. Popular applications include gaming machines, ATM installations, kiosks, industrial equipment, and point-of-sale.

Advantages

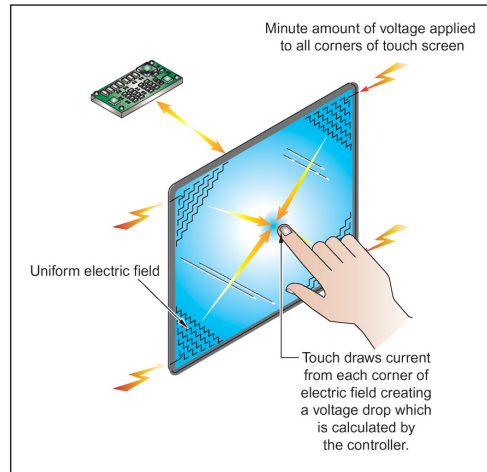
- Extremely durable
- Very accurate
- Good optical clarity
- Good resolution

Disadvantages

- Requires bare finger or capacitive stylus
- Severe scratch can affect operation within the damaged area

Capacitive touch screens are curved or flat glass substrates coated with a transparent metal oxide. A voltage is applied to the corners of the overlay creating a minute uniform electric field.

A bare finger draws current from each corner of the electric field, creating a voltage drop that is measured to determine touch location.



the sake of quality control, they would discard it.

Following the manufacturing process, the completed sensors go for test and calibration. Again, I wasn't able to photograph this process. Each sensor lies on a bed where an automatic "finger" is used to probe a number of different locations across the

Francisco J. Cruz and Rudy Burgos
Printing Electrode Pattern

surface. The measurements taken by the mechanical finger are used to generate linearized data, then stored in the NOVRAM. These linearization readings are used to calibrate the NOVRAM in the sensor tail. These calibration readings are stored on the company's server as well. If, for any reason, the NOVRAM goes

bad or loses its memory, the values can be recalled from the server and dumped into the NOVRAM.

Finally (after yet another series of inspections) the completed touchscreens are



Peter Smolag
Printing/Screen Room Process



Nom Toeuy
Electrode print pattern inspection station



Maria Ramos
Final quality control station.

packed and shipped to monitor manufacturers and casinos around the world. It's just fascinating how they manufacture these things

and I could spend all day telling you the details of the manufacturing process . . .

but then, apparently, I'd have to kill you.

- Slot Tech Magazine

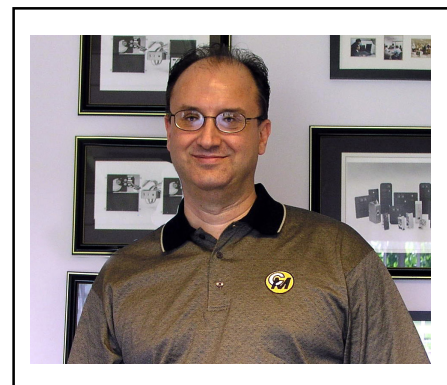
Slot Tech Promotion Announcement - George Hoehne, Senior Product Manager @ Coin Mech

On June 2nd, 2003, George Hoehne was promoted to the newly created position of Senior Product Manager. George transferred into the Coin Mechanisms' Marketing Department in 2000 as Product Manager of Electronic Products. In this capacity, Hoehne was instrumental in guiding the introduction of the Micro Comparitor brand identity and in coordinating the product line expansion and market introduction of the Intelligent Comparitor. Hoehne championed the development of the new Defender product line to include specification development, coordination of field-testing and regulatory submission. George was also the primary technical coordinator for the introduction of the Intelligent Comparitor into Europe. This was a massive project that required bills of materials to be created to conform to many new token sizes; plus account for electrical requirements, software development and floor mix assessment. Hoehne's tenacious

attention to these hundreds of details allowed Coin Mechanisms and Eurocoin to successfully launch the Intelligent Comparitor throughout Europe.

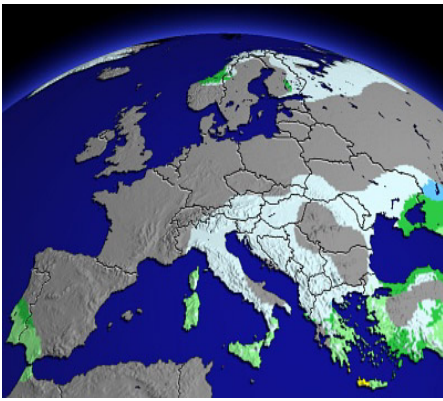
Hoehne's promotion acknowledges these contributions along with his dedication to Coin Mechanisms and his ongoing commitment. It also is recognition of the expanding needs of the company as Coin Mechanisms, Inc. continues to seek out new product opportunities.

In his new capacity as Senior Product Manager, Hoehne has been given organizational authority to decide policy regarding the enhancement and modification of existing electronic products. He has also been given the responsibility to assess new products that are candidates for internal development or acquisition from outside the company. All new product concepts will pass through George for technical and market assessment.



He will continue to spearhead regulatory submissions. Hoehne will also assume technical supervision of Coin Mechanisms' Field Support Manager so as to insure the highest quality of customer training and installation support.

Contact:
George Hoehne
Coin Mechanisms, Inc.
400 Regency Drive
Glendale Heights, IL 60139
Tel. 630-924-7070
Fax. 630-924-7088
e-mail: georgeho@coinmech.com



Graz, Austria

Atronic Sets An Example In Styria As It Celebrates Its 10th Anniversary

“Atronic sets an example for Styria” in the words of the Minister of Economy, Finance and Europe of the Austrian federal state, Herbert Paierl, on the 10th anniversary of Atronic, which was celebrated on 9th May in Unterpremstätten near Graz, the seat of the Research and Development Center.

