



European Network for Accreditation of
Engineering Education

Report to EUR-ACE Label Committee

Application for Re-Authorisation to award the EUR-ACE Master Label

from

Commission des Titres d'Ingénieur (CTI)

Members of ENAAEE Review Team

- 1. Guenter Heitmann, ASIIN, Germany (Chair)**
- 2. Iacint Manoliu, ARACIS, Romania**
- 3. Erbil Payzin, MÜDEK, Turkey**
- 4. Cedric Belloc, EC, UK**

Date of Draft Report: April 2015

Final Report : 6th of May 2015

1. GENERAL INFORMATION

1.1 The ENAEE Team

The application by CTI to be re-authorized to award the EUR-ACE Label has been assessed by an ENAEE Review Team (RT) composed as follows:

Guenter Heitmann - ASIIN, Germany, (chair)

Iacint Manoliu – ARACIS, Romania

Erbil Payzin – MÜDEK, Turkey

Cedric Belloc, EC, UK

1.2 Meetings, visits and CTI plenary session

The CTI application for re-authorization, dated October 2014, contains very comprehensive answers to all ENAEE review questions and in particular focused links to all relevant CTI documents which can provide necessary evidence.

The ENAEE assessment is based upon the documents provided, observations of two CTI audits at Ecole Centrale de Marseille on 6th and 7th of November 2014 and at ITECH Lyon on 19th and 20th of February 2015.

A plenary session of CTI dealing among other topics with the two HEIs observed was held on 14th and 15th of April 2015 and attended by Guenter Heitmann, chair of the ENAEE Review team.

In addition two meetings with CTI members and staff took place: On the 5th of November the ENAEE review team met Anne-Marie Jolly, currently one of the two CTI Vice-Presidents and chair of the Centrale Marseille audit team, and the programme managers Teresa Sanchez-Chaparro and Julie Nolland from the permanent staff of CTI. After the CTI plenary session on 14th of April Guenter Heitmann met these three CTI representatives again, in addition Maurice Pinkus, also Vice-President of CTI and member of the ITECH audit team.

Helpful additional information on special request was provided by Teresa Sanchez-Chaparro and Julie Nolland, who also perfectly organised the meetings and the site visits for the ENAEE RT.

Schedules and participants of the site visits and audits are documented in the annexes of this report. The two HEIs and audits observed have been:

- Ecole Centrale de Marseille:

Centrale Marseille is a higher education institution which results of the merge, 10 years ago, of 4 schools from Marseille with different status. It is presently in a strong progression process. It belongs to the 'Écoles centrales' Group and has established local partnerships, in particular developing programs with Aix Marseille Université (AMU).

Based on 2 year preparatory classes or comparable qualifications the School delivers

a 3-year engineering generalist master degree in full-time training and by apprenticeship with CFA "Epure". So far only few apprenticeships contracts have been signed.

172 engineers have obtained their diploma in 2014, 258 new students have been enrolled and they aim for 300 in 2022. Ecole Centrale Marseille offers only one engineering degree with different specializations. At 15 Juillet 2014, there were 825 engineering students of which 236 have been women.

In addition, the school delivers a bachelor degree together with Aix Marseille University; 24 places are available and a selection recruitment is in place. After the bachelor, students may be admitted to the first year of the school after a selection process. This bachelor degree allows the integration of international students in L3. The school provides in addition 11 Masters together with University Aix Marseille: 30% of engineering programme students attend also a Master programme.

- ITECH Lyon :

The Institut textile et chimique de Lyon (ITECH) is a small private HEI resulting from a merger in 1988 of four highly specialized schools of engineering in the branches of leather, textile, plastics and chemistry of colours. Based on a minimum entrance requirement of bac + 2 the current 3 year programme focuses on these 4 specializations after one common year. The school enrolls about 110 students per year, one third of them in the apprenticeship track. Since 2014 ITECH offers in addition a new English European programme in collaboration with comparable HEIs in Düsseldorf and Leeds in the study field «chimie de la formulation ».

1.3 ENAEE Review team approach and documents provided

The task of ENAEE observers is to verify if the written standards and procedures of CTI are in compliance with the ENAEE and EUR-ACE Standards and Guidelines, if the CTI regulations and procedures applied and decisions taken correspond to the requirements, if the information obtained on the site visits and audits is consistent with the written information, if CTI makes sure during the respective assessment procedures that HEIs provide convincing evidence that required programme outcomes are achieved and a continuous quality improvement approach and system is existing. In addition, it has to be checked whether sustainable structures and facilities of CTI are in place to carry out its mission and an adequate internal quality assurance system is implemented.

