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Gyttorp is located right in the middle of Southern Sweden

Location
Town: Gyttorp **Country: Sweden** **Size of town: 637 (Y2000)** **Closest airport:** **Örebro, 32 km - 30 min taxi ride** **Closest major cities:** **Örebro (124,000) – 32 km** **Stockholm (744,000) – 230 km** **Oslo (538,000) – 365 km** **Closest major port:** **Göteborg (484,000) - 318 km**

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Safety

- Highly regulated, approved person legally responsible
- Management system integrated with ISO 9001:2000
- No primary explosives
- Risky processes remote controlled
- 2 TRI:s 2005 equal to TRIFR 0,9
- New explosives license during 2008
- New environmental license during 2007

Health

- On site preventative occupational health service
- On site physiotherapist
- On site training facilities
- Sponsoring employees physical activities
- Introducing Health & Hygiene programs according to Orica standards.
- Working actively with alcohol and drug policy
- Empowered people
- Comparable low sick leave (<5% during 2007)
- No RSI during current millennium

Environment

- Water based processes (except fuse heads)
- Low lead formulations, aluminum delay elements.
- Total consumption of lead 3000kg/a

Quality

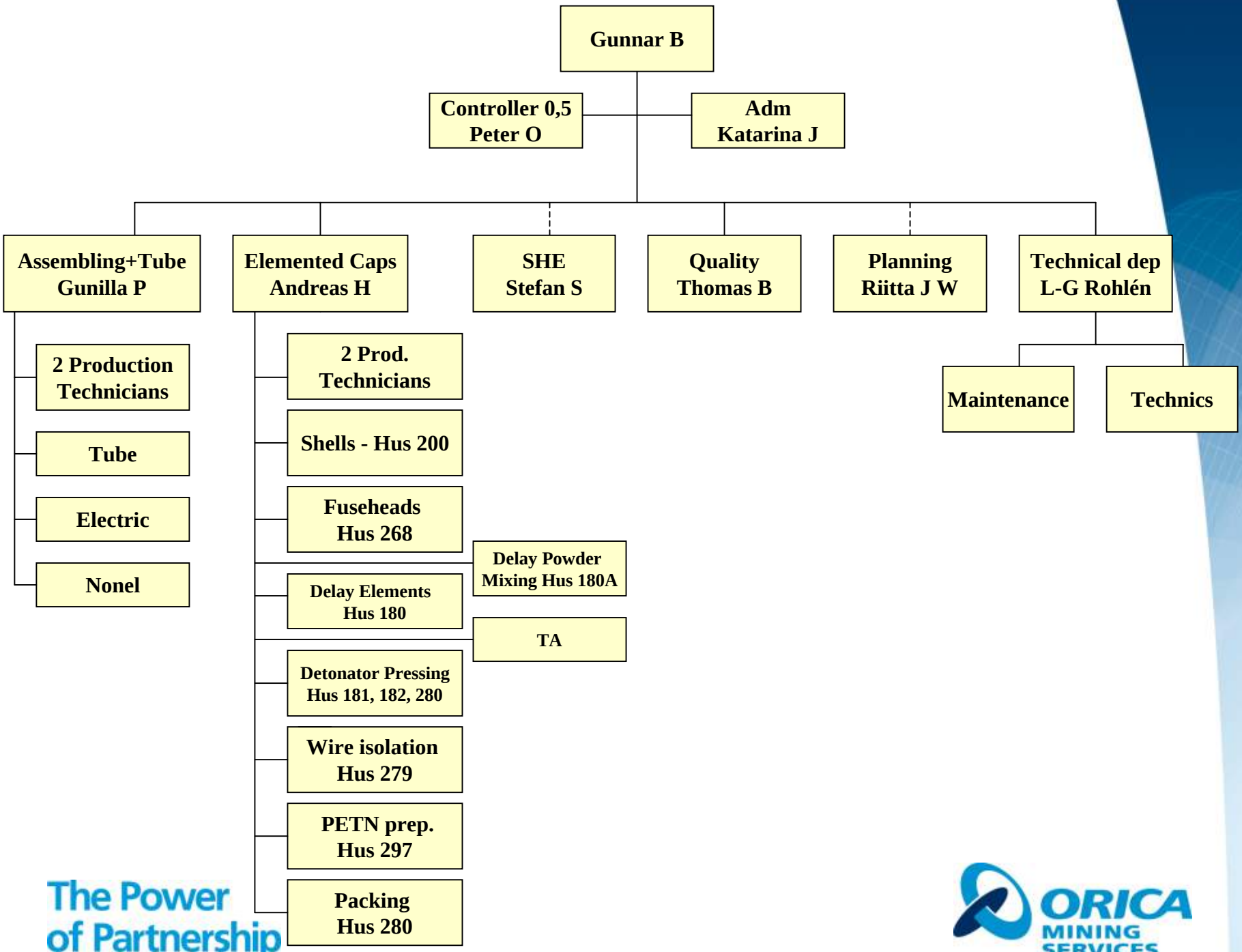
- Certified quality system ISO 9001:2000
- Superior delay time accuracy compared to competitors
- Mistake proofing technique
- No repeatable non-conformities
- Goal < 2 claims/month