The Styrian Minister of Economics expressed his great personal respect for the company executive Michael Gauselmann. Since 1993, he said that together with a team of committed and motivated colleagues, Mr. Gauselmann had applied trust, confidence

International View

By Martin Dempsey



Michael Gauselmann

Barcrest Games' Stampede Gathers Momentum

Barcrest Games was delighted to learn that Gold Rush Stampede, its new multiplayer sit down machine for arcades and bingo clubs, has gone down a storm in the wild west plains of Stockport!

Enthusiastic staff at Leisuretime in Stockport really got into the swing of things with the arrival of Gold Rush Stampede, by donning Stampede t-shirts and gold stetsons at a special launch event to unveil the new game.

and courage to successfully transform a bankrupt company into a new and globally successful operation.

The regional government of Styria would like to have more businessmen who are prepared to adopt this approach, to ensure that the process of economic change in Styria can be positively continued.

For further information contact Robert Hess M.A., Communication Manager.
Tel.: 05772 - 49 282
Fax: 05772 - 49 289
RHess@gauselmann.de
Mobile: 0171 - 9745720
<http://www.gauselmann.de>
<http://www.atronic.com>

Simon Shaw, Director of Winners Amusements commented: “Gold Rush Stampede is a real centrepiece and our launch night was an incredible success. Some of our customers who started playing the machine at 6pm were still engrossed at 10pm!

For further information please contact: Clare McMillan / Sam Drakeford @ england. Tel: 0113 234 5600. Fax: 0113 234 5601. Email: clare.mcmillan@englandagency.com



Huxley Signs Exclusive Agreement For Woollen Gaming Layouts

A W Hainsworth are pleased to announce that they have signed an exclusive agreement with John Huxley to supply all their woollen cloth for the gaming market.

Terry Clarke, Commercial Director of John Huxley comments: "We are delighted to be supplying Hainsworths cloths. With 200 years of manufacturing experience, they have developed a casino cloth which is undoubtedly a market leader, unrivalled in quality and appearance and this will provide a platform for our expansion into the North American market."

For more information, please contact Tracy Cohen, John Huxley.
Tel - 020 8803 3038.
Email
TracyCohen@johnhuxley.com



Vivid's Jumpin' Jokers

Jumpin' To The Top Of The Charts!

Vivid Gaming is jumpin' for joy at the news that following a raft of retailer approvals its latest AWP, Jumpin' Jokers has now been launched.

Jumpin' Jokers features all of the qualities that have become Vivid's hallmark in the

industry. The game combines colourful artwork with high levels of fun and excitement, and builds on the learning gained from the successful Card Shark AWP.

For further information please contact: Clare McMillan Tel: 0113 234 5600. Fax: 0113 234 5601. Email: clare.mcmillan@englandagency.com

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Paul Gauselmann Awarded High Honour Of the Federal Republic of Germany

On the recommendation of Peer Steinbrück, Minister-President of North Rhine-Westphalia, in the course of upgrading, Paul Gauselmann has been awarded the Officer's Cross of the Order of Merit of the Federal Republic of Germany by Federal President Johannes Rau.

Paul Gauselmann had already received the Cross of the Order of Merit of the Federal Republic of Germany in 1993. The Order was conferred by Regional Commissioner Andreas Wiebe in a small ceremony in the offices of Detmold district government.

For further information contact Robert Hess M.A., Communication Manager. Tel.: 05772 - 49282; Fax: -289. E-Mail: RHess@gauselmann.de Mobile phone: 0171 - 9745720. Website <http://www.gauselmann.de>

Royal Castle - The Majestic Stella Innovation For The Czech Republic

STELLA International, a member of the German Gauselmann Group, was proud to present the first product out of the new STELLA casino line for the Czech market - Royal Castle - at World of Entertainment 2003 exhibition in Prague.

Get fascinated by the brilliant AWP game Royal Castle! Feel invited to explore the castle and collect the crown! Royal Castle is a video based game which will inspire the players. Multiple bets and two different bonus features enable the player to find his own strategy.

To find out more information about STELLA International, please visit the website at <http://www.stella-international.de> or contact Susanne Wesemann. Phone: +49-5741-273 515. Email: swesemann@stella-international.de



Royal Castle - at the "World of Entertainment 2003" in Prague



HAPP - E'COIN - A Strategic Partnership For Benelux & Germany!

Happ Controls Europe Ltd has announced a major step in strengthening and further increasing its market share across Europe, with the appointment of E'Coin Spares & Service BV, Holland as its distributor for Benelux & Germany.

Ray Hazelton of Happ Controls reported: "Partners are key to our continuing success and growth. With E'Coin's reputation for service quality, plus their experience and spare parts expertise Happ's 11,000 product lines will be brought much closer to new and existing clients throughout Germany and Benelux. Catalogues will begin to be sent out during May 2003 and stock will start to arrive in the E'Coin warehouse around this time.

For more information email toine@ecoin.nl or ray.hazelton@happcontrols.co.uk

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TECHFEST 7 TECHFEST 7 TECHFEST 7

ATLANTIC CITY, NJ - OCTOBER 21, 22, 23 2003

Make plans today to join the gaming industry's top engineers, technicians, technical writers and instructors for 3 days of technical seminars and presentations that will enhance your performance as a technician and dramatically increase your value to your employer.

TechFest 7 will be held October 21-23, 2003 at the Atlantic City campus of the slot tech training specialists at Atlantic Cape Community College. For more information about the college, visit their website at <http://www.atlantic.edu/casino/slot.shtml>. Registration fee for TechFest 7 is \$390.00 per person and includes lunch each day.

