

# SPLIT ENGINEERING

Digital Image  
Analysis Software  
Systems & Services

*More Than Just Size...*

Volume 1, Issue 8

September 2007

## Above the Clouds in Indonesia

Split Engineering started business in December 1997 and in early 1998 Freeport McMoran's PT Freeport Indonesia copper-gold mine (PTFI) became one of the first companies to embrace the Split-Online (SOL) technology. Their two-38" foot SAG mills are among the largest in the world, so it is important to quantify the particle feed size distributions going into their mills. Using the Split Engineering technology they could now tell the operators and the control systems the feed size in an effort to make their operations efficient. After nearly ten years of using the Split-Online system technology, their operations and tonnage have expanded significantly, with three large Primary Crushers throughout their operations. In 2006, PTFI Management decided to expand the use of the Split-Online system to the upper ore flow, close to the mining operations with implementation of cameras monitoring the feed and product the Primary Crushers to provide quality control on their comminution circuit. Upgrades were also done to the original SOL system installed on the SAG mills.



Split Engineering put together our commissioning team headed by Tom BoBo (with 5 trips to PTFI), accompanied by Luis Delgado (Sr. Field Engineer, from our Santiago office) and Shaun Gregory (Field Engineer, from our Tucson office) to the awe-inspiring wonders PT Freeport on the island of Irian Jaya (Papua), Indonesia. After nearly 48-hours of travel from the USA and Chile we arrived at Timika at the local airport just above sea-level, from there we had a short drive to the base of the mountains and then we put the truck in to four-wheel drive for the 45km drive straight up the mountain to Tembagapura, the town-site at ~8,500 ft! The planning and design of this mine (both open pit and underground block caves) and supporting infrastructure are a testament to man's drive to overcome jungles, daily rain, > 16,000 ft peaks, glaciers and cultural diversity to extract minerals from this vital resource.

The SAG milling operations sit at ~10,000ft, and from the mill floor you see the tram taking mine workers up *above the clouds* to the mine ~2,500ft above the shear cliffs to the Grassberg mine. From there, the mountains still extend up to over 16,000ft. Needless to say we had quite the spectacular view from primary crushers, which we called our office for the week. Having completed our work on-site installing two new Split-Online systems on their three crushers and upgrading the SAG mill systems, we were treated to a drive around the pit to see a true wonder of this world. Even at 3-degrees off the equator there are glaciers around the peaks: the only equatorial glaciers in the world! Every time I come to PT Freeport I am amazed by grandeur of this place and feel fortunate that we are able to travel the globe to provide our clients with technology that enhances their bottom-line. At every installation we take away unique experiences and new friendships. Thank you everyone at PTFI who helped us make another successful Split-Online installation. -Tom BoBo



### Inside this issue:

Trade Shows	2
Current Projects Update	2
Welcome New Clients	2
Meet New Members of Split Engineering	3
Split-FX	3
News	4
Split Engineering Directory	4

*If you are interested in upgrading an existing system installation or would like to purchase a new system with Split-Online Version 3.1, please contact Tom BoBo (tbobo@spliteng.com) for more details.*

*For those customers with an annual service agreement, you can look forward to receiving your upgrade information soon.*

# Trade Shows

Split Engineering will be attending the following trade shows and seminars

**SAG Workshop**—Viña del Mar, Chile—September 23-26, 2007 (sponsor)

**VII Jornadas de Tronadura**—Puerto Varas, Chile—November 21-22, 2007 (attendance)

**Arizona SME**—Tucson, AZ—December 2-3, 2007 (Attendance)

**ISEE**—New Orleans, LA—January 27-30, 2008 (Booth #416 w/Soft-Blast)

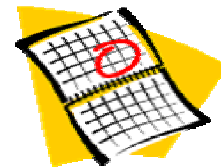
**SME Annual Meeting and Exhibit**—Salt Lake City, UT—February 24-27,2008 (Booth # 803)

**EXPOMIN**—Santiago, Chile—April 15-18, 2008 (Booth and Attendance)

**Automining 2008**—Santiago, Chile—April 23-25, 2008 (attendance)

**42nd U.S. Rock Mechanics Symposium**—San Francisco, CA—June 29 to July 2, 2008

**MINExpo 2008**—Las Vegas, NV— September 22-24, 2008 (Booth #1410)



## Current Projects Update

Monitoring rock fragmentation size is as important as ever. Thanks to all time highs in metals prices with new projects and expansions Split Engineering has been busy around the globe, from new Split-Online® system installations to expanding processing capabilities for existing customer systems. We appreciate your business and look forward to helping you quantify your fragmentation particle size throughout your comminution circuit!