A few milestones

1864 Nitroglycerinaktiebolaget founded by Alfred Nobel
1865 The worlds first factory for nitroglycerine set up in Stockholm
1886 Nitroglycerine production started in Gyttorp
1896 Alfred Nobel dies
1900 The Nobel Foundation formed
1921 Production of explosives moves from Stockholm to Gyttorp
1965 Name change from Nitroglycerin AB to Nitro Nobel
1986 Dyno Industrier A.S acquires Nitro Nobel AB
1999 Nitro Nobel changes to Dyno Nobel Sweden AB
2006 Orica acquires Dyno Nobel

History

- **Industrial activities since 1658**
- **Black powder 1853-1963**
- **Dynamites 1868-1994**
- **Emulsion explosives 1980-**
- **Detonators 1940-**
  - Electric 1940
  - Nonel 1973
  - NPED 1990



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Main Operations

- **Elemented caps**
  - Delay compound
  - Delay element
  - Shell and delay sleeves
  - Initiation element
- **Pack Out**
- **Fuse heads**
- **Shock Tube extrusion**
- **Electrical Assembly**
- **Nonel and Exel Assembly**
- **Blasting machines**

Current Production

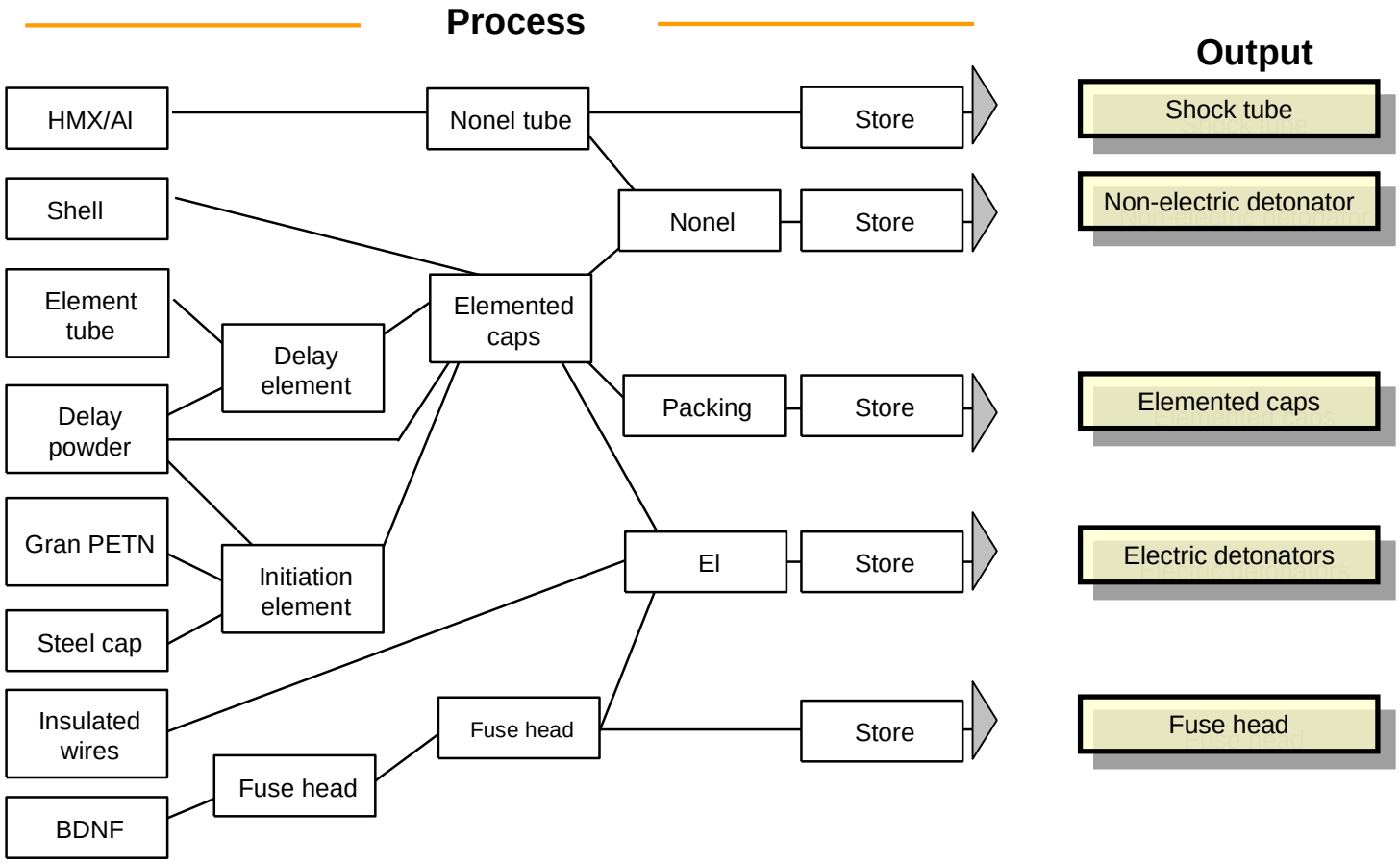
- Exploders totally — 46 Million/annum
- External sourced — 5 Million/annum
  Out of which:
- Electric detonators — 5 Million
- Nonel/Exel detonators — 21 Million
- Exploders exported for local assembly — 20 Million