This is a technical presentation. The TechFest is geared for working slot techs and technical managers who are looking for a way to make a dramatic improvement in their understanding of video slot monitors, touchscreens, bill validators, hoppers and more with no-nonsense technical presentations from:

- **Asahi Seiko - Coin Hoppers**
- **Coin Mechanisms, Inc. - Coin Comparitors**
- **Mars - Bill Validators**
- **3M Touchsystems - Touchscreens**
- **Sencore - Test Equipment**
- **Seiko - Ticket Printers**
- **IDX - Coin Validator**
- **Money Controls - Coin Validator/Coin Hoppers**
- **JCM - Bill Validators**



- PLUS - A special instructional series on video slot monitor repair presented by Randy Fromm

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have a chance to ask about YOUR problems. You have a chance to get REAL answers to your questions, face-to-face with some of the most qualified technical experts in the industry.

TechFest is for slot techs of all skill levels, from novice techs who want to learn the basics of BV and hopper maintenance to advanced techs that need to brush up on monitor repair.

SCHEDULE OF EVENTS

Tuesday, October 21st, 2003

9:00 am - 12:00pm

How Monitors Work - Part 1
Theory of Operation - Beginning level

1:15pm - 3:15pm

MEI - Mars Electronics, Inc. - BV
troubleshooting and repair

3:30pm - 5:30pm

Seiko Printers - Printer troubleshooting and repair

Events subject to change

Wednesday, October 22nd, 2003

9:00 am - 12:00pm

How Monitors Work - Part 2
Narrow Down the Problem - Intermediate Level

1:15pm - 3:15pm

Asahi Seiko - Hopper troubleshooting and repair

3:30pm - 5:30pm

Coin Mechanisms, Inc. - Coin Comparitor technology and repair

Thursday, October 23rd, 2003

9:00 am - 12:00pm

How Monitors Work - Part 3
Circuit Analysis and Component Level Troubleshooting - Advanced Level

1:15pm - 3:15pm

Money Controls - Coin validator and coin hopper maintenance and repair.

3:30pm - 5:30pm

JCM - Bill Validator Troubleshooting and Repair



Visit the website at slot-techs.com
for more information

Space is limited - Register today!

PLUS - Bonus sessions from 3M Touchsystems (MicroTouch) IDX (Coin validators) and Sencore (Test equipment to speed through monitor repairs)

Dates and times to be announced

Vertical Deflection Circuits - part 2

In last month's Slot Tech Magazine, we took our first look at the vertical deflection circuit in a monitor. We looked at the block diagram in order to get a basic understanding of what the vertical deflection does and how it works. This month, let's begin our much more detailed look at the vertical deflection hardware. We'll start with the old stuff and work our way forward in time, just so you can appreciate how simple this circuit has become in modern monitors. We'll also start at the output of the vertical deflection circuit and work our way back to the vertical oscillator at the very beginning of the circuit.

This is also how we'll troubleshoot most vertical deflection failures. Since the bulk of vertical deflection failures are in the output circuit, we usually start looking there. If we can't find a problem in the vertical output stage of the monitor, we move backward through each stage in turn until we encounter the defective component. It's actually pretty easy once you know what to do and what to look for.

The Vertical Output Circuit

There is one type of vertical output circuit that was used

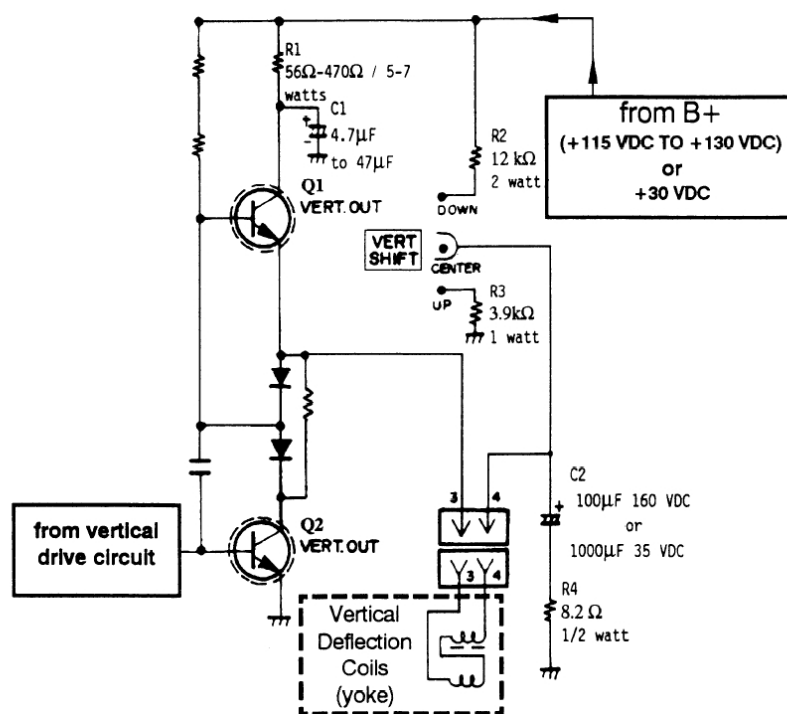
in older monitors. The circuit was more or less the same regardless of model or manufacturer. The component values varied a bit but the basic design was fairly constant.

This circuit used a pair of transistors (appropriately called the "vertical output transistors") to drive the vertical deflection coils in the yoke (see figure 1). In this schematic drawing of a typi-

cal vertical output circuit, the two vertical output transistors are Q1 and Q2.

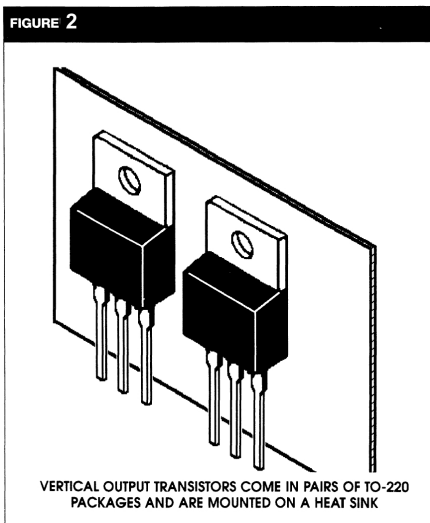
It's usually pretty easy to identify the vertical output transistors in a monitor. They would always come in pairs, in TO-220 packages (see fig.2) and will be mounted on a heat sink. The two vertical output transistors often would be identical NPN transistors as they are here but vertical

FIGURE 1



TYPICAL VERTICAL OUTPUT CIRCUIT

FIGURE 2



output transistor pairs can also be made from two transistors of opposite polarity; using one NPN and one PNP transistor.