Equipment is being assembled and tested for new system installations at CVRD-INCO Voisey's Bay, Newmont Phoenix and the Newmont Boddington expansion. On-site preparations for system commissioning and camera expansions are ongoing at FMI Phelps Dodge Cerro Verde, Kennecott, US Steel's Keewatin Taconite and FMI's Phelps Dodge Bagdad. Systems are going to be designed for Asarco Ray and Mexicana de Cobre this month.

System upgrades were recently installed at FMI Phelps Dodge El Abra and an upgrade is set for Oxiana Golden Grove. Both of these projects are upgrades from first generation technology (original software first released in the early 1990's on the Apple Macintosh operating system) to the latest Windows offering now generations later.

Again, we would like to thank you for using Split Engineering's technology, hope to see you at your operation soon!

## Welcome New Clients



Anglo Research  
Dumlopinar University  
Goldfields Ghana  
FMI - El Abra

FMI-PD Mining Technology Group  
Rio Tinto Rossing Uranium



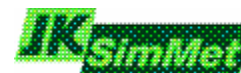
Goldfields Ghana  
URS Corporation



Grupo Mexico, Mexicana de Cobre  
CVRD—Inco Voisey's Bay Nickel  
Newmont Boddington  
Newmont Phoenix



Barrick Veladero  
Geodes S.R.L.  
Queen's University  
University of Lausanne  
University of Padova



Barrick - Zaldivar  
SGS Lakefield Research Chile S.A.



FMI - Safford  
FMI - Candelaria

# Meet the New Members of Split Engineering

Meet Jeff Handy: Jeff Handy returned to Split Engineering in September 2007 as the Director of Development. After joining Split Engineering for the first time in 2000, Jeff spent nearly five years developing the Split-Online software and managing the development of other software projects, including Split-FX. For the past two and a half years he has been away from Split Engineering, working in the visualization/simulation industry, primarily developing software for terrain simulation. Jeff's background is deeply rooted in the mining industry. He earned a BSc in Geological Engineering from the Colorado School of Mines, and spent over 10 years with ASARCO as a Geological and Mining Engineer. We are happy to have Jeff back, to lead our Development.



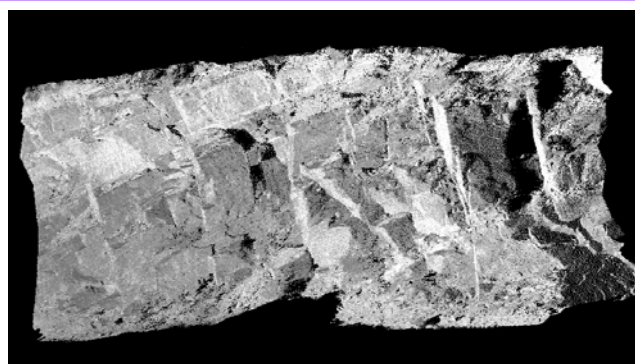
## Split-FX<sup>®</sup> Version 1.0 Now Available!!

***The Split-FX<sup>™</sup> software can analyze rock slopes, underground excavations, dam and bridge foundations, and other rock engineering sites of interest.***

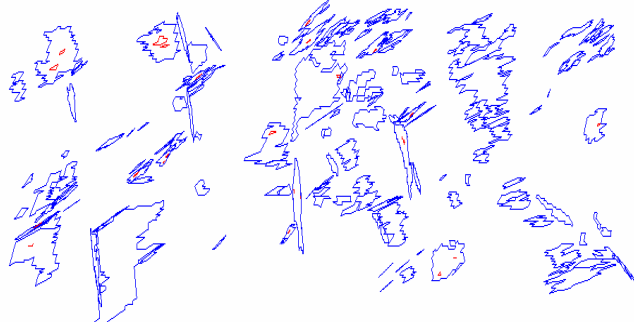
Utilizing ground-based 3D LIDAR point clouds (LIDAR: Laser Imaging Detection and Ranging) and Digital Image Processing, the Split-FX software first requires a field survey, which can take as little as 10 minutes. The results of the field survey are then automatically processed with the Split-FX software, resulting in three-dimensional information about the rock mass, including stereo nets of fracture orientation, distributions of fracture size and a roughness estimation. From start to finish, you can safely and accurately characterize the rock mass at a field site in less time than it takes to make a few strike and dip measurements manually!