CTI presented a comprehensive set of documents, many of the documents available on the official web-site of CTI: <http://www.cti-commission.fr/>

Besides the information on the web-site the ENAEE Review team received:

- Application of CTI from October 2014 to renew the ENAEE authorization to award the EUR-ACE Master Label (in English) including 4 detailed annexes.
- The English brochure : Accreditation Criteria, Guidelines and Procedures, approved by CTI's plenary assembly on 10th of July 2012,

- The extended French version available from the CTI web-site
- Accreditation Criteria, Guidelines and Procedures for Engineering Education Programmes outside France, approved by CTI's plenary assembly on 10th of July 2012, provided on the CTI web-site, pdf download possible
- An up-dated « Lineup CTI and EUR-ACE outcome criteria for degree programmes » (in English) from October 2014
- The ENQA letter from 26th of September 2014 concerning renewal of the CTI membership in ENQA
- Short versions in English of the Self-evaluation reports of Ecole Centrale de Marseille and ITECH Lyon, the long ones including comprehensive annexes have been provided in French
- Audit report of the CTI audit team of Centrale Marseille in English
- Audit Report of the CTI audit team of ITECH Lyon in French
- A set of French brochures of Ecole Marseille and ITECH, advertising the HEI and the programmes
- Schedule and agenda of the audit visits (see Annexes) and of the CTI plenary assembly of 14th and 15th of April 2015.

2. HISTORY AND DEVELOPMENT OF CTI

2.1 History

The Commission des Titres d' Ingénieur (CTI) was founded by the law promulgated on the 10th of July 1934 which extended to all French HEIs and programmes the evaluation and accreditation from an academic and a professional point of view, with the programmes leading to the French degree of "ingénieur diplômé", which is in due course a professional title. Later, the "Savary" law, passed in 1984, completed the regulations of the accreditation procedure.

However, the obligation for periodic evaluation (every 6 years) by the CTI of all existing programmes of public and private HEIs leading to the engineering degree in France ("titre d'ingénieur diplômé"), has been requested only since 1997. For the CTI this obligation results in the execution of more than 80 to 100 accreditation requests each year on average (e.g.: 137 decisions were taken during the one year 2013 – 2014 campaign). CTI is doing so by focusing its regular re-accreditations on HEIs of a certain region each year. As the period of full accreditation lasts 6 years CTI defined 6 regions of France. As in the future the full accreditation will be reduced to five years this will result in a reorganisation of the regions and more cases per year.

According to French law, "Ingénieur diplômé" is a degree equivalent to that of "Master" (French decree n°99-747, August 30th 1999). Even if France is a signatory of the Bologna Process and has meanwhile adapted its Higher Education system to the three cycle Bologna

structure with qualifications also at the bachelor level, engineering education in its majority sticks to the traditional format of 2 + 3, a two year general education primarily in mathematics and natural sciences at preparatory classes followed by a 3 year engineering programme at respective HEIs. CTI is evaluating only the master level. Besides some other formats of the five year programmes towards an “Ingénieur diplômé” degree, this degree can also be achieved by so called apprenticeship programmes, by joint and double degree programmes and by the validation of prior and experiential learning (VAE).

2.2. Main activities

The main activities of the CTI are explained in the “CTI Application Form for ENAEE” from October 2014 and are as follows:

- “The accreditation of all French higher education programmes leading to the French engineering degree title of “Diplôme d’ingénieur”; State-owned HEIs are authorized to award the engineering degree (“habilitation”) by the HEI’s supervisory Minister(s) upon receipt of CTI advice. Private HEIs are authorized by the Minister of higher education upon receipt of a CTI accreditation decision.