The vertical output circuit will get its power in one of two ways. One method uses the main B+ power supply (normally around +115 VDC to +130 VDC depending on the manufacturer and model.) When the B+ is used as a power source, the value of resistor R1 will often be somewhere around 470 ohms, 5 to 7 watts. If this resistor fails, it will open circuit. You will lose the collector voltage at the vertical output transistor Q1. This resistor might also open circuit if one or both of the vertical output transistors fail. Since failure of R1 can be an indicator that there are additional defective components, be sure to test both vertical output transistors when you find R1 to be open.

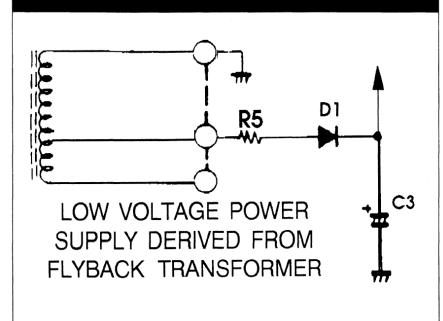
The obvious visual symptom is loss of vertical deflection; a thin, horizontal line across the middle of the screen. In some cases you may see a

very short picture but it won't be more than an inch or two tall. This is a common failure in monitors.

In other monitors, a separately derived low voltage supply of around +24 to +30 VDC is used as a power source for the vertical output circuit (see fig. 3). This low voltage source was usually derived from a small secondary winding on the flyback transformer (see "Flyback Derived Power Supplies." Slot Tech Magazine, January, 2002). The AC output of the this low voltage secondary winding is then rectified by a single diode (D1) and filtered with an electrolytic capacitor (C3.)

When the vertical deflection circuit was powered by a low voltage supply, the value of R1 would be as low as 22 ohms up to about 68 ohms. If you have a loss of collector voltage at vertical output transistor Q1 and you're missing the voltage at the other end of R1 as well, be sure to trace back to the origin of the low voltage power supply. You will often find a resistor (fig.3 R5)

FIGURE 3



in series between the low voltage secondary winding on the flyback transformer and the diode. This will usually be a low resistance (anything from a few ohms to a couple of dozen ohms of resistance) and may have opened, causing the loss of voltage. As we discussed earlier, an open resistor here might indicate additional problems. One or both of the vertical output transistors might be bad. Also, check D1, C3 and any other circuits that are connected to the low voltage power supply.

Take another look at the junction of R1 and the collector of Q1. Do you see capacitor C1? When this capacitor fails, it produces a very strange symptom: a black, unstable hori-

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zontal bar at the top of the screen. You may have some raster show up above the bar and everything on the screen that you DO see appears perfectly normal.

As a test, try reducing the height of the picture using the vertical size adjustment potentiometer. If the black bar shrinks or disappears as you reduce the size of the picture, C1 is bad.

Another quick test is to connect a new capacitor in parallel with the existing one. Just tack it on the bottom of the printed circuit board with your soldering iron and a drop or two of solder (observe polarity). If the problem goes away, you've found your culprit. Of course, you don't really have to solder the capacitor just to perform this test. If you're careful, you may simply hold the cap in your hand and CAREFULLY touch the leads across the existing C1 (observe polarity) as you observe the screen.

You can replace C1 with a larger capacitor if you need to. The original value is really not too critical. For example, if the original capacitor is 47 microfarads and all you have is a 100 microfarad capacitor, it will work fine. Naturally, you must not use a capacitor with a lower voltage rating than the original capacitor. However, higher voltage ratings are always acceptable in all situations.

As mentioned earlier, the vertical output transistors

themselves fail sometimes. In fact, this is not at all an uncommon failure. The best bet here is simply to test them with a digital multimeter (power OFF). They often will not check normally in circuit so you really need to pull them out of circuit to test them. As a matter of fact, when I am working on a monitor with a complete loss of vertical deflection, I generally test these transistors first, before I perform any power-on voltage tests.

The output of the vertical deflection circuit comes from the middle of the circuit where the emitter of vertical output transistor Q1 is connected through two diodes to the collector of Q2. The output is connected to pin 3 of the yoke connector which, in turn, is connected to one end of the vertical deflection coils in the yoke. These two coils are connected in series. The combined DC resistance of the vertical deflection coils will vary quite a bit between models and manufacturers but most seem to fall into the 15 to 40 ohm range. Some, however, have a DC resistance of as little as 8 ohms. It is this difference in resistance (among other things) that often prevents using one monitor chassis to drive a different picture tube and yoke assembly.

Take a look at the other side of the yoke coils. Look at pin 4 of the yoke connector and follow this wire to capacitor C2. This is an interesting circuit and a common failure

too! C2 is known as the "AC return" capacitor. Its function is to allow the 60 Hertz AC signal of the vertical sweep to pass through (to "return" to ground) while blocking any DC (more about the DC later.)

All of the AC current that drives the vertical deflection coils in the yoke has to pass through the AC return capacitor. This capacitor fails a lot! In fact, it's probably the most common failure in the vertical deflection circuit in older monitors. The symptom is a picture that doesn't fill the screen from top to bottom, even with the vertical size potentiometer turned all the way to maximum.

You may also see a picture that's squished at the top of the screen and stretched out at the bottom, or vice-versa. This condition is known as poor "linearity." You may see vertical foldover as well, with the top of the screen bent back over onto itself. As before, a quick test can usually be made by bridging a new cap across the existing one to see if the problem goes away.

