

# MAGIC MAKERS







## For the team behind Bruno Mars' *24K Magic* Tour, no detail is to small

By: Sharon Stancavage

**B**runo is very involved in all of the aspects of his tour. He has a great vocabulary with which to describe what he wants, and usually spends a lot of time pulling references himself and finding things that he likes, whether it's costumes, staging, lighting, or video. Anything that is a reference for him, he'll share and say, "This is what I'm looking for." So says Cory FitzGerald, who handled the lighting design for the current Bruno Mars tour, *24K Magic*.

"With Bruno, everything starts with the music," explains production manager Joel Forman. "He really worked hard on getting the music where he wanted it to be before we could start adding the production elements. As much time as we had in rehearsals, he knew what the elements were and he knew what he had to work with. But it wasn't until the music was done that we were really able to dig into which production elements played where."

"The new album was heavily influenced by '90s R&B, as well as hip-hop, and Bruno was interested in the look and feel of that particular era," FitzGerald says. "A lot of the references that he was going through and we were pulling together had to do with large arrays of PAR cans—classic-looking shows that were walls of lights, ceilings of lights, or big moving pods of lights. We also had a lot of references from The Jacksons' *Victory Tour* and Queen shows of that era."

The set, designed by LeRoy Bennett, has a retro-club feel. "The major element, which plays the entire show, obviously would be the fascia element that ties the stage and the ceiling together," Forman says. "It defines the space that is unique to Bruno and makes a performance area that's big enough for an arena, yet puts the focus in a small box." The LED fascia is comprised of a white polycarbonate for a diffusion effect. The fascia squares vary in size, depending on their locations; the largest on the rigged proscenium are 7' wide by 3.75' high, while the largest on the stage sections are 8' wide by 2.3' high. Todd Vernon, project manager at Lititz, Pennsylvania-based TAIT, where the set was fabricated, notes, "With the lighting and automation truss grids being so condensed, it meant that we had very specific sizing limitations we had to adhere to. The fascia on the stage itself was also a last-minute addition to the project scope, so we had to design and build that element while the tour was being sea-freighted to





The upstage columns rotate and transform from light boxes into arrays of Robe Spikies.

Europe; this also required on-site integration in Antwerp for the first time prior to the first show.”

The stage floor is comprised of 58 opaque multi-layered pieces. Vernon says, “The bottom layer is a machined clear acrylic, for the structure of the walking surface; the mid layer is a white polycarbonate, for light diffusion; and the top surface layer is a smoked polycarbonate, to match the finish of the standard high-shine black staging around the light boxes.” Underneath them are TMB Solaris Flares, which turn the floor into a giant light box. FitzGerald notes, “We can do effects on the floor, which essentially means we have a ‘Billie Jean’ [referencing the Michael Jackson “Billie Jean” music video] style light-up stage.” GLP impression X4 Bar 20s also line the perimeter of the stage.

The synthesis of lighting and scenery continues upstage. Forman explains, “There are five 7’-wide-by-16’ 9”-high columns upstage that rotate; one side is a light box and the other side is populated with 375 Robe Spikies.” The light box columns appear during the opening number, “Finesse.”

“Integrating lighting in and around the set has been a genuine collaboration between [Tait] and our production and design support team,” notes Susan Tesh, VER’s executive director, global lighting division; the firm’s Los Angeles office supplied the tour’s lighting gear. “VER has

been working with Joel Forman and Cory FitzGerald on Bruno Mars since before 2012,” Tesh continues. “We’ve had a strong working relationship with his team, including stage manager Brian Bassham and tour manager Shaun Hoffman. There are good relationships on many fronts between Bruno Mars’ folks and the VER folks; it makes a huge difference when people enjoy working together to produce amazing shows. You really feel that on this tour; the best of the best enjoying what they do and delivering a great show every time. It’s an honor to be involved.”

In addition to the Robe Spikies, FitzGerald says, “We have [Philips Vari\*Lite] VL6000 BeamWashes placed in terms between the columns. They do a searchlight-type beam with a really raw edge; there’s nothing else quite like them, because they have mirror reflectors. The VL6000 has a huge face, it’s fast, and it has a very punchy beam.” There are six terms, each with eight VL6000s.