- On receipt of a request from foreign higher education institutions, the accreditation of engineering degree programmes outside France. Up to the current moment, CTI has accredited engineering programmes belonging to ten institutions outside of France in six different countries (Belgium, Bulgaria, Burkina Faso, China, Vietnam and Switzerland)

- The publication of position statements on all issues related to engineering degree programmes. In particular, CTI sets the criteria and procedures for the accreditation of engineering degree programmes and contributes to their continuous improvement, in a European and international context.“

2.3 Main CTI Terms of Reference

- 1 - “References and Orientations” (edition 2012 - 2015), consisting of 2 volumes, available on the CTI web site and among other chapters including the comprehensive requirements for programme outcomes and programme accreditation
- 2 – « Guide auto-évaluation » – which details the requirements for the self.evaluation reports (SER) and refers explicitly to all criteria described in “References and Orientations”, and the
- 3 - “Rapport de Mission”, which provides a detailed template for the reports of the CTI panels

These references and further information regarding CTI regulations and documents are provided on the CTI web-site: www.cti-commission.fr

2.4 The CTI commitment to quality assurance

CTI is one of the founders of EUR-ACE through ESOEPE and founding member of ENAEE. CTI aims at complying with the European Standards and Guidelines for Quality Assurance in Higher Education (ESG) for its internal and external Quality Assurance systems. Already in 2003 CTI formulated a quality policy which has been subsequently up-dated at least every third year. CTI since 2005 is member of ECA and also a full member of ENQA. In 2014 CTI passed an external evaluation by ENQA and got the confirmation of its membership for additional 5 years. ENQA submitted some recommendations for further development and requires a follow-up report on the recommendations latest by September 2016.

Since November 2010 CTI is listed on the European Quality Assurance Register for Higher Education (EQAR). The listed agencies have demonstrated in an external review by independent experts that they comply substantially with the European Standards and Guidelines for Quality Assurance (ESG). Following an external review, CTI got the renewal of the inclusion on the Register in November 2014 until June 2019.

3. ACCREDITATION STANDARDS AND PROCEDURES

CTI Accreditation approach

The CTI accreditation approach is basically an institutional evaluation with an embedded programme accreditation, based on an evaluation procedure usually covering all degree programmes which an applying HEI offers. Since 1997 a stronger focus on programme accreditation is implemented in the mandatory evaluation of the HEI by the CTI. The comprehensive evaluation process has to be renewed after 6, in the future after 5 years. It may happen that certain programmes are not accredited or that not all programmes of a public or private HEI receive full accreditation for the maximum period but for 2 or 3 years only with the request for an additional evaluation after the limited period.

“CTI accreditation criteria are compiled in the document “Références et Orientations” (References and Orientations - RetO). The reference framework is composed of six sections:

- A) Strategy and identity of the institution
- B) External links and partnerships
- C) Educational process and study programmes
- D) Student selection and admission
- E) Graduate employment
- F) Quality assurance system

The evaluation covers not only programme related aspects but also the HEI research, entrepreneurship activities, internationalization, student life and the HEI policy and strategy in general. Therefore a lot of data have to be provided by the self-evaluation report and its annexes based on the detailed CTI self-evaluation guidelines.

In addition, CTI in 2012 has implemented a data system forcing the HEIs to continuously provide the most recent data for 90 key indicators which are then published on the CTI website and can be publicly accessed. This is a source of information for all stakeholders but it is also one of the documents taken into account by CTI during the accreditation procedure.

3.1 Programme Outcomes

– Is the content of the Agency Standards consistent with the Programme Outcomes in Section 1 of the EUR-ACE Framework for Second-cycle degrees?

France adopted most of the recommendations of the Bologna Process and refers to the overarching Qualifications Framework for the Higher Education Area. But apart from respective generic outcomes indicators for the various degrees France has no governmental regulations of detailed requirements for programme outcomes in engineering education. The definition of respective outcomes and standards is part of the mission of CTI. The CTI developed a comprehensive list of outcomes based on a competence based approach, e.g. also with reference to the EUR-ACE Framework Standards, and is continuously discussing and regularly up-dating it. Major enhancements during the past years have been special regulations for programmes in apprenticeship mode and a stronger promotion of internationalization including an increase of foreign language requirements.

CTI evaluates and accredits only second cycle degree programmes. It provides to HEIs a Self-Evaluation Guide addressing all the standards and requirements detailed in the document “References et Orientations”, edition 2012, RetO. In Volume 1 of the RetO five essential competences for professional engineering activities are mentioned (in A.1.1.6). Related to it, in Volume 2 of the RetO in paragraph D.2.1 eleven capacities and general competencies of engineering graduates are outlined. Paragraph D.2.2. reminds that in the 2007 authorization of CTI by ENAEE the coherence of these competences with the EUR-ACE programme outcomes has been demonstrated.