The AC return capacitor is important because of the way the vertical centering adjustment is accomplished. In order to move the entire picture up or down on the front of the picture tube, a "DC bias" is applied to the yoke through resistor R2 or resistor R3. If the vertical shift jumper is connected to R2, some of the B+ is connected to the yoke. This moves the picture down. If R3 is connected, a DC con-

nection is made to ground and the picture moves up. Naturally, the center position isn't connected to anything at all because no DC bias is required in this situation. The AC return capacitor keeps the AC vertical sweep signal from interfering with the DC bias and vice versa.

While many vertical deflection problems originate in the vertical output circuit, you will find an occasional problem in the vertical drive circuit as well. However, the vertical drive circuit rarely suffers from a catastrophic failure. Most vertical drive problems cause distortion in the picture rather than the straight horizontal line across the screen that is the symptom of total loss of vertical deflection.

Vertical Drive Using Discrete Components

Before the advent of integrated circuits, monitors used all discrete components (individual parts like transistors, resistors and diodes) for the vertical deflection circuitry. A typical vertical drive circuit is shown in figure 4.

The vertical drive circuit gets its power from a low voltage (+12 VDC - +15 VDC) power supply. As it is with just about all low voltage power supplies in older monitors, this low voltage power supply is derived from a winding on the flyback transformer. A single diode and a filter capacitor convert the AC output of the

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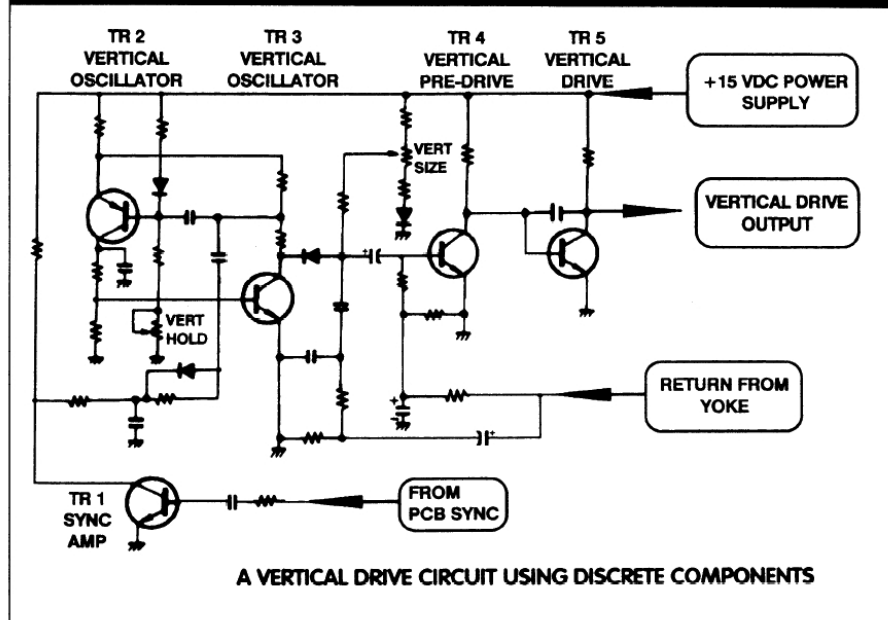
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FIGURE 4

flyback into direct current. If you have vertical deflection problems of any type, be sure to measure the voltage of this power supply. Just find a convenient test point (like the top end of any of the resistors that are connected to this supply) and measure the voltage. The power is on, so be careful!

The vertical sync signal that comes from the game's CPU is connected to transistor TR1, the sync amplifier. If you have a problem with an unstable picture that is rolling (as if you need to adjust the vertical hold control) this transis-

tor might be bad. However, this is a rare failure that you probably will never see.

After amplification by TR1, the sync signal is passed to the vertical oscillator. The vertical oscillator is made from two transistors, TR2 and TR3. The vertical oscillator generates the 60 Hertz "vertical sweep" signal that will eventually drive the vertical deflection coils in the yoke. When viewed on an oscilloscope, the output of the vertical oscillator will appear as shown in figure 5a.

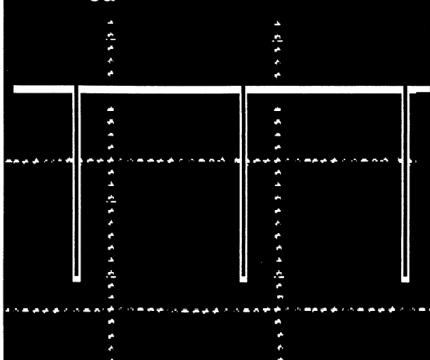
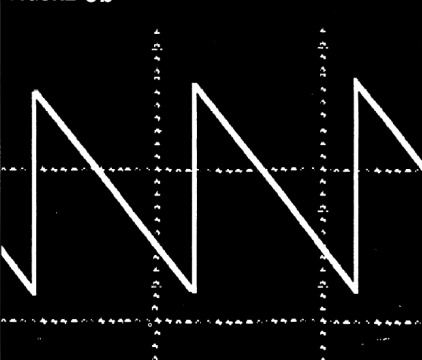
Notice the vertical hold po-

tentiometer that is a part of the vertical oscillator circuit. The vertical hold potentiometer is used to adjust the 60 Hertz frequency of the vertical oscillator. In fact, this pot is labeled "vertical frequency" in some monitors. When you adjust the vertical hold, you're actually changing the frequency of the vertical oscillator. All you need to do is bring the vertical frequency somewhere in the ballpark and the sync signal will lock it firmly in place at exactly the proper frequency. This prevents the picture from rolling.

The output of the vertical oscillator is now passed to transistor TR4. This is the vertical pre-drive stage. The vertical size potentiometer controls the voltage at the base of TR4 to vary the height of the picture. It is here in the vertical pre-drive that the narrow pulses created by the vertical oscillator are converted into the "sawtooth" waveform that is required by the yoke (see figure 5b.)