The biggest lighting statement, one that reflects Mars’ vision of a show that references the hip-hop era, are twenty 8’-wide-by-3.75’-deep-by-2.4’-high pods above the stage. Vernon notes, “These dimensions were chosen so that the pods would fit into a truck easily and not require additional packaging.” Each is filled with 21 Spikies. Forman picks up the story: “The manufacturer called me when we were bidding this out and said, ‘Is this really hap-

pening? Because I have every vendor calling me, asking about them for your tour.' I said, 'Yes, it's going to happen, and we're going to give it to someone, so get to molding some plastic and building some lights, because we're going to need them.' And to their credit, Robe did it in about a month's time. We loaded into [the rehearsal facility] Rock Lititz on February 15, so in the course of six weeks, the design went from having about 100 Spikies to 800 or so. [The total is 795.] They were showing up by the truckload in cardboard boxes." Tesh adds: "VER is a global provider and we continually invest, so purchasing large numbers of good products makes sense for us. With such investments, we're able to support new and original designs that other regional lighting companies might not be able to do. We work closely with a number of designers, helping them make their shows artistic successes."

FitzGerald is a fan of the Spikies: "We knew we wanted it to be all the same type of light, so it was more about which fixture would give us the most flexibility, as well as the size, form factor, and speed. I knew the Spikies would give us the most flexibility and options with all of their features, as well as the homogenized lens, which gives everything a nice even feel."

The pods are hung on a total of 40 Nav-Hoists, controlled via Tait Navigator. FitzGerald notes, "We spent a lot of time building automation looks with the different automated pods, so that we could shape the show in different ways; we would just change the feeling or change the back wall, and that would give us enough of a different look to build us a whole new section out of that."

Also used are 49 Philips Vari\*Lite VL4000 BeamWashes located above the stage. "The VL4K is my go-to; it does everything I need," FitzGerald says. "It's our overhead back light and front light; they're big, old light cannons."

Downstage is an additional truss of Solaris Flares. Forman adds, "The first downstage truss has a header that is lined with 70-something Flares from end to end."

For spotlights, FitzGerald has seven Robe BMFL Spots on a dedicated truss downstage. "We're using the BMFL fixtures as front followspots and they're remote-controlled with a new system—LiteCOM's SPOTDRIVE," the lighting designer explains. (LiteCom is a Danish equipment supplier, among other things it has provided gear for more than one edition of the Eurovision Song Contest.) SpotDrive is a handlebar automated lighting controller mounted on a tripod, which utilizes cameras and monitors. It provides shutter, dimmer, zoom, blackout, and focus control and has slide control for the iris and dimming, as well as seven programmable buttons for colors of filters.

FitzGerald programmed the show on an MA Lighting grandMA2 console, with assistance from lighting director Whitney Hoversten. "It's a very heavily cued show. Everything is very specific with the music, so there are lots and lots of cues. Some songs have time code, but some

don't, so it's very much live either way," FitzGerald says.

One of the most surprising aspects of the production is the color palette. The lighting designer notes, "There are lots of primary colors coming out of the era that we were trying to reference. A few thematic songs feature very bold, primary colors mixed together; that's something I wouldn't necessarily do, but I think on this it works, especially in terms of the content." Specifically, he notes, "The first song, 'Finesse,' is definitely multi-colored and very referential to the era, so as soon as the show starts, there are interesting looks from a color standpoint. I think 'That's What I Like' is certainly a more red/green/blue/yellow bold kind of song; it's about mixing colors that are very primary, while 'Versace on the Floor' and 'Calling All My Lovelies' are more about interesting saturated pinks and ambers."

Expanding on "Versace on the Floor," Forman says, "There are arches that play during the song—three upstage and one downstage, and two at left and right." The arches range in height from 10' to 14'. "Each is a custom aluminum beam structure with taper and latch connections between sections," notes Vernon. The arch exteriors are made of a sign-grade white polycarbonate. Forman adds, "The left and right arches live on cable bridges; the only two independent arch trusses are up- and downstage. Since we could make the others into cable bridges, they serve a purpose, and it's not like we're flying 20 extra points for one song. The arches go together pretty easily."