In the RetO Volume 1 in section C, in particular C.2.4 the programme outcomes are only described as general and specific learning outcomes and competences. Details are to be found in the Self-Evaluation Guide for the HEIs. In the corresponding C.2.4 paragraph of the guide 19 programme outcomes are specified and also potential learning outcomes related to each one of it. In addition, it contains information how these outcomes should be assessed, in particular a list of potential evidences is proposed with regard to each of the CTI outcomes. These outcomes should be achieved independent of how the programmes are organised. Besides the predominant normal approach many schools offer also an apprenticeship track of three years duration. In these programmes up to two third of the

student workload and ECTS are covered by practice in industry but should arrive at the same CTI required outcomes as the traditional programmes.

As explained in the CTI application and further detailed in the up-dated document “Line-up of CTI’s and EUR-ACE outcome criteria for degree programmes”, compiled in October 2014, the CTI programme outcomes cover the EUR-ACE programme outcomes for the two cycles considered in the EUR-ACE Framework Standards (EAFS). With regard to transferable skills the CTI requirements are more detailed and go beyond the EUR-ACE ones.

Conclusion - Yes, the CTI Programme outcome standards are consistent with the Second Cycle Programme Outcomes of the EUR-ACE Framework.

– Do the Agency Standards specify a depth of knowledge and understanding consistent with those of the EUR-ACE Framework for First and Second-cycle degrees?

The highly competitive admission and enrolment practice of French engineering HEIs guarantees in general a high standard in the fundamental math and natural science subjects. The CTI Standards are competence oriented and do not only address knowledge and understanding but skills and competences on the forefront of industrial practice and research.

The “Références et Orientations”, RetO, emphasise the importance of innovation, management and research skills and reinforces the profile of the “Ingénieur Diplômé”.

Conclusion – Yes, the Agency Standards specify a depth of knowledge and understanding consistent with those of the EUR-ACE Framework.

3.2 - Programme Organisation

– Does the Agency satisfactorily assess how the programmes are organised, managed and maintained in order to ensure that the Programme Outcomes are achieved?

CTI requires a comprehensive set of data from the applying HEI about how programmes are structured, managed and quality assured. The CTI programme manager check the completeness of the SER and the data delivered and ask for additional information if needed. The assessment is executed by a CTI audit team primarily based on the SER and the information gained during the on-site visits.

The ENAEE review team observed that HEIs due to their mission and tradition define their own programme outcomes. In their SER and their presentations during the on-site visits the two observed HEIs did not explicitly refer to each of the 19 CTI programme outcomes. The assessment for the achievement of programme outcomes by the audit team - according to the recommended review report template and the visit schedule - is not very much focused on the check and analysis of provided documents like module descriptions, textbooks,

contingency tables or rubrics, assessment plans or of student products like exam papers and outcomes, project results, documented student`s learning experiences and reflections, final thesis work and presentations, questionnaires answered by students or graduates.

During the site visits only few time is reserved for this kind of checking even if is stated in the document “Accreditation Criteria, Guidelines and Procedures” that “the visit should also allow enough time to examine a number of relevant documents which should be provided during the visit”. In one of the observed cases the scheduled slot of 45 minutes was even not used due to lack of time because of lengthy presentations and discussions on other topics. The assessment by the audit teams whether programme outcomes are achieved seems to be more indirect and based on the existence of certain satisfactory frame conditions of the programme (appropriate curriculum, facilities, teaching staff, existence of internship or study abroad requirements and opportunities, research collaborations) and of the experiences and satisfaction of the involved stakeholders presented in the discussions with stakeholders during the on-site visits.

The visited HEIs reported that they are still in the process of implementing all stages of the competence approach promoted by CTI. One school explicitly stated that after detailing programme and learning outcomes they just started to deal with an appropriate and aligned assessment system and of training their teaching staff accordingly.

Conclusion – Yes, CTI assesses programme organisation and management but there is a need for improvement of explicit outcomes assessment.

– Does the Agency accreditation procedure require course providers to provide adequate resources to deliver programmes?

The “Guide d’Autoévaluation » asks in detail which resources are available in order that the HEI can deliver the programmes. The documents submitted by the two visited HEIs refer to all the resources provided to achieve the educational objectives and the programme outcomes. The CTI audit panel as well as the CTI plenary critically discussed the resources available and decided on some recommendations for improvement.