We see some failures in the vertical pre-drive circuit. Although you may occasionally need to test the transistors, diodes and resistors in this circuit, these are almost exclusively electrolytic capacitor failures. Some of the capacitors are in an "RC network" formed by a resistor and a capacitor. Technically, this circuit is known as an "integrator". The integrator circuit changes the skinny pulses from the vertical oscillator into the sawtooth waveform.

- Next month: Part 3

FIGURE 5a**FIGURE 5b**

Editor's Note: Just before heading out for a training mission at the Nugget Casino in Fallon, Nevada, I contacted Ceronix's Ramiro Limon and asked him to put together a kit of spare parts for me.

"Sell me about three hundred bucks worth," I said.

When Ramiro showed up to give us a day of training on repairing Ceronix monitors (see related article in this issue of Slot Tech Magazine, page 14) he brought the parts with him. We had a great time with him and learned a lot about the easy way to troubleshoot and repair Ceronix monitors. He left the box of spare parts, along with a packing list.

On the following pages is a list of all the components he brought with him, along with the quantities. For those just starting out in electronics and monitor repair, I've included pictures of the parts. Hey! Don't laugh. You didn't always know what the parts look like, did you?

Naturally, there are larger quantities of those parts that: a.) fail the most often and b.) are the least expensive. It doesn't make much sense to buy less than 100 of a part that costs just a few cents. Likewise, you may not want to stock large quantities of expensive components, regardless of their failure rate.

Prices on replacement components are very low when purchased directly from Ceronix. They WANT you to be able to fix their stuff.

This list comprises some of the most common replacement components (excluding CRTs, deflection yokes and fly-back transformers) used in Ceronix monitors. Armed with just a few hundred dollars in spare parts, you should be able to repair a million bucks worth of monitors.

A great big Slot Tech thank you to Ramiro Limon. You were great.

Ceronix
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Auburn, CA 95602-7419
tel. 530.886.6400
fax. 530.888.1065
www.ceronix.com

- Slot Tech Magazine

Suggested Ordering Quantity

Electrolytic Capacitors

100



CPC1100
1uF 50V 20%
CETLQ1H010M0511AD

100



CPC1101
10uF 50V 20%
CETLQ1H100M0511AD

100



CPC1102
100uF 25V 20%
CETMZ1E101M0812AA

25



CPC1109
470uF 50V 20%
CETLQ1H471M1321FD

10



CPC1111
220uF 250V 20%
CEHRB2E221M2525TX

10



CPC1112
220uF, 100V 20%
CEUST2A221M1325FD



Transistors

Suggested Ordering Quantity

50



CPQ1301
PN2907A+28+A
30V, 6A PNP - HSMC

50



CPQ1302
MPSA64 FC-A
30V, .5A, PNP, DARLINGTON

50



CPQ1303
PN2222A+28+A
30V .6A NPN - HSMC

5



CPQ1304
2SK1446LS
4.5A, 450V, MOS FET

5



CPQ1305
2SD1651 TRANSISTOR
2SD1651 CTV-YB

5



CPQ1306
2SC3675 T0220-SD
.1A, 1.5KV,NPN TRANSISTOR

5



CPQ1307
2SC4159E T0220ML-SD
2SC2344E TRANSISTOR

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**Suggested
Ordering
Quantity**

Transistors - Cont.

10



CPQ1308
2SC3467AE TRANSISTOR
2SC3467 E-AE AMMO PAK

10



CPQ1309
2SA1370 E-AE TRANSISTOR
.1A, 200V, PNP AMMO PAK

10



CPQ1310
2SA1371 E-AE TRANSISTOR
.1A, 300V, PNP

5



CPQ1318
2SC5690-PM-YB TRANSISTOR
12A, 1.5kv, NPN



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**Suggested
Ordering
Quantity**

Diodes

200



CPD1250
FDH400-NS-A - FAIRCHILD
100mA 200V DIODE

50



CPD1256
BZT03-D160+TF+A TEMIC
3W 160V ZENER DIODE

50



CPD1259
TF307 + T6 + 1 - UPM
3A 1Kv FAST DIODE

Integrated Circuits



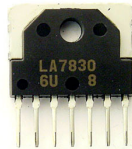
**Suggested
Ordering
Quantity**

5



**CPI1400
LA7851**

5



**CPI1401
LA7830**

10



**CPI1402
CA3224E - HARRIS IC
CRT AUTO BIAS**

5



**CPI1403
XRC5184**

20



**CPI1405
LM324N - ST IC
QUAD OP-AMP**

10



**CPI1406
LM339N - ST IC
QUAD COMPATOR**

5



**CPI1407
L7812CV - ST IC
3 TERM REG, +12V**

10



**CPI1409
XRC5346**

10



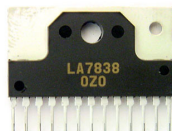
**CPI1410 LM393N - ST IC
DUAL COMPARATOR**

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**CPI1414
LM392N
NSC OP-AMP/COMPARATOR**

5



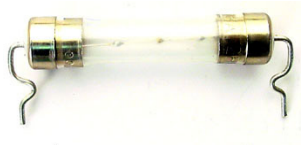
**CPI1415
LA7838**

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**Suggested
Ordering
Quantity**

Miscellaneous

20



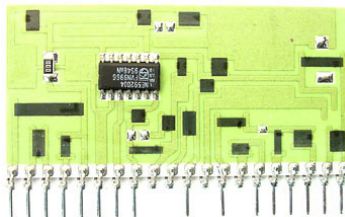
CPR0425
3 AMP 250V FUSE
U/C ATP-AK 3A 250VHST

10



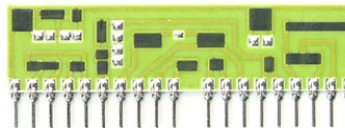
CPR0433
24V COIL, 200V @ .5A RELAY
COTO P/N 9007-0045