### WHY USE SPLIT-FX?

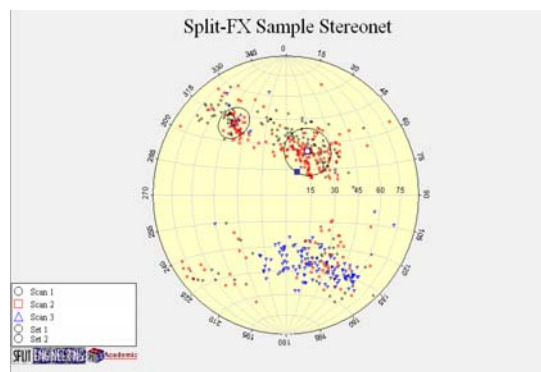
- **Perform rock mass site characterization in a safe and timely manner.**
- **Conduct analysis at significant distance from the rock face where access to the face is not possible due to safety or other concerns.**
- **Produce a database of thousands of fractures for a rock site in less time than just a few fractures could be characterized using traditional manual techniques.**
- **Eliminates human bias by automating the process of collecting and processing rock mass data.**



Point Cloud.



Fracture patches (surfaces) found with

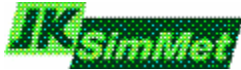


Fracture poles on a stereonet.

# News



Split-FX® Version 1.0 is available for sale! For a free 30 trial demo, go to our website:  
<http://www.spliteng.com/split-fx/demo.asp>



Split Engineering Chile now formally trained and certified by JKMR in Brisbane, Australia to provide full, advanced JKSimMet software training in Latin America. For formal training in JKSimMet, please contact Sebastián in our Latin American office.



**Drill Information Systems**

Split Engineering is the authorized distributor for Thunderbird Mining Systems for Latin America. Thunderbirds DRILLING EFFICIENCY INDICATOR (DEI™) was introduced to the mining industry in 1982, and since has been installed worldwide on nearly all makes and models of drills. The DEI has proven to be an extremely reliable tool that will increase a mine's productivity, reduce overall drilling costs and improve blasting efficiency. Contact Split Engineering Chile Ltda. for more information.

## Split Engineering Directory

### UNITED STATES CONTACTS

**Tom BoBo**  
Director of Technical Sales and Marketing

**Shaun Gregory**  
Field Engineer

**Jeff Handy**  
Director of Development

**John Kemeny, Ph.D.**  
Director of Research

**Janice Meyer**  
Office Manager

**Brian Norton**  
General Manager

### LATIN AMERICA CONTACTS

**Cristián Rodríguez Silva** - Manager,  
Latin American Operations

**Claudia Aravena**  
Accountant

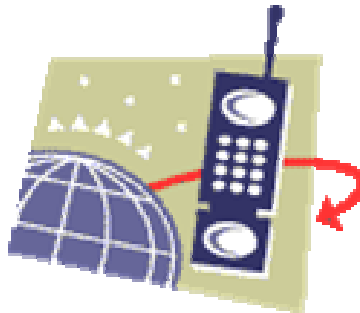
**Luis Delgado Huanchicay**  
Field Engineer

**Rodrigo Fuentealba Tolosa**  
Mining Engineer

**Rosa Guerra**  
Accounts Manager

**Sebastián Urrejola Pérez**  
Metallurgical Engineer

### HOW TO REACH US



### NUMBERS AND ADDRESSES



[www.spliteng.com](http://www.spliteng.com)

**Split Engineering LLC**  
110 S. Church Ave, Suite #8312  
Tucson, AZ 85701  
USA

Phone: 520-327-3773  
Fax: 520-326-7532  
Email: [info@spliteng.com](mailto:info@spliteng.com)  
or [sales@spliteng.com](mailto:sales@spliteng.com)

**Split Engineering Chile Limitada**  
Calle General Salvo #331, Oficina 201  
Providencia, Santiago  
Chile  
Fono: 56-2-5978200  
Fax: 56-2-5978206  
Email: [info@spliteng.com](mailto:info@spliteng.com) o [ventas@spliteng.com](mailto:ventas@spliteng.com)