Current Production (Cont.)

- Nonel tubing 300 Million Meter/annum
  190 Million Meter for own consumption and the rest for internal and external customers.
- Fuseheads 12 Million Pieces/annum
  5 Million Pieces for own assembly and the rest for internal and external customers.
- Blasting machines

Products are distributed to customers in over 50 countries

The end products go through several stages before being sent to the end customer



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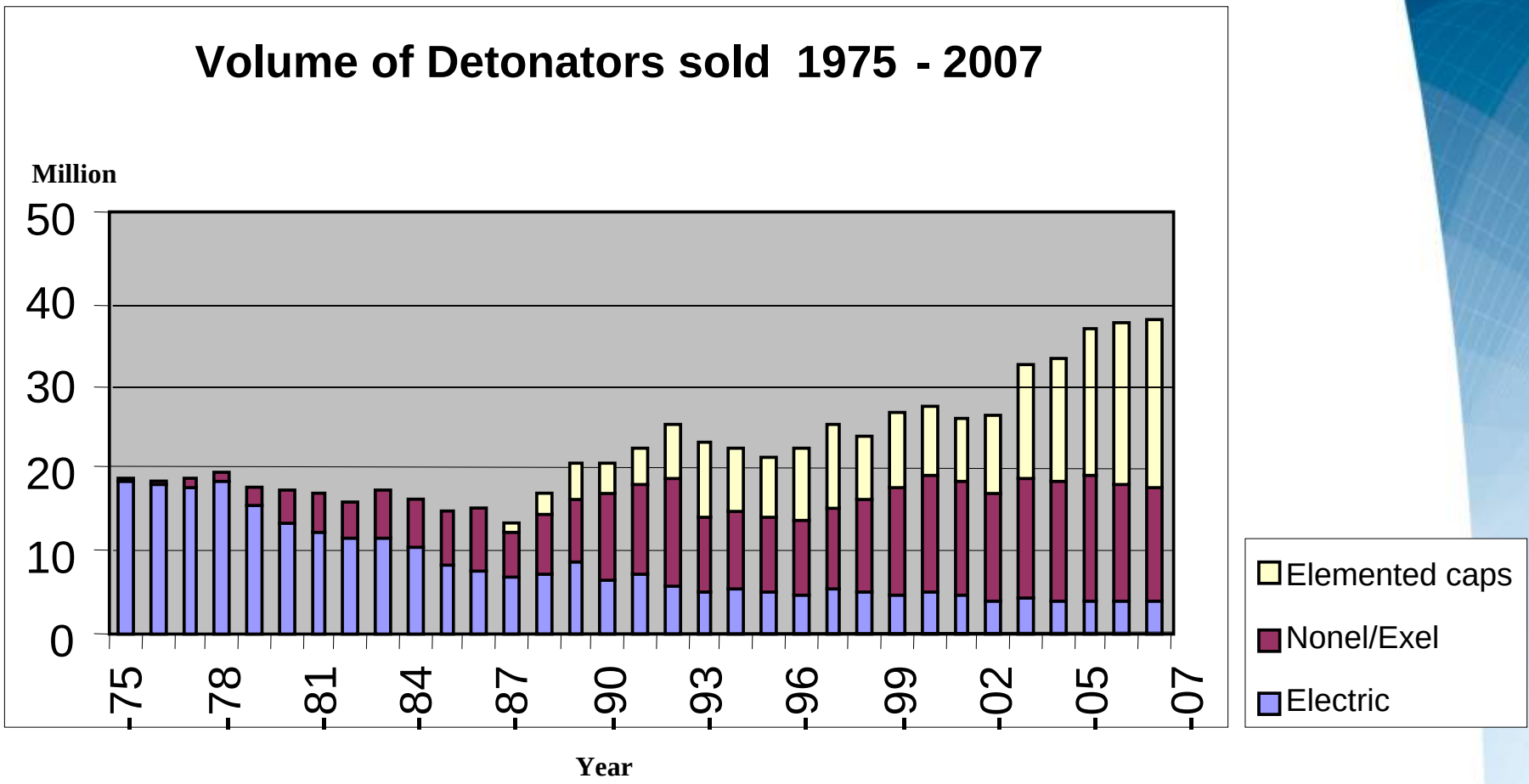
Total Sales