10



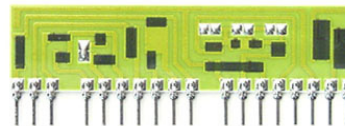
CPR0500
"B" VIDEO AMPLIFIER

10



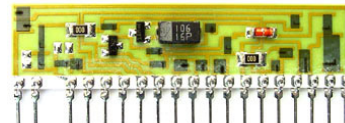
CPR0501
"J" PRA POWER SUPPLY

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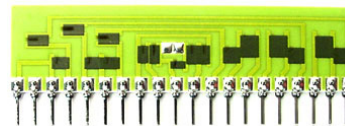
CPR0502
"I" PRA HORIZONTAL CTRL

5



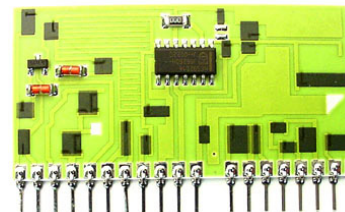
CPR0503
"H" PRA VERTICAL CONTROL

20



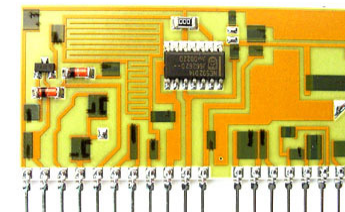
CPR0506
"C" PRA AUTO BIAS 'REV B'

5



CPR0510
"K" VIDEO AMPLIFIER

10



CPR0511
"BLUE" VIDEO AMPLIFIER



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Press Release Ignites BV Controversy

Agency Accidentally Releases Confidential Test Results

Editor's Note: A couple of months ago, I received an e-mail from an employee of a well-known and respected marketing agency. It went more or less like this - *Hey, Man. JCM just completed a bill validator acceptance test in a casino where we really beat out the competition. We want to give Slot Tech Magazine an exclusive on publishing the results.*

He gave me a few scant details so I asked him to provide me with some additional information. I wasn't about to run a press release that simply stated "Tests were conducted earlier this year over an 8-week period at a casino in Las Vegas by an independent firm" so I asked him to name the independent firm and send me a copy of their report.

In his response, he attached a preliminary copy of the press release. The release was more-or-less what you read in the May, 2003 issue of Slot Tech Magazine in the article entitled "JCM Beats Competition in Head-to-Head Test." However, the press release didn't have enough details to make it credible.

I responded with the following demand for additional details: "I really need to know who the 'competitor' is, which model BV you're talkin' about AND how the reject/accept rate was calculated. There is

some controversy here as MEI (I assume that is the 'competitor') claims that it flags bill rejects in a different manner than JCM, accounting for the difference in acceptance rates between the two units."

His response was to send me the press release you read in May. With the deadline at hand, it was published just as he sent it. It is not Slot Tech Magazine's policy to verify the data provided in company press releases. That is not the business of a trade journal (not this trade journal, anyway). We print 'em as we get 'em. If someone has a problem with the press release (like a competitor, for example) they'll let me know.

Which is exactly what happened in this case. A day after the May issue hit the street, I received a telephone call from the marketing guy. He sounded a little panic-stricken and in a somewhat conspiratorial tone of voice said to me something like -- *Holy Cow! We weren't supposed to release some of that information and they're pissed-off.*

To be honest, my first reaction was to laugh. I know I shouldn't have because there were/are some serious ramifications to this whole affair but like watching someone fall backward in their chair or take a header on a skate-

board, you almost can't help but laugh. I suppose it's because deep inside, you're really glad it wasn't you and in this case, I was in the clear. It was an official press release from the official marketing and advertising agency for one of Slot Tech Magazine's best supporters and advertisers. They wanted me to run this press release and by George, I ran it for 'em.

Immediately following that call, I received a call from Brian Carty of Advanced Electronic Systems, Inc. Many of you are familiar with Brian, as he has been a featured presenter at TechFest. As the representative of MEI bill validators to the gaming industry, AESI was naturally interested in this press release. Brian had been aware of the test. He asked me how some of this test information came to be released in Slot Tech Magazine so I told him the story of the advertising dweeb.

Well, as you might expect, Advanced Electronic Systems, Inc. wanted to have a chance to back up their homeboy, MEI. They asked for equal time to state their case, so here it is. As it was with the previous publication, this is presented as submitted, without editing.

I really feel sorry for that advertising guy, though. I wonder what he's doing for a living now?- rf



Advanced Electronic Systems, Inc.
Sales, Technical Support, Service



June 9, 2003

Randy Fromm
Slot Tech Magazine
1944 Falmouth Dr.
El Cajon, CA 92020-2827

Dear Randy,

Normally I do not respond to ludicrous claims made by JCM but in the case of the article (JCM beats competition in head to head test) placed on pages 28 and 29 of your May issue I must respond because *JCM is misinforming and not fully informing your readers*. I guess we have narrowed down where the former Iraqi Minister of Information found a job. He is either working for JCM or their advertising firm. I wonder if JCM is overcompensating for something?

Now that I am done with my wise cracks let me get down to specifics.

Misinformation # 1 During the test in question JCM did not account for the acceptance or rejection of bar-code tickets. I would think that since tickets were a big factor in the test they should have accounted for them.

The other bill acceptor in the test (which was the MEI "Cashflow") did account for the acceptance and rejection of bar-code tickets. MEI believes the customer should know how their product performs with all bills and tickets presented to the bill acceptor.

Misinformation # 2 JCM does not account for the rejection of bills that have a noticeable bent corner. What happens is the JCM bill acceptor takes the bill in only about 1/2 an inch and instantly rejects it. The problem is that they do not count this as a rejection. Your readers should try inserting a bill with a bent corner and see what they find.

The "Cashflow" not only will take the bill in all the way, it will actually attempt to accept it.

