



**TRAINING COURSE / WORKSHOP  
ON  
“DIMENSION STONE-CONSTRUCTION MATERIALS  
QUARRY MANAGEMENT, EVALUATION & MINING”**

**Carrara (Italy), 18-20 June 2016**

*“Capacity development of mineral institutions, associations and of the small-scale private sector operating in dimension stones, construction materials and “low value” industrial minerals”.*

*The sustainable modern development of these groups of minerals and natural materials, often neglected by Institutions and Development Programmes are, on the other hand, often key instruments for the development of the local Private Sector both in developing and developed countries.*

An International Training Course/Workshop on “Dimension Stones and Construction Materials Quarry Management”, will be organized in Carrara (Italy) the 18-20 June 2016 by IMM Carrara S.p.A and AlpiConsult Stones (Marco Cosi DS expert).

The Course/Workshop will be organized, during the “stone international week” immediately after the Stone Conference STONECHANGE 2016 (Carrara, 16-17 June 2016) and the Training Course on “Mineral Standard Reporting” (Carrara, 15 June 2016) organized by Internazionale Marmi Carrara S.p.A and PERC (Pan European Resources Reserves Reporting Committee) , together with other International Institutions, and the Technical Coordination of AlpiConsult Stones and Spanish Centro Tecnológico del Marmol (see website [www.stonechange2016.com](http://www.stonechange2016.com))

The Course/Workshop will be mainly focused on Dimension Stones (DS) Quarry Management, anyway with necessary mentions to other “low value minerals and materials”, that often derive from DS mining as waste, such as aggregates, sand, CaCO<sub>3</sub> and others.

The main aim of the training Course/Workshop is to provide the participants with the most exhaustive information and common rules, about the evaluation, rational exploitation and in general management of a DS quarry project (with mentions to other construction materials usually produced as waste in the DS mining; see above). Moreover special attention will be given to environmental, safety aspects and new EU regulations on ethical code of conduct. Finally, attention to the following processing and marketing/selling phases will be also paid, because they are all intimely related one to each other.

All this, keeping in mind the short period available and the risk to offer a very general and superficial overview of the target issue.

For this reason we propose a Course/Workshop mainly addressed on DS and the Mining Management.

The Course/Workshop will be organized on three days period from Saturday 18 to Monday 20 June 2016.

Day 1: will be dedicated to theoretical sessions at IMM Carrara Training Center head quarters in Marina di Massa (Carrara).

Day 2:(half day), will be devoted to a round table with discussion and presentation of cases histories both by trainers and trainees.

Day 3: will be entirely dedicated to field work in the marble quarry/ies in Carrara area.

*See below for detailed program.*

In order to give the participant a general but realistic idea about what does it mean to manage a stone quarry the third day of the Course/Workshop will be entirely carried out in the field. In particular one or two quarries of different size will be visited in the Carrara district. In both quarries the Course/Workshop attendants will enter also in touch with quarry management and staff and they will have the opportunity to follow the most important quarry phases and operations “live”, by directly interacting with local quarry management. Everything with the coordination and teaching of a DS mining expert, with direct experience of quarry methods and equipment.

In particular, the participants already experienced in quarrying could take this opportunity also to ask specific questions about any issues concerning DS mining and to be up dated on the most modern quarrying methods and equipment.

The Course/Workshop will be opened to private company quarry management and foremen, Institutional technical staff directly operating, supporting or ruling/regulating the stone mining projects and also involved in project M&E.

The Course/Workshop will be open to a number of participants up to 30 that during the field course will be often divided in two groups, for a better a more precise following of the quarry operations.

The Course Course/Workshop will be managed by a mining/quarrying geologist (Trainer 1) with wide experience in DS exploration, evaluation, mining and market, and by one more senior expert with specific experience in mining, safety & environment and waste management (Trainer 2). Both are very well known skilled experts in the industry.

Finally the third day the participants will be followed by an expert with wide direct experience in quarry operations and related equipment (Trainer 3) and Trainer 1.

In particular, during the Course/Workshop the following main topics will be treated:



## SESSION 1

1. DS Industry: introduction, overview and main rules
2. Quarry types and related different approaches
3. Quarry Evaluation (exploration will be just touched and it'll be part of a possible next Course)
4. Technologies for quarrying (an overview)
  - Production cycle in marble and granite quarries
  - Description of equipment
  - Investment evaluation for the opening and management of a quarry

Starting from the main difference between marble and granite stone exploitation (only from a commercial point of view), all the most updated technologies for the quarries exploitation will be analysed. Special attention will be carried out in the selection of the equipment in relation to the morphological and geological frames of the quarry where they must operate and in relation to the commercial value of the material to be exploited. Even if the opening of a dimension stone quarry cannot be compared with the investment needed for a classic metal or IM mine, it is important to have a clear idea of the cost needed for the starting of the activity, above all considering that the first income will arrive at least after 6 to 8 months from the beginning of the activity.