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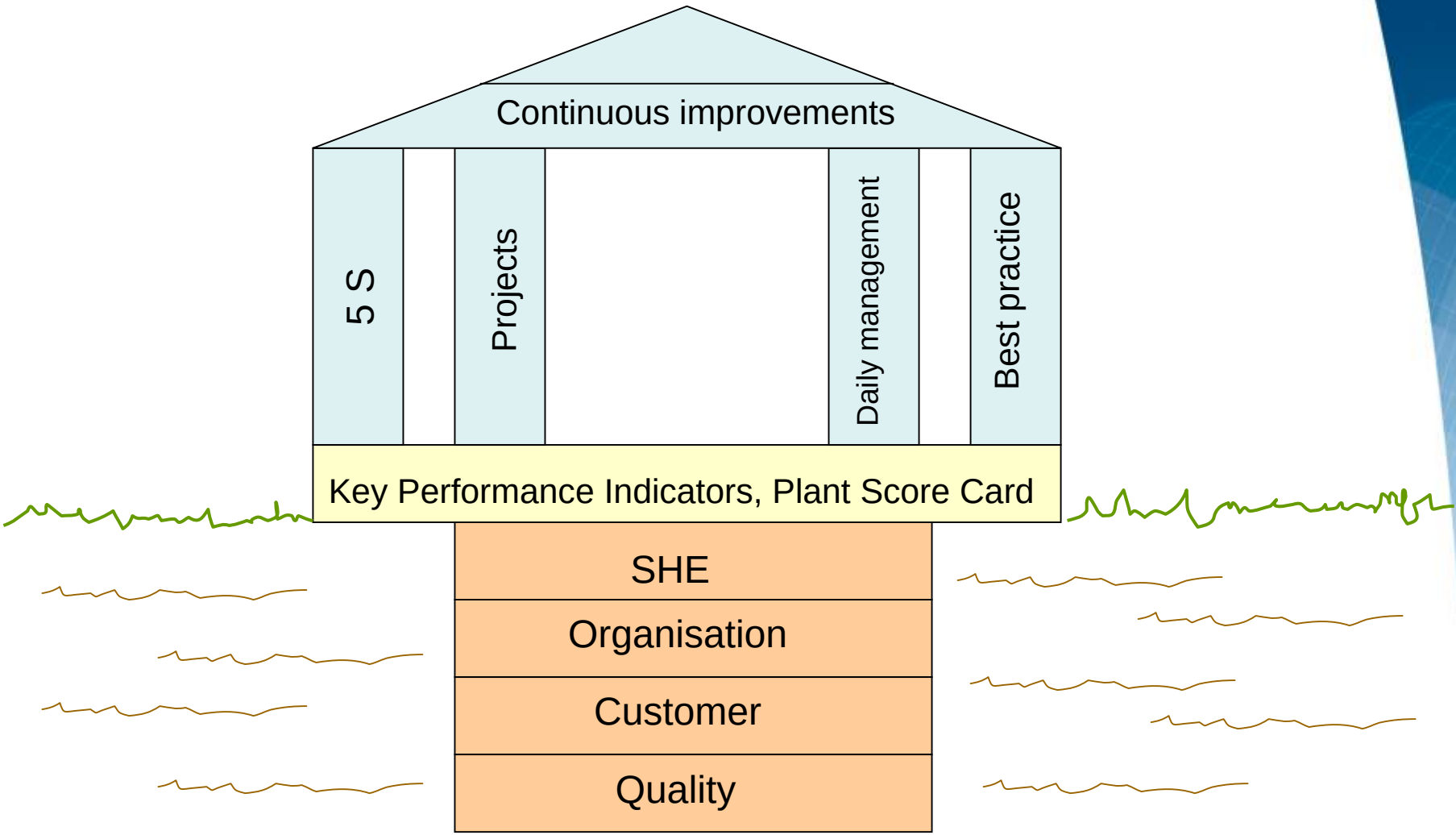
Improvement activities 2007-2008