This brings me to another point which is acceptance rate vs. attemptance rate.

First, by not accounting for tickets or bent cornered bills, JCM is not using an accurate formula to determine their acceptance rate. Therefore the 98.1% that they claim is not factual and they are misinforming your readers.

Second, on other tests where JCM went up against an MEI bill acceptor, it was found that although JCM reported a slightly higher acceptance rate, machines with MEI bill acceptors had a soft count drop that was substantially higher than games with the JCM bill acceptor.

This can easily be explained as follows. *The population of bills that JCM will attempt to accept is finite while the population of bills that MEI bill acceptors will attempt to accept is infinite.* MEI bill acceptors attempt to accept any bill inserted regardless of the condition of the bill. In most cases MEI will accept the bill. In some cases MEI will reject the bill. In all cases MEI accounts for the bill in their acceptance rate calculation.

Below you will see a graphical explanation of "Attemptance" rate. This gets a little wordy but hang with me as I explain the graph. The vertical axis represents the acceptance rate of a bill acceptor starting from the bottom at 0% going up to the top at 100%. The horizontal axis represents the physical condition of the bill starting from the left as a brand new bill and moving to the right as a physically unfit bill. As the condition of the bill deteriorates the acceptance rate of bill acceptors begin to drop. Based on this graph it is easy to see that bill acceptors that refuse to attempt acceptance of a severely worn bills or bills with bent corners, and, do not account for those bills in their acceptance rate calculation, could in fact report a higher acceptance rate than bill acceptors that attempt to accept any bill that is inserted and account for all insertions.

The important thing to a casino operator is the larger the population of bills that the bill acceptor will attempt to accept, the larger their soft drop will be.

In addition to acceptance rate or attemptance rate, there are many other factors to consider when accessing a bill acceptor. Jam rate, easy of maintenance, flash download speed etc..etc..

Therefore, I would like to present the following challenge.

MEI will go head to head with JCM anytime, anywhere. Let's let casinos draw their own conclusion about who makes a better bill acceptor.

By the way, the casino that JCM mentioned in their article has been buying new games. In those games they have been specifying the MEI "Cashflow" bill acceptor. I guess that's the bottom line.

Sincerely yours,

James M. Brendel
President
Advanced Electronic Systems, Inc.
Representatives for MEI bill acceptors

For more details about "Attemptance Rate" please see an article by Neil Young of MEI in the July issue of Casino Enterprise Management.

[Advanced Electronic Systems, Inc.](#)

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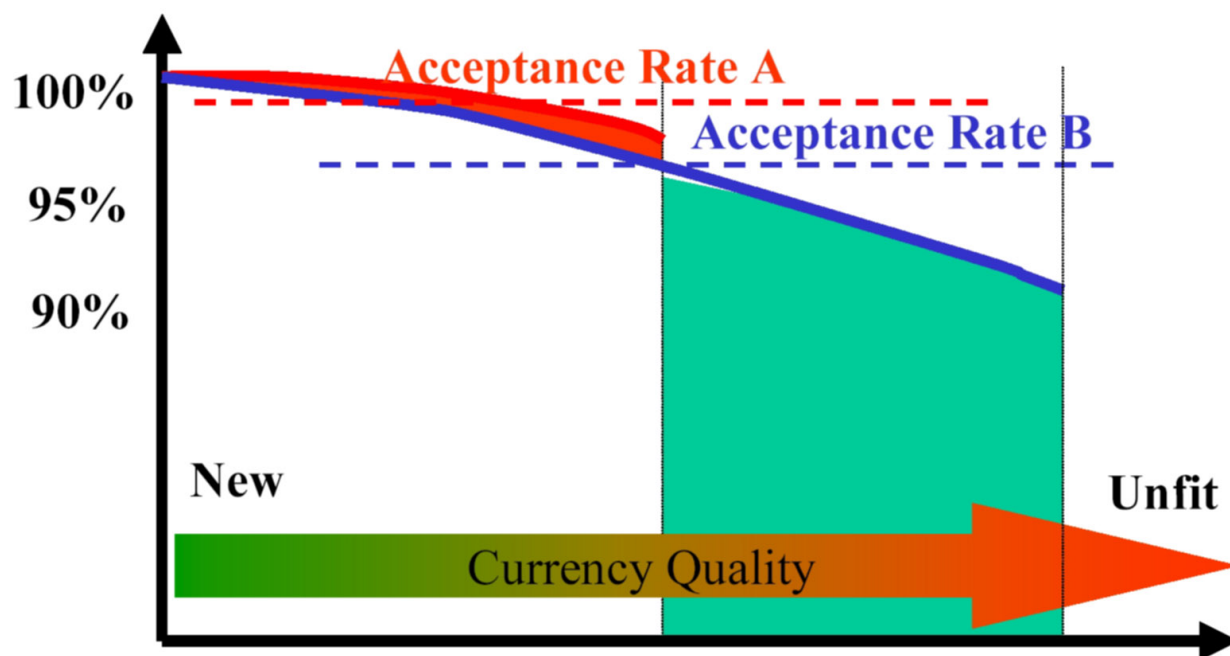
Buy and sell the used major components of a slot machine (bill validators, mechs, hoppers, printers, touch screens, monitors & signs).

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Graphical explanation of "Acceptance" rate



The vertical axis represents the acceptance rate of a bill acceptor starting from the bottom at 0% going up to the top at 100%. The horizontal axis represents the physical condition of the bill starting from the left as a brand new bill and moving to the right as a physically unfit bill. As the condition of the bill deteriorates, the acceptance rate of bill acceptors begin to drop.

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Additionally, current and future articles more-or-less assume that readers are already familiar with what has been covered in past issues. This editorial policy assures that Slot Tech Magazine's contributing writers are not limited to "writing down" to the level of a novice technician but are free to continue to produce the most comprehensive technical articles in the gaming industry.



Randy Fromm's

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