



2D laser profiling analysis makes it possible to measure basic blast parameters such as free face shape, burden, spacing and bench height. This can give immediate solutions to improve fragmentation and avoid safety and environmental problems.

## APPLICATIONS

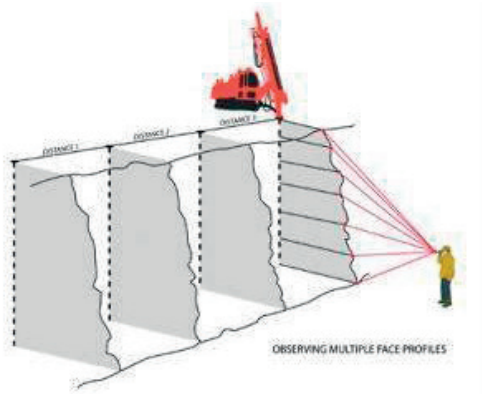
✗	Open pit
✗	Civil construction
✗	Underground
✗	Quarry

## BENEFITS

2D laser profiling is a fast and useful way to define blast geometry this allows control of results and blast performance.

### Real measurement: Control of blast results and performance

- ✗ Vertical bench height, to define borehole length
- ✗ First row position, real distance between the bench crest and hole.
- ✗ Bench angle, theoretical borehole definition.
- ✗ Toe calculation in order to define subdrill, bottom charge or loading density.
- ✗ Distances (Burden, Spacing, vibrations monitoring)
- ✗ Estimated volume of blasted rock



## Safety

- ✗ Fly rock control, adjusting explosive charge to the real burden along the bench height. Decking definition if necessary
- ✗ Adequate charge according to minimum/maximum burden design. Explosive charge calculation.

## Blast optimization

- ✗ Blast design based on real geometry

## Environment

- ✗ Noise reduction due to gas confinement
- ✗ Vibration control, by defining real toe and the adequate blast pattern to assure for breakage and displacement.

## EQUIPMENT

**There is a number of 2D laser equipment available. Leica, QuarryAce and Pulsar 2D are standard equipment in MAXAM.**

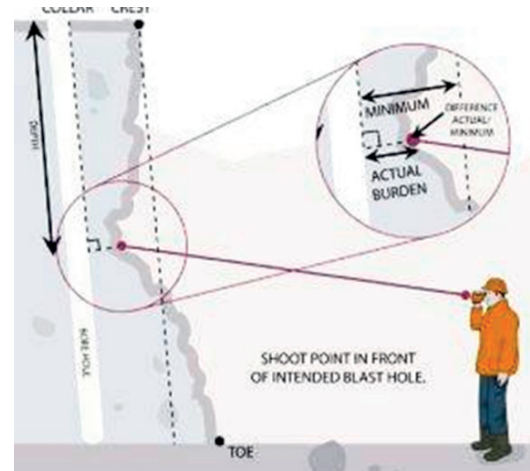
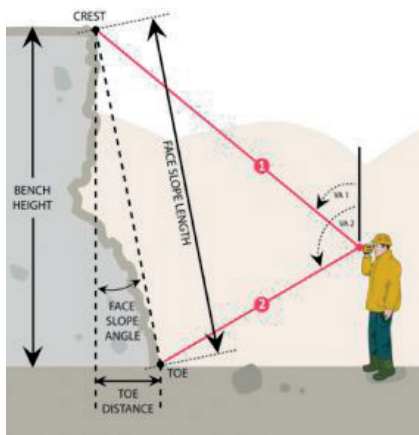
- ✗ Measure range without reflector up to 150 m.
- ✗ Measure range with reflector up to 600 m.
- ✗ Precision up to 5 cm.
- ✗ Operating temperature -10°C to +45°C.
- ✗ Water resistance (IP63).



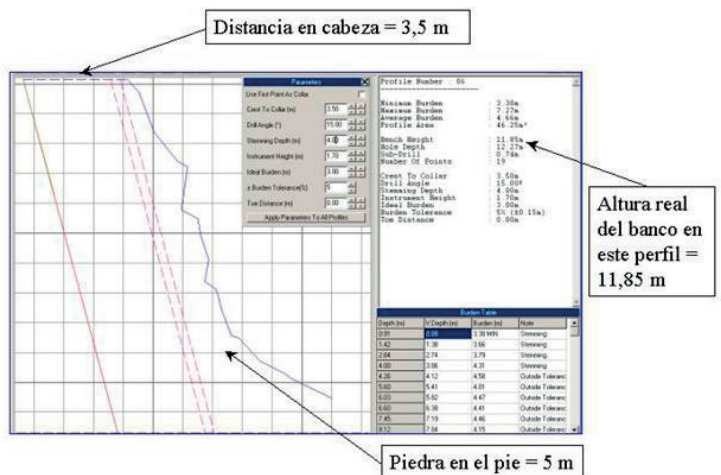
## METHODOLOGY

2D laser profiling is suitable for drilling definition, as a practical tool. The recommended step by step procedure is:

- ✗ Obtain real- free face data 2D -sections.
- ✗ Drilling plan adaptation to the real free face shape.
- ✗ Mark the drilling pattern and adjust the front row.
- ✗ Measure drilling pattern (burden/spacing).
- ✗ Definition of loading of explosive and decks, if necessary. Stemming length determination.



As an addition to the data obtained in the quarry/mine, it is possible to download the information to specific software such as MAXAM's -RIOBLAST allowing the analysis of borehole profiles in detail.



Relevant information to prepare blast report and deeper blast design analysis are important benefits as well.

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