

First-hand course impressions

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Dr Martin Artner, 43, has been working at Austroplan for more than four years. He graduated as a chemical engineer at the Technical University of Vienna, with a focus on inorganic materials technology. Martin recently completed a series of CemNet online training courses designed to provide full understanding of the cement manufacturing process, and in this article provides a personal assessment of the service.



Dr Martin Artner of Austroplan gives an overview of what it is like to participate in some of CemNet's e-Learning's training courses for the cement industry

When I joined Austroplan, naturally, I had a basic knowledge of cement but not the type of specific know-how that you have when you are working on cement projects on a day-to-day basis. Austroplan initially employed me to cover all process calculations for its projects.

At Austroplan my first aim was to "update" myself on cement know-how as quickly as possible by reading literature and articles, having discussions with colleagues, working directly at a cement plant and providing support on cement projects lead by senior colleagues.

Of course, all the knowledge needed would have been available at Austroplan itself. However, any type of external training provides inputs from another point of view and aspects that had not yet been distinguished. In addition, the

combination of updated theoretical basics with year-long in-house practical experience gives you the best background to solve complex problems.

Course enrolment

Together with three younger colleagues – a civil engineer, a mining engineer and an economist – we enrolled on the CemNet *Cement Manufacturing Technology* course, to learn the fundamentals of cement manufacturing. We all received a good basis of cement knowledge, but I was already interested in the next courses.

Each CemNet e-Learning training course consists of lecture notes, a verbal presentation, meaningful and ambitious exercises for the participants, professional articles and end-of-module exams. After the submission of the students' solution for the exercise by email, a professional

comment is received and it is possible to discuss aspects or other approaches to the respective topic with the course tutor, Dr Michael Clark.

Within the timeframe of a CemNet course, each participant can select and progress with the single course modules at their own pace.

The enrolled colleagues and myself also completed the *Cement Factory Maintenance* course. For my part this course was very advantageous. However, for my colleagues with less relevant qualifications, it might have been too technical in parts.

Challenging exercises

The *Cement Kiln Process Chemistry* course is prepared in an excellent manner. It was surely a lot of work for a non-chemical engineer to take on, but as a

The schedule of CemNet e-Learning courses can be viewed at www.CemNet.com/training



chemical engineer I found it an absolute “pleasure” to do. In any case, the course is a great source of knowledge for each participant. “Exercises” are challenging and ensure that the participant understands the material.

My daily core activities at Austroplan include preparing raw mix calculations, clinker phase calculations according to Bogue methodology, a bypass estimation, checking the alkali-sulphur balance. In addition, I assess the influences of harmful elements on cement quality and find practical solutions for clients, as well as show the consequences if proposed steps are not implemented. For these tasks

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the CemNet lecture notes are a welcome reference source for me – answers to individual questions can be found directly and are well documented. In general, I prefer to enter all data into Excel calculation sheets, similar or modified to that of the CemNet exercises, make some variation of parameters, obtain results and interpret these findings, considering

local conditions and norms, intended conceptions of the client, etc.

Further CemNet courses

The *Cement Kiln Pyroprocessing* course is also an extremely useful collection of important information, combined with mathematical and chemical background. This course provided excellent information on kiln feeding details, fuel dosing, ID fans, preheater types and details, fuel firing, burners, safety, etc. The course material is prepared in a way that the background and correlations are easily understandable.

Cement Kiln Refractories again

provides an impressive collection of good, applicable information. After finishing this online course, practical consultant's work such as the evaluation of offers from a refractory specialist is possible and its conception is basically understood. One is able to formulate meaningful questions and remarks, but probably will not be able to qualify a system as being “good” or “not proper” for certain applications without an element of doubt, eg refractory data sheets (in general) which do not contain much detail.

The *Grinding and Milling Systems* course presents existing grinding and milling systems, process calculations,

Austroplan's consultancy services

What are typical jobs at Austroplan's cement consulting department? Which services do clients order from a cement consultant like Austroplan?

- Plant monitoring (consultant reviews contractor's documents, inspections at sub-suppliers plant sites, monitoring of contractor's work at plant sites, during commissioning, reporting to client, etc).
- Feasibility studies and all its related services (market, raw material investigations, norms, plant lay out, infrastructure, technology, etc).
- Tender document preparation, tender evaluation, client's support at contract negotiations.
- Recommendations to investors, control of and advice to cement project-executing parties to prevent undesirable developments.
- Recommendations to clients who have operational problems at their plant.
- Checking tender documents prepared by others: listing of missing items, comments and proposals for improvement, identification of weak points.
- Due diligence of cement plants (eg for a potential take-over through an investor).
- External tests of materials for potential cement admixture and test of (new) binder materials.

General items

- Recommendations to investors if intended (building material) projects are feasible or make sense, process calculations, emission calculations, media consumptions, contact to environmental authorities, clarification of legal issues, elaboration and submission of plant documents to public authorities, sub-contracting of specialties to experts, etc.

This list does not include Austroplan's full spectrum of services, but those most often ordered by clients. Most important for Austroplan is to advise the respective client duly and help prevent any undesirable project development.

Austroplan itself has been a leading service provider for engineering, contracting and management consultancy in the cement and building materials industry for more than 50 years. Austroplan is independent and therefore acquisition and execution of contracts and selection of business partners takes place on a strictly professional basis.

deduction of formulae, separation theory and the like. It provided an ideal fundament for further questions at Austroplan (mass/energy calculations at mill systems, control of bids and optimisation of milling systems). At Austroplan, since taking this course, I had already elaborated mass/energy balances, considering flue gas dew points, operation at different seasons, eg as a support for Austroplan's project manager at a plant site in Libya.

The *Cement Factory Quality Control* course was also a very useful experience, learning about the techniques of statistical process control and the need for process adjustment, the calculation of average blending bed compositions, the fuel ash correction of raw mix and raw mix calculation, based on eg, LSF, SM and AM target values.

Summary

In general, the online CemNet courses not

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only cover technical issues, but tackle key issues such as CO₂ abatement, carbon capture and storage, CDM and waste heat, all in a practical, applicable and comprehensible way.

If someone should decide to take an individual CemNet course, they will get an excellent overview of the selected topic, work on practical issues and obtain background information at a very attractive cost-performance-ratio.

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Of course, these courses will not solve all problems in practice. From a technical consultant's point of view it will always be meaningful to investigate a specific topic, discuss items with senior colleagues and in this way find the best strategy to cover all aspects of the subject.

Ultimately, CemNet's training programme has enabled me to gain a practical and advanced understanding of the entire cement manufacturing process. As an online training programme I valued the opportunity to engage with the course tutor, move through the topics at my own pace, and schedule my learning around work and home commitments. The courses are many times cheaper than comparable residential courses, which obviously assisted in securing sponsorship from my company who funded the training. _____

CemNet e-Learning courses provide a thorough learning experience for cement industry personnel, with a range of features designed to accelerate full understanding of the complete manufacturing process.

Regardless of your type of cement company organisation, skill levels or personnel learning styles, a CemNet e-Learning course can provide access to the right level of training – anytime and anywhere.

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