## SESSION 2

5. DS Market overview

*Although market is not a specific objective of the Course, it's anyway important to introduce it and its main features and rules, because in the DS industry (probably more than most of other mining sector) it is intimately related with all other project phase (mining and processing).*
6. Exploitation methods for marble and granite quarries
  - Marble quarries exploitation in the open pit and underground pit
  - Granite quarries exploitation
  - Planning of the activity
  - Monitoring of the exploitation
  - Stability of the quarry faces

The different technologies for the exploitation of the marble and granite quarries have been described in the previous section (mainly in the theoretical sessions). During the field work in the quarry we will try to enter in the details of the method of exploitation by explaining all the main mining phase from the "virgin" rock mass to the production of the final block. Marble quarries (including in this definition all the rock constituted by calcium carbonate as

limestone, travertine, onyx, etc..) can be exploited by open pits as well as underground mining while granite quarries (including volcanic rocks) are generally exploited by means of open pits. The different method will be deeply analysed in order to find the most economic method in relation to the characteristics of the quarry to be opened. In most of the countries the exploitation is monitored by the issuing of exploitation plan which will be described as well as the different phases of the technical parameter to be monitored during the exploitation phase of the quarry: stability of the quarry fronts, presence of fracturing portion to be avoided, presence of penalizing factors, etc.

7. Environment impact and workers safety

- Environment impact made by exploitation
- Rehabilitation of a quarry site during exploitation and after
- Waste management
- Safety problems and solutions

<b>SESSION 2</b>
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8. Financial Analysis and Business Planning of a DS Quarry Project

*General introduction on the financial-economic evaluation of a DS quarry project; analysis of a typical Business Plan (CAPEX, fixed and variable OPEX) and how to structure and use that.*

9. *Feasibility Report of a DS Project*

10. *Standard Reporting for Resources – Reserves evaluation of a DS project (an overview)*

Taking into consideration the present situation of the Dimension Stone sector in most of ACP developing countries, some particular issues of Sessions 2 and 3 could appear not realistic or not appropriate for the real scenario of the country. Anyhow it is very important to start since the beginning with the introduction of these concepts.

The protection of environment and the safety of the workers during exploitation represent two very important keys for a modern and sustainable development of the sector. The management of the waste could be also a realistic opportunity of business even because in many ACP countries there are many quarries opened just for getting crushed stone for the construction of road or aggregate for the cement: the waste of the dimension stone quarries can be used for those purposes, saving the cost for their exploitation.

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### Proposed Programme

#### **Day 1 (Saturday 18 June 2016)**

##### THEORETICAL SESSION - IMM Carrara head quarter

09.00-10.45: theoretical Session 1

10.45-11.15: *coffee break*

11.15-13.00 theoretical Session 2a

13.00-14.15: *lunch*

14.15-16.00: theoretical Session 2b

16.00-16.30: *coffee break*

16.30-18.00: theoretical Sessions 3

#### **Day 2: (Sunday 19 June 2016) – IMM Carrara head quarter**

##### ROUND TABLE Q&A Session - IMM Carrara head quarter

09.30 – 13.00: round table with discussion on topics of day 1 and introduction on practical session of day 3. Presentation of cases histories both by trainers and trainees. Q&A session.

10.00-10.30: *coffee break*

Afternoon: dedicated to internal UNDP meeting. If needed the Course coordinator will be available

#### **Day 3: (Monday 20 June 2016) : Field Training on Carrara DS quarry/ies**

**(Snack lunch in the Quarry area)**

### **LOGISTICS**

If requested, possibly all participants to the Course will be accommodated in Marina di Carrara, in cheap 3\*\*\* stars hotel/s, at walking distance to STONECHANGE 2016 Conference and Courses Venue Location (IMM Carrara head quarters).

If they will also participate to the Conference STONECHANGE 2016 the same accommodation could be booked for the entire duration of stay in the area also for STONECHANGE CONFERENCE (16-15.6.2016) and COURSE ON “MINERAL STANDARD REPORTING” (15.6.2016).

Please Confirm ASAP (see website [www.stonechange2016.com](http://www.stonechange2016.com)), and any way stay in touch with the organisers.

Sooner will receive the registrations and related logistic requests, the sooner the Organization will be in position to make the preliminary hotel booking and to send the Official Invitation Letters for the request of VISA at Italian Embassy.

Restaurants are available close to hotel/s at walking distance. Taxi are available anytime. Taxi are always available. Other logistic info can be found in [www.stonechange2016.com](http://www.stonechange2016.com).

## REGISTRATION

### Course/Workshop COST

The **registration fee** at the Course "DIMENSION STONE-CONSTRUCTION MATERIALS QUARRY MANAGEMENT EVALUATION & MINING" (Carrara 18-20 June 2016) is

**795 €.**

The fee includes:

- Participation to all the phases of the Course
- Teaching documents prepared by the Course Organization
- Coffee breaks, lunches and snack as per Program above
- Transport to Carrara quarry the third day
- Transport from and to Pisa Airport (in group)

**The Participants shall add the cost** of international flights, VISA and all other travelling cost to arrive to Pisa Airport (Italy) and the cost of accommodation and meals, not included in the Course Program.

## PAYMENT

### By bank transfer

The bank transfer must be made out to :

INTERNAZIONALE MARMI E MACCHINE CARRARA SPA

Bank name: CARIGE S.p.A – Cassa Risparmio di Genova e Imperia

Address: Via Roma, 2 – 54033 Carrara (MS – Italy) - Ph. +39.0585.7661

**SWIFT/BIC code: CRGEITGG350 - IBAN: IT10R0617524510000010554480**

**TO REGISTER**, please send e-mail with copy of Bank Transfer and name of participant or List of participants (First and Last Names, birth date, nationality, company or Institution/organization, position, address, mob. And office telephone and e-mail) TO:

Mr. Marco RAGONE (IMM Carrara) E-mail: [m.ragone@immcarrara.it](mailto:m.ragone@immcarrara.it)

Mr. Marco COSI (AlpiConsult Stones) E-mail: [alpistone.mc@gmail.com](mailto:alpistone.mc@gmail.com)