- **SHE**
  - *Info about our new, more strict, regulation*
  - *Do a JCC at every work place*
  - *Re do the safety inspections*
  - *Change the management style*
  - *Introduce propensity to take risks.*

  Implement the Gyttorp production system

Gyttorp Production System



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Empowerment

Target orientated group activities without any supervisors

The Groups are responsible for:

- Incoming materials (ordering/quality check/storing)
- Production (planning/maintenance/costs/HMS)
- Products (quantity/quality/intermediate store/delivery times)Personal (planning/development/flexibility)
- The Groups manages the daily contacts with service departments, other IG's and suppliers
- Run the daily management system

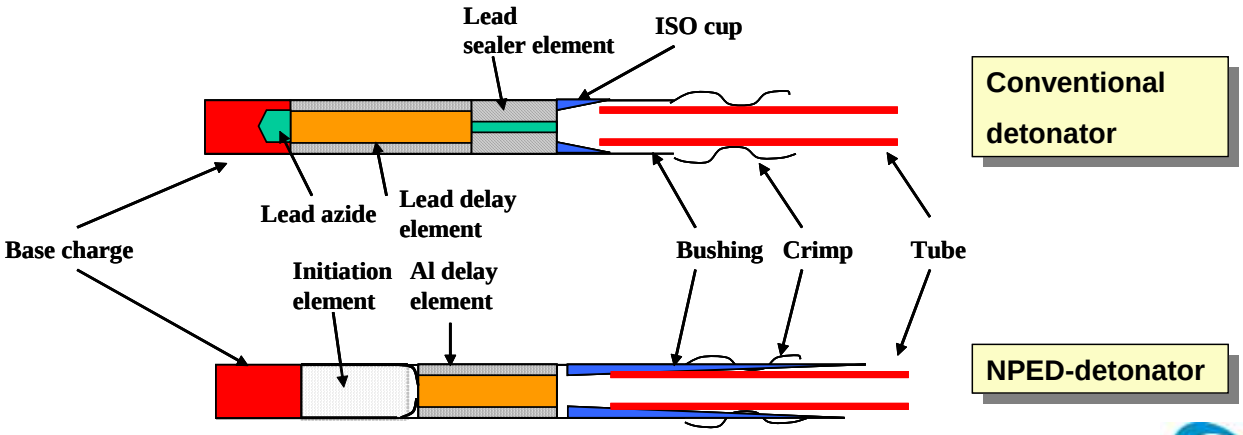
Which leads to:

- More contacts with other departments
- More contacts with customers
- More flexibility/different tasks

Gyttorp has put significant work into creating environmental friendly and safe detonators

The NPED technology leads to increased safety and a better working environment

- First and only detonator for civil use which does not contain any primary explosives
- Reduces handling risk: Less sensitive to different stimuli than a conventional one - higher safety is introduced in all operations:
  - Manufacturing, Transportation, Storing, Handling and Use.
- Environmental benefit. By replacing lead azide with PETN in the NPED detonator ORICA will not have any unforeseen costs when an eventual ban of lead in products is put into force.
- 1.4 S packages improves transportation safety and fire fighting



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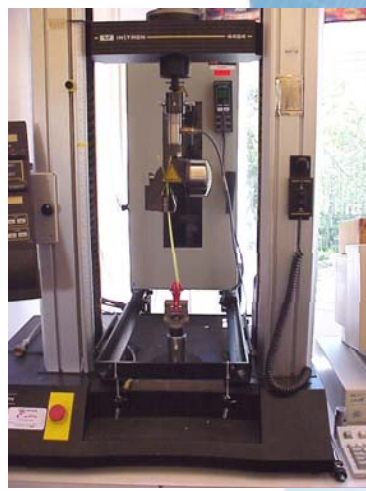
R&D IS Gyttorp

Test site V:a Sund
Function tests
Bonfire tests
High speed camera

Extrusion Pilot Plant
Process ability
Process development
Material qualification
Production of special products

Detonator pilot plant
Initiation elements, delays and caps for testing
Small production series

Laboratories
Tube testing lab
Autoclave
Climate chamber
Test-shooting station
TAM-micro calorimeter
DSC-TGA
Electron microscope (SEM)
Delay element press
SAC element press
Mixing rooms
Julius Peters test
Versatile lab for electronic components



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