NanoDiamond Products

pioneering nanodiamond solutions

NDP

NDP – PDC & TSP Shaped cutters

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Company Profile

- NDP is a privately owned independent company located in Shannon, Ireland
  Enterprise Ireland (Irish Government) is a key stakeholder

- The directors of the company have a combined experience in the diamond industry of over 100 years

  - We are a team of engineers, chemists and scientists dedicated to providing customised solutions

  - **John Sexton, Chairman**
  - **Derek Wright, CEO**
  - **Karl Tuffy, Exec Director**
  - **Alex Engels, Development**
  - **Siobhan Boyd, CFO**
  - **Natasha Donovan, Quality**

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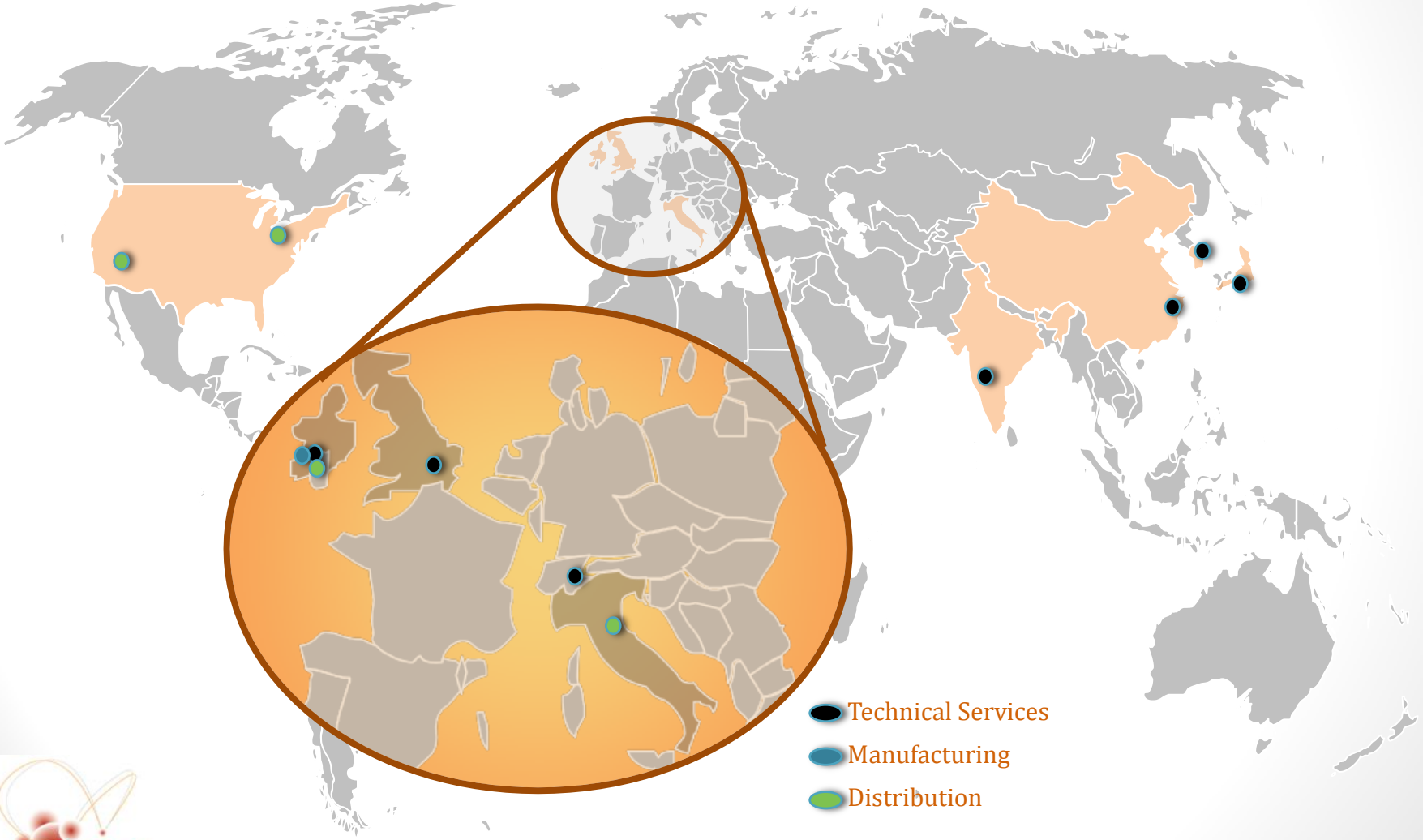
Company Profile

