Case Study
Reducing Community Impact while increasing Productivity with Larger Blast Sizes
Acton Quarry, Canada

Site Profile
- “Acton Quarry” Acton, Ontario, Canada
- Established in 1962
- Owned by TCG Inc., (former owner - Blue Circle Aggregates)
- 50 km northwest of Toronto, Ontario
- Production target – 340,000 tonnes of crushed stone per month.
- 6th largest quarry by production in Canada.

The Situation
Wanted to cut down on the number of blasts per week with optimum target of one blast weekly.
Neighbours on quarry’s east boundary are particularly sensitive to blast effects.
Need larger blasts to increase efficiency of quarry haul trucks and loaders.
To reach production targets, quarry operators must shoot 350,000 tonnes or more a month to keep ahead of crusher.

Operation hours limited to 17 hours a day by local ordnance, putting extra demands on productivity

Technical Solutions
- Introduced the i-kon™ System in March 2001.
  Progressively increased size of shots from a single row to 2, then 3 rows and to over 80,000 tonnes (virtually a 400% increase in blast size), all within compliance.
- Expanded the pattern from 16’x19’ to 18’x20’.

Demonstrated Benefits
- Largest blasts in last five years are staying significantly under compliance readings.
- Good muck pile and fragmentation.
- Achieved major step-up in frequencies, yet vibration and airblast remain within norms.
- 81,000 tonne blast was monitored at 3.05 MPS and 102 decibels, and was measured in frequency range of 34, 39 and 26 hertz range. Pyrotechnic blast frequencies were in 8, 20 and 11 hertz range.
- Blasting is less frequent with minimal complaints using the i-kon™ System.
- Quarry productivity improvements flowed directly from the significant 400% increase in blast size.

Testimonial
“The larger the blast, the less downtime and more productivity for the quarry. We went from single row blasts to 3 rows. The digging is good and we have less oversize. It’s working out well. And we’re significantly below compliance even with the larger blasts.”

Mining Issues
Using pyrotechnic delays had fired modest blasts of 7,000, 10,000 and 18,000 tonnes but still had concern over the number of complaints from the neighbours.
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Richard Erdmann
Assistant Director of Operations
Acton Quarry

“We can shot more pounds per delay, we can expand the pattern, so we save on drill costs, we save on not having to deck as much, and we get better fragmentation because of the accurate timing we can put in.”

Ron O’Gorman
Q&C Account Representative
Orica Canada

“Before we were shooting every day and we had to shut down the operation for 45-60 min. in peak production time. Now if we can shoot once a week or every 5 days and it’s a big plus for us.”

Don Barr
Quarry Manager
Acton Quarry

“If we can put a week’s worth of production on the ground with one blast, compared to blasting every day, there’s 3 to 5 hours of down time saved every week.”

Dave Proudfoot
i-kon™ System Specialist
Orica Canada