During the song "24K Magic," a 60'-wide sign, spelling out "XXIV," appears. "It has some neon LEDs built into it," Forman says. "It's a structure, it's something that was very literal. Again, it's another Tait-constructed piece that goes together easily."

A white drop, supplied by Rose Brand and placed on a Tait Austrian system, wraps around three sides of the stage; it's used at the top of the show and after the finale, "Uptown Funk." "A 20'-high soft good basically hides all the arches, letters, and video wall," Forman says.

To keep these elements hidden, the show requires a fairly high trim height. "We're hanging about 150 points per day and want the hook height at about 60' plus; 65' is ideal," Forman notes. "For many of the buildings in Europe, between trim height and sheer loading capacity, we were forced, on a pretty regular basis, to make some compromises, be it in height and in weight to get to an acceptable safe allowance in these buildings. The trim heights in the States will be far greater, so we'll have fewer issues." The lowest trim that enables the show to use all the elements is 55'. Forman adds, "Fortunately, we have a great crew of riggers, an amazing stage manager and the best carpenters and automation crew. We talk daily and navigate our way through these things so that we have a good understanding going into next building."

A 56' x 20' SACO Technologies 12mm video wall is featured in approximately one-third of the songs; the DeKalb,





Illinois office of Solotech provided the video gear and IMAG camera package. The same video product is found on eight variously sized stage lifts. FitzGerald explains, “We had Empirical Studio, led by Ben Nicholson, come in and build the content. We use a lot of Notch effects and JT Rooney headed up that side of things; those effects are generative inside the servers, as opposed to pre-built content, so a lot of that stuff ended up being manipulated and working in real time to build content for the show.” The show uses two (a primary and a backup) d3 Technologies 4x4pro media servers, provided by VER. “Each server has an SDI VFC card and DVI output card. We also supplied Notch playback licenses for each server, as the video content for the show is heavily reliant on Notch effects and content sequences created by Empirical Studio,” explains VER media server programmer/engineer Drew Atienza.

Atienza adds, “We selected d3 as the media server for the tour as the content would primarily be Notch-driven. We also picked d3 as the tour would be ‘hands-off,’ meaning there was no dedicated media server technician. The video engineer would open the rack, connect all the feeds,

and launch the system, but that would be it. With the success of this setup for Justin Bieber’s *Purpose World Tour* in a similar situation, we felt comfortable doing this.”

### Special effects

Pyrotek, located in Markham, Ontario, is providing the special effects that are an integral part of the production. Bob Ross, Pyrotek COO, says, “In the preliminary meetings with Bruno’s design team and management, we initially discussed the categories that he wanted to display in his show. This time around, they wanted to incorporate flames, pyrotechnics, confetti, and lasers.”

“24K Magic,” the second song of the set, starts and ends with pyro. Ross explains, “We have a total of ten pyro zones, with eight zones positioned across the mid-stage area along with two different zones in the lighting truss.” In Europe, the pyro product was provided by Le Maitre and its team, led by Sharon Wells; in the US, it will be provided by Next-FX and LeMaitre. Pyro also appears during “That’s What I Like,” “Runaway Baby,” and “Uptown Funk.”





Opposite: Twelve audience-scanning and 12 high-powered lasers from Kvant are used throughout the show. Above: The XXIV sign, courtesy of Tait, appears during “24K Magic,” along with pyro from Pyrotek.

“This time for Bruno, we have twelve 20W Kvant Spectrum lasers positioned on the upstage wall and lighting rig, along with an additional 12 Kvant audience scanning lasers; we’re using the audience scanners for the song ‘Versace on the Floor,’” Ross says. “Versace on the Floor” engulfs the audience in violet lasers, while “Calling All My Lovelies” pairs white high powered lasers with Congo Blue stage lighting.

The hit “Grenade” is the only song with flames. “We have eight [LeMaitre] Salamander Quad Pros positioned strategically across the entire stage,” Ross says. “This positioning was carefully plotted out in order to allow for the high-paced and complex choreography that we have all come to love and expect in a Bruno Mars show.”