It turned out in the two HEI audits that in particular the new programmes delivered in an apprenticeship mode have problems to acquire appropriate internship facilities in industry and to collaborate with industry in a way that required contributions to the programme outcomes are achieved and the achievement proved.

Conclusion – Yes, the Agency accreditation procedures require HEIs to provide adequate resources to deliver the programmes.

3.3 Accreditation Procedure

– Are the Agency’s accreditation procedures satisfactory?

The procedures are defined in the already mentioned documents and comprise the usually applied steps for programme accreditation as required by ENAEE. The criteria analysed and

assessed go beyond the ENAEE recommended ones. The CTI evaluation puts a strong focus on institution and programme improvement possibilities based on a SWOT analysis required from the CTI audit team. The report and the final proposal of the audit team for the decision in the CTI plenary session contain respective recommendations.

The procedures have been verified not only during the visits to the HEIs but also in the plenary session of CTI. The CTI plenary devotes enough time, usually at least an hour per HEI, for the audit report presentation and the discussion about conclusions, recommendations, the final decision on the accreditation of the involved programmes and the accreditation report to be published.

Conclusion – Yes, with recommendations. The procedures in general are in accordance with the EUR-ACE recommended ones and the ESG. Most of the various parts are carefully prepared and executed. Procedures could be improved by emphasising programme and learning outcomes assessment, requiring more information on outcomes achievement and allocating more time for the analysis of provided evidence during the on-site visits, e.g. by reducing the time for presentations in the meetings with stakeholders.

– Does the Agency documentation provide adequate information for all the participants in the accreditation process?

CTI provides a comprehensive set of documents on the Internet and in hard-copy in order to inform the schools about the national law and regulations, the context and history of the so called “habilitation”, the international requirements and the CTI accreditation procedures and criteria.

Besides these documents and information CTI organizes regular meetings with the presidents and deans of HEIs, an Annual Conference for the HEIs, training for experts and additional workshops, some together with other stakeholders, by which additional information about requirements, good practice and future developments can be submitted and discussed.

In the context of an accreditation procedure some kind of advice is available from the CTI staff and experts. In addition, before the formal visit the CTI audit team chair establishes a personal contact with the president of the school for further clarification or supplementary information that may be required by the team.

Conclusion – Yes, the Agency documentation and other measures provide adequate information for all the participants in the accreditation process.

- **Does the Agency documentation provide clear guidance to enable the university to produce a comprehensive self-assessment report and other necessary information?**

Besides the “Références and Orientations” Version 2012 the “Guide d’Autoévaluation” offers very detailed instruction about requirements to fulfil, questions to answer and documents to provide. In addition, the template and recommended structure of the audit team report (“Rapport de Mission”) gives a clear picture of what will be considered and assessed.

Conclusion – Yes, the Agency documentation provides clear guidance to enable the HEI to produce a comprehensive self-evaluation report and other necessary information.

- **Is the composition of the accreditation team adequate?**

The CTI accreditation teams consist of minimum 3 up to 6 members. As stated in the CTI application:

“One of the specificities of CTI as an accreditation agency is that the members of CTI’s plenary assembly also take part in the evaluation visit. At least two CTI members (one with academic profile and another one with professional profile) are present during the visits.” Usually one of them is appointed as chair of the audit team. Apart from CTI members, CTI’s assessment activities are carried out using an extensive network of national and international experts. The list of CTI experts is updated every two years. Experts are proposed by the different CTI stakeholders and appointed by CTI’s board.

Since 2010 CTI started to steadily increase the participation of international experts in its audit teams. In 2011/12 this has been successful in 20% of the cases. CTI also tries to involve students in the accreditation procedures as members of the audit teams, based on a collaboration with the French Association of Engineering Students (BNEI) since 2010. In 40% of the audits it took place. Also in the two audits observed by the ENAEE review team a student representative was present as a member of the audit team.

Appointed experts must follow a training session and sign a deontology chart. This applies also to the student members. Special training sessions are provided for them.

The ENAEE review team of 2007 in its report criticised that experts were not appointed with regard to subject areas under consideration and recommended to avoid this unsatisfactory team composition. CTI has since that time increased the pool of experts and is trying to satisfy the different needs even if in situations with a big variety of programmes and specializations it is not possible to cover all subject areas. The current ENAEE review team was satisfied with the composition of the team in the two cases observed.