NDP Global Network



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Mining PDC

- Mining market
  - PDC mining domes for percussive drilling
    - Innovative custom designed for extreme impact resistance
    - 16mm & 19mm in diameter available
      - Diametric tolerances to suit press fit

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Thermally stable polycrystalline (TSP)

- NanoPak – polycrystalline diamond ("binder") compact
  - TSP – thermally stable polycrystalline diamond
  - Drilling, oil & gas exploration, mining
  - Wear parts

- TSP's available for wear protection and gage protection
  - All shapes including domes
  - 2 grades available
    - Wear – extra wear resistance
    - Drilling grade – extra toughness

- Surface enhancement on TSP's available from NDP for a wide range of attachment technologies
  - Brazing
  - Press fit

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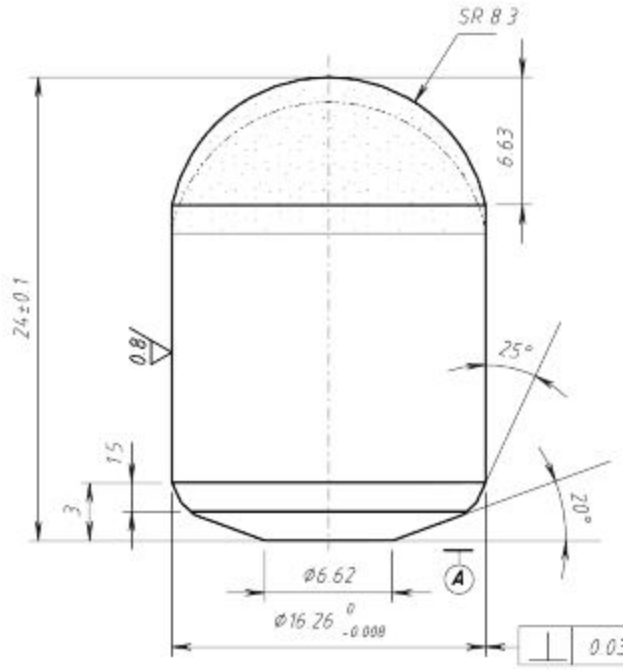
Mining PDC

- Mining market
  - PDC mining domes for percussive drilling
    - Innovative custom designed for extreme impact resistance
    - 16mm in diameter and larger available
      - Diametric tolerances to suit press fit



- Cross sections
  - 2.2mm v 1.2mm PCD layer

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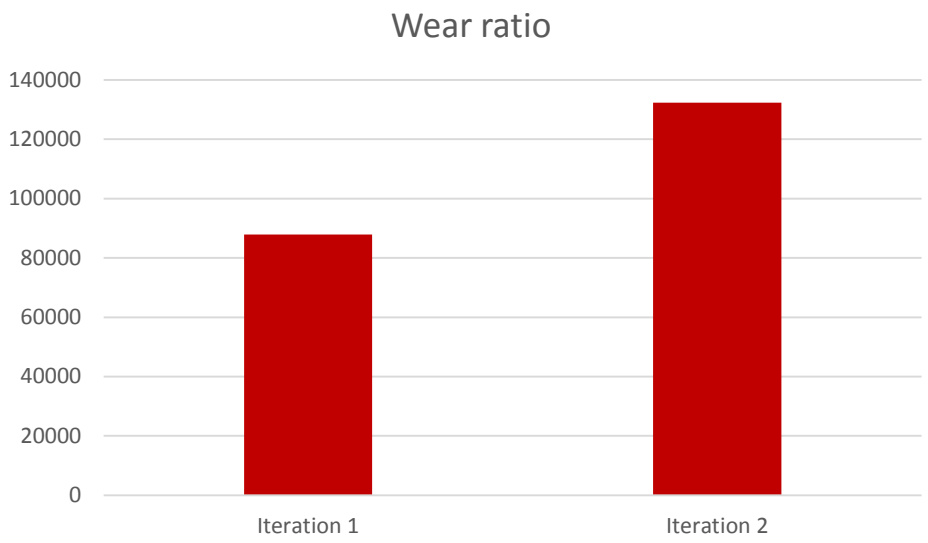
Vertical borer test

Cutting depth	0.2mm
Feed speed	4mm/rev
Rotational speed	37rpm
Volume removed granite	230,790
Workpiece	Red granite



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Drop test

Energy	150J
Plate	HRC 58
End of test	1000 drops or failure
Impacting angle	30 degrees

- Result
  - Iteration 1 – failure due to delamination between 340-486 cycles
  - Iteration 2 – no failure after 1000 cycles

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