For “Locked out of Heaven,” the first song of the encore, “We use six Turbo confetti blowers that are fabricated in-house by Pyrotek,” Ross adds. “There are four units on the downstage edge and two at the front of house. The confetti has been supplied by Los Angeles-based Artistry in Motion; Roger [Wachtell] and his team are a pleasure to work with.” Pyrotek is also providing four

LeMaitre GForce 2 foggers and chiller systems to provide low fog throughout the show.

### Sound

Chris Rabold, the tour’s front-of-house sound engineer is using a Clair Global Cohesion PA. “It has excellent head-room and takes very little manipulation to get it tuned properly,” he explains.

It also meets another of Rabold’s qualifications: “I’m never looking for a PA to sound a certain way in terms of color; I’d rather the system be all but invisible and I’ll do my part to make it better or worse. The Cohesion is very transparent, but, with that being said, what character it does have is a bit aggressive. It does ‘in your face’ very well and, for a tight, punchy, hi-fi, modern sound like Bruno, it fits the bill just fine.”

Rabold adds: “Our systems engineer and my partner, Chris ‘Sully’ Sullivan, is probably the best I’ve ever worked with and I’ve been fortunate enough to work with some good ones. His approach to system design is as intense and thorough as you’re going to find. It makes getting con-





The pods containing Spikies are hung on 40 Tait Nav-Hoists, controlled via Tait Navigator.

sistent results far easier for myself and for Bruno.”

Rabold has 32 Cohesion CO-12 full range cabinets for the main PA, 24 Cohesion CO-12s as side hangs, and 16 Cohesion CO-8 as 270 hangs. There are also four Cohesion CO-8s for front fill, eight CO-8s for side fill, four Cohesion CP-218 ground subs, and six CP-218 flown subs. “It’s a great system. I truly believe that,” he notes.

Rabold runs the show on a DiGiCo SD7 console, a product he describes as “oftentimes my default on gigs with a ton of inputs. It’s incredibly fast to program and things come at you very fast with a gig like Bruno Mars.” The SD7 is also transparent, he adds: “The console itself,

to me, doesn’t really sound like much of anything, which is good, as it allows me free rein to do what I want.

Functionally, it offers so many different ways of laying out the console to your liking; it’s very flexible in that regard. If I take a job and I know I need to get results fast, I typically go with a DiGiCo.”

Rabold has a variety of outboard gear. “I like pieces that generate certain tones and I still enjoy the tactile experience of looking away as you turn a knob and begin to hear the audio change,” he says. “I love plug-in technology but there’s still nothing like getting hands-on with a piece of gear.





“For Bruno, specifically, I use a [Rupert Neve Designs] 5045 [Primary Source Enhancer] but only sparingly; let’s call it a gate, which it more or less is, only with a slightly more esoteric way of accomplishing the task. I then have a somewhat old-faithful-type signal path for Bruno in the live world, which is a [BSS Audio by Harman] 901 [dynamic equalizer] into an [Empirical Labs] EL8 distressor; it works great. I also dedicate one outboard reverb from Bricasti M7 for his vocal.

“Most of my outboard gear focuses on lead vocal, drums, and bass as well as the stereo bus. For drums, I use an Empirical Labs Fatso [Model EL7] on the snares;

that couples with an Overstayer M-A-S [Model 8101, from Overstayer Recording Equipment, Inc.] to complete the snare sound. Sometimes I mix and match different compressors, but, for the majority of this run, I use an Overstayer SVC [Stereo Voltage Control Model 3722, peak limiter/compressor] on my main drum bus and a Smart Research C2 [compressor] for my [drum] parallel bus. From time to time, those will get swapped out for an Overstayer SFE [Model 3701, stereo field effect] or a [Universal Audio] API 2500 [bus compressor]. All of those units do really cool and unique things to the overall drum sound and they all do it a little differently. I’ll literally just change them out for fun sometimes.”

The bass DI “gets split into three channels,” Rabold explains. “One channel has a distressor on it with just a couple of decibels of gain reduction here and there. Another channel goes into an Overstayer M-A-S and gets clobbered; it becomes this ball of unmoving power. The third channel goes to a [Tech21] SansAmp PSA 1.1 that’s set to boost some midrange and provide some distortion.”