Conclusion – Yes, the number and qualification of accreditation members are adequate. The ENAEE review team strongly supports the inclusion of students and international experts.

- **Are the timetable and the agenda for the visit acceptable?**

Visits can last from one day to one week depending on the size of the HEI, the number of programmes and special features. The agenda for the visits is specified in the RetO, volume 2, paragraph F.4.2. 2

The visits to Centrale Marseille and ITECH Lyon have been two day visits with a meeting of the audit team in the evening before the visits. The time tables for both visits provided enough time for meetings with school representatives, stakeholders, graduates and local institutions and for visiting the facilities but not enough time for a more focused programme evaluation and assessment of outcomes achievement.

Conclusion – Yes, agenda and timetable in general are adequate for the purposes of the audit. However, more time should be devoted for assessing programme and learning outcomes achievement and critically checking the evidences and documents provided by the HEIs.

– Is the conduct of the visit acceptable? Are the meetings efficient in obtaining the necessary information?

Before the visit the audit team chair has a previous appointment with the HEI to evaluate if all the information is available and if the visit can be carried out with efficiency.

Each member of the audit team has to read the documents thoroughly. As the maximum 40 pages of the self-evaluation report can have hundreds of pages of annexes, the burden of reading and preparing the interviews is sometimes split according to special parts of the agenda where not the appointed chair but one of the experts take over the structuring of a certain session and discussion. For instance: In both observed audits the student expert took over the chair for the discussion with the students. Some of the sessions could have been more structured and focused, e.g. with regard to an extended discussion of programme matters. In one case the investigation and discussion was lacking from the absence of industry representative to discuss crucial issues of the apprenticeship programme.

There were no major changes in the programme of the visits. It was obvious that the audit teams stick to the requirements of their final report, with the chairs trying to do their best to collect all relevant information needed during the various meetings. The initial meeting of the audit teams on the evening before the visit could have been more efficient in identifying crucial issues for the following sessions. However, it may well have been, that the audit team members wanted to offer a friendly welcome and talk to the ENAEE observers, which indeed happened and may have changed the normal procedures.

Sometimes the audit team during the visit splits into different groups to visit various units or departments of a HEI. After that all the groups visiting the same HEI discuss their collective findings. This was not the case during the two visits observed by the ENAEE review team. All members of the CTI audit team as well as the RT took part in all parts of the visit.

Conclusion – Yes, the conduct of the visit is acceptable and the meetings usually provide the information missing or required by the audit report template.

– Is the decision-making process acceptable? Are the decisions communicated properly?

Decisions about applications and the nominations of the chair and rapporteur of the audit teams are taken by the CTI plenary assembly which usually convenes every month for a one day or two days meeting.

The audit teams have to agree about the proposal for the CTI plenary assembly, in particular which kind of accreditation decision should be taken and which recommendations for improvement to the HEIs. At the end of the visit the audit team summarises the impressions and conclusions. Strength and weaknesses of a HEI are discussed and decisions on recommendations for the CTI plenary taken. The final discussion of the audit team with school representatives at the end of the visit usually only contains general impressions. The report of the CTI audit team without recommendations is sent to the evaluated HEI for correction of any factual error.

Final decisions about accreditation and recommendations to the HEI are taken by the CTI plenary based on the audit team report, a presentation of the appointed chair or rapporteur of the team and the proposal of the team.

With regard to programme accreditations the following decisions are possible:

- “Mature programmes and no major problems detected: Mature programmes in which no major problems are detected are accredited for 6 years. Follow up of the recommendations is normally analysed during the following CTI’s accreditation and no intermediate formal control is conducted.
- New programmes or significant problems detected: New programmes or programmes where significant problems are detected are normally accredited for 3 years. The length of the accreditation could be shorter if important difficulties are found. The minimum accreditation length for a programme which is already in operation is 1 year.

Regardless of the accreditation length, in some cases, CTI demands the HEI to report on the implementation of certain recommendations by submitting an interim report. A CTI expert or member is appointed in order to analyse the progress report and presents his/her conclusions to the general assembly.” (quoted from CTI application)

During the CTI plenary assembly on 14th of April 2015, when the ENAEE RT observed cases of Centrale Marseille and ITECH Lyon have been on the agenda, intensive discussions about the proposals took place, resulting in some changes of the proposed accreditation periods and recommendations.

