



PORFIDO DEL TRENINO



PORPHYRY OF TRENINO

It goes without saying that the stone industry has a variety of new opportunities to focus on; nevertheless, it is fundamental to revise and reconsider the relationship between quarrying activity and the production processes when creating objects, i.e. the importance to set precise levels of compatibility in terms of environmental as well as economic and social impact and sustainability .

Over the last years, there has been an increase in studies and technological innovation projects concerning the identification of new methods to analyse eco-sustainability of both materials and products, energy efficiency, EPD directives, life cycle, control of CO2 emissions.

This has given rise to increased interest among some farsighted producers of stone products .

It should also be considered that, at present, there is no all-encompassing integrated and complete system capable to provide an efficient and undeniable interpretation criterion that can be applied to the entire stone production chain, in order to distinguish and scientifically identify a low-impact stone product over its potentially polluting counterparts.

Given the considerations above, and acknowledging the importance of product certification programmes (including the assignment of ecological quality marks based on environmental low-impact), and stressing the need to support research to set up a veritable codified and officially approved rating for the entire natural stone industry, what follows is the presentation of the activity implemented by Trentino Prophyry in order to limit the environmental impact and enhance as much as possible the use of a natural resource such as natural stone, being aware that few homologue identical industries are capable to show similar potentialities:

- **The extraction activity of the Porphyry quarry in Trentino is ruled by the Provincial law 7/2006**, which also includes some mandatory requirements, i.e. : **a)** the environmental impact proposed by the quarrying company and submitted for approval to the competent structures including geological, forest, mining, urban planning, etc. departments; **b)** Environmental Impact Assessment (EIA is an administrative procedure that ensures that the environmental implications of decisions are identified, described and assessed before the decisions for a specific project are made. EIA is ruled

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as a technical-administrative decision-making instrument. Public administration, based on the information submitted by the project applicant; other administrative structures, and consultation with the public, will assess the environmental compatibility of an individual project. When approving projects concerning the surrounding territory, EIA procedures focus on stimulating the participation of normal people in the decision-making processes; c) excavation time schedule and control on excavated product volume; d) bank guarantees covering the expenses needed to finance the project and the restoration of the quarry after having fully exploited the lot. The law set forth by the Province of Trento has been taken as a reference.

- by other administrations at domestic level. It seems that no other Non-European Country (China, Pakistan, Turkey, etc.) has ever implemented similar legal requirements.
- Because of its distinguishing prerogative and peculiar features, Trentino's stratified porphyry needs to be excavated mainly with a large use of manpower. Looking at **economic sustainability** – i.e. the income generation and job creation – **as well as social sustainability** – i.e. human wellbeing in terms of safety, health and education - since 1930, the Trentino porphyry production industry played a key role in phasing out the migration of domestic workers. As of the '90s, this produced a turn-around with a huge increase in incoming foreign labour well integrated in the local communities. Opposite to many non-European countries where undeniably quarrying is synonymous with foreign labour almost reduced into slavery, and even with child labour, porphyry excavation is ruled by a clearly stated **collective work contract meeting the needs of the stone industry**. This contract is subject to revision and update at regular intervals in compliance with the Italian law, and is acknowledged by the main unions also part of the Employers' committee of the Porphyry and Trentino Stones District. A **Joint Committee** provides workers with refresher courses on safety conditions at work for all categories of workers. A recognized and successful result obtained from the study commissioned to the University of Verona and the Trento-based INAIL (national insurance institute for accidents at work) - also acknowledged by the Italian Coordination Committee for **health and safety at work** – led to the introduction of lifting benches during the first processing cycle.

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- From a closer and stone-oriented look at the relationship with the environment, approx. **80% of the Trentino porphyry production is obtained almost entirely by hand - supported only by hammer, chisel and human strength - or assisted by splitting machines with a very low impact on the environment.** This depends on the fact that, opposite to the majority of the natural stones existing in the world, porphyry features a natural quarry plane which is both rough and planar, and perfect for flooring or cladding with no need of surface treatments. For non standard sizes and polygonal splits, but also for setts and tiles, such a prerogative turns porphyry into a **leader** in the **leed system** which however has not yet introduced a rated system in Europe fitting the stone industry, and likewise has not taken into consideration some variable assessing criteria disregarded in the original American system: surface transformation such as wear resistance and durability as a consequence; slip-resistance for the benefit of the user; residual humidity rejection; thermal conductivity, etc.).
- Leed criteria are certainly not the only parameters on which the Trentino porphyry industry should rely on as far as principles for environmental impact control is concerned. The extraction activity in general is mainly considered as a destroying activity, and none understands it as a well organized reallocation of matter, provided that this activity is the outcome of production processes based on quality and control. *Stonehenge too for instance could be taken as an alteration of the setting of those rocks. Nevertheless, right because they have been moved and stood up made them famous, worldwide unique not as their cousins still sitting in the quarry.* This is the reason why when we speak about environmental impact, we should not only rely on figures or reference tables. Transportation for instance is a strategic point for almost all assessment systems, and concerns all building materials including stones. What is important in this case is the cost of transport not as an absolute value, but compared to similar products. Furthermore, polluting elements possibly produced during the stone processing must be considered within the potential duration of the produced item which is eternal when it comes to stones. The Trentino porphyry production chain is based on a **clear-cut use description of all excavated materials with well-defined applications, and special flooring setts designed to guarantee durability and resistance.** A lasting floor has, as a consequence, a low impact on

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the environment. However, this feature is not taken into consideration because assessment systems mainly focus on the processes to obtain products almost disregarding more complex processes where products are assembled such as in stone floors with dozens of different solutions with as many different functionalities despite the use of similar components (ex.: setts for paving made of draining sand, waterproof sealing mortar, resin, polymeric sand, etc.). The competitive edge given by porphyry to maintain paving hardness and resistance over other production systems, offers a variety of tools, activities, services provided by the market and mostly by professional layers as well as designers and site managers: CE marking on all components, product trademark “Controlled Porphyry from Trentino” (the only non-private trademark in the world of the stone industry), operating manuals and technical data sheet to define flooring layouts, layer training, training and refresher courses for designers, technical assistance, inspections on materials for special deliveries up to the final inspection at the construction site by a third institution including the filing of laying procedures and the possibility to programme maintenance which increases the life/duration of the work. **As a consequence, from the original idea of a casual assembly of materials with low impact on the environment, porphyry is now a complex system offering versatility and multi-faceted applications which remarkably increase its durability with the passing of time.** This philosophy, which is typical of the Trentino porphyry, unfortunately is not supported at the moment by a corresponding number of assessments and environmental certification processes. This is also true for the above-mentioned economic and social sustainability features provided by porphyry over many other stones.

- As already pointed out, the porphyry production chain **includes the complete use of all the material excavated also including the recovery of porphyry at different stages.** In particular, overburden can find applications in reclamation and filling for drainage in agriculture; tailings are entirely re-processed and crushed for the building industry (sand, asphalt grains, porous pavements, ballast for railroads, concrete); other large-sized left-over materials may be used to regenerate eco-sustainable products by tumbling; flooring products could be certified – at present only locally – as recovered and re-converted antique tumbled materials.

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- Finally, the choice for Trentino porphyry certified by the quality Chain enhances the value and confidence in this industry which is fighting to emerge from market criteria based only on low-priced products. There is a strong will to reshape the image of Italian quality based on the long-lasting traditions of this industry fully aware that stone is an exhaustible and public resource, and requires a deep sense of responsibility to be shared by all the production chain.

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