“My usual go-to signal path for the main stereo bus, and the one that sees the majority of work, is an API 2500 going into a Sonic Farm Creamliner [stereo line signal conditioner]. The 2500 adds muscles, and nothing sounds quite like it, once you let the transients bend around the compressor. The Creamliner adds harmonics and if you hit it as hard as I do, it acts as a limiter. Your peak-to-average level really flattens out once it goes through there.”

Rabold also uses a Rupert Neve Designs Portico II MBP [master bus processor]. He admits, “I’m not crazy about the compression, although the limiter section is great. You can add different levels of coloration via the Silk controls, and I prefer the red setting, which focuses primarily on the higher end of the frequency spectrum. The width can be really cool, too, if you just barely engage it.”

Waves is the nexus of his plug-ins. “I’ve done tours without it and had success but, by and large, Waves is nice to have, as they are industry-standard plug-ins that almost everyone knows, including a lot of artists who are used to seeing them being used on their album projects. It’s nice to say, ‘Yeah, I have that’ when someone brings up what was done in the studio. Of course, there’s rarely a correlation between what works in the studio versus what works live. I’m happy to play along, though.”

Specifically, he notes, “I like the SSL EQs [E-Channel] on drums and I like their bus compressor emulation [G-master buss compressor] in certain spots too. Other than that, I’ll use the occasional C6 [multiband compressor] but not nearly as much as I used to. Effects-wise, I absolutely love the H-Reverb; man, that thing is fun. I use the Super Tap 2 delays religiously as well, and the L2 [Ultramaximizer peak limiter] is a mainstay on my record bus that goes to Bruno or any artist for that matter.

“As far as actual microphones go, we use a combina-





Eight Le Maitre Salamander Quad Pro units upstage provide flaming accents for “Grenade.”

tion of Shure SM7s, SM57s, Royer 122s, and [Audio-Technica] AT4050s on the different guitar rigs.” There is a variety of mics on the drum kit. “Drums get a Shure SM91, Telefunken M82, and [Moon Mics LLC] DW Moon Mic on the kick, and SM57s and Mojave 101s for snare tops, with Telefunken M80s on the bottom. The high-hat and ride are also Mojave [Audio] 101s and the overheads are Mojave 201s,” he says. The Mojave mics are an atypical choice. “I do get a lot of questions about them, and for good reason; I’ve never found a microphone that worked better for overheads in a live setting than their MA201s. They’re clean and bright in just the right way without getting that nasty white-noise, overly hyped sound that is way too easy to get with people bashing away on cymbals in a live show. They capture the whole kit really well, too; it’s definitely not something I use just for cymbal sounds.” As for the rest of the band, the Leslie cabinet has a Beyerdynamic M88 on the bottom rotor and two Sennheiser 906s on top, while the horns are all captured with DPA 4099s.

The back-up vocals “come from Sennheiser 9000 Series [digital wireless] microphones with 9245 capsules, which we really like,” Rabold says. “Bruno was on the 9000 for a while but, for familiarity’s sake as well as literal comfort, he has gone back to his old 5000 Series mic with

the 5235 capsule. The goal is to get everyone back on the 9000, since it really is a better product in every way.”

On a nightly basis, Rabold’s biggest challenge involves getting Mars’ vocals out front. Rabold explains, “He’s constantly moving and likes to flip the mic from hand to hand. Because of how mobile he is, you end up getting a vocal sound that can come from any number of angles as it enters the microphone. Naturally, this variation in proximity to the capsule means you have a constantly changing tonality. Between that and the fact that we’ve coupled his vocal to an absolute freight train of a music mix, it can be challenging. It’s just a very delicate dance, one that keeps my hand on his fader all night as you’d expect.” That all being said, Rabold concludes, “I have an absolute blast doing it, despite the challenges. I’m as proud to be a part of this show as any I’ve ever done.”

The show has dates into 2018. “Bruno is still working on it,” Forman says. “He’s a professional and a perfectionist, so he’s always trying to make the next show better than the last. When we finish our last show with this tour sometime in 2018, he will finally stop trying to make it better.” Bruno Mars’ *24K Magic Tour* is in the US until November; it then travels to South America and beyond. 📶



24K MAGIC WORLD TOUR

**BRUNO MARS**

Photo: Florent Déchard



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