Decisions are taken by the majority of votes of the CTI members present. At the observed plenary sessions 28 of the 32 members took part. As explained in appendix 2 of the CTI application for re-authorization, in the case of private institutions CTI makes a final decision about the accreditation. This is the reason why representatives of the private HEI are invited to the plenary session where their case is discussed to give an additional opportunity for the plenary members to raise questions, like it happened at the observed session with ITECH Lyon.

“In the case of public institutions, CTI delivers a judgment (“avis”) on which the Ministry of Higher Education bases its decision to grant the accreditation. CTI’s technical judgment on quality issues is always respected by the Ministry.

Nevertheless, as long as public funding is engaged, the Ministry can include some additional criteria (specifically, on the opportunity of the investment) that could modify the final habilitation decision. Since 2005 (year in which CTI was granted full ENQA membership for the first time), only two of the Ministry decisions have been different from CTI’s judgment (out of the around 160 accreditation decisions made by CTI every year).” (quoted from CTI application)

Regarding the information of the HEIs and the general public:

CTI does not publish the comprehensive audit team reports but only the on average 4 pages accreditation reports which are decided by the CTI plenary. They comprise:

- A brief introduction about the characteristics and history of the institution and of the results of past CTI’s accreditations
- A brief description of the engineering programmes and their evolution
- Follow up of CTI’s recommendations
- Analysis and result of the accreditation

All CTI’s accreditation reports are transmitted to the concerned institutions and published on CTI’s webpage together with the minutes of the General Assembly meetings. The reports for each institution are also accessible through CTI’s search engine. Apart from CTI’s webpage, a number of additional publication mechanisms are in place at national level:

- The official list of programmes accredited by CTI and authorized by the French government is published every year
- Under the control of CTI, the main features of the accredited programmes, in particular the expected competences, are published in the “Repertoire National des Certifications Professionnelles”, RNCP, in www.cncp.gouv.fr

Conclusion – Yes, the decision-making process is acceptable and the decisions are communicated properly.

– Is there an appeals system in place?

The CTI application for re-authorization describes the appeal regulations as follows. :

“Concerning the appeal procedures in place, as CTI decides for private institutions and provides opinions for public institutions, there are two formal procedures:

- The French law provides a specific procedure to appealing CTI decision for private institutions (see appendix 2 of the application)
- For public institutions, since the final decision is taken by the ministry, the procedure comes down in the general scheme of the official appeals of administrative decisions.

Before getting into these heavy procedures, CTI offers an internal appeal:

institutions may appeal a CTI deliberation with a motivated letter to CTI` s president, within 2 months after CTI’s deliberation (i.e. before the official « habilitation» by the Ministry). The president presents the request to the plenary session which may or may not decide to revise its position.

The different appeal procedures are explained in CTI's bylaws, which are accessible through CTI's web-site.

Conclusion – Yes, there is an appeal system in place.

4. AGENCY MISSION AND STRUCTURE

4.1 - Official Status

– What is the legal basis for the accreditation role and how is compliance demonstrated?

As described already in top 2.1 of this report the composition and missions of CTI are defined by law since 1934. CTI is recognized as the organization in charge of accreditation of programmes of engineering education and public and private HEIs that award the title of “ingénieur diplômé” as it is stipulated in “Code de l'éducation” in articles L-642-3 and a decree of State Council n° 85-685 of 5th July 1985. It was confirmed and enhanced in a revised version of the “Code de l'éducation” and by different government decrees from 2001 and 2002.

The CTI application for re-authorization in Annex 4 provides a comprehensive selection of the main legal texts concerning CTI's missions and activities.

Conclusion – The legal basis of CTI continues to be clear and well supported.

– Are its constitution and administrative procedures adequate to conduct accreditations?

As already explained, CTI since 2005 has taken many initiatives in order to conform with international frameworks of quality assurance, in particular the ESG.

Already the document “External Evaluation Review Committee (EERC) Report: Commission des Titres d'Ingénieur (CTI) – dated October 2007” proved the compliance with the European Standards and Guidelines for the External Quality Assurance of Higher Education (ESG). The ENAEE evaluation of 2007 also arrived at a positive conclusion. The recent external evaluation by ENQA in 2014 for the renewal of the ENQA membership concluded implicitly that the constitution and administrative procedures are satisfactory.

Conclusion – Yes, the CTI administrative procedures are adequate for to conduct accreditations.

4.2 - Activities

- **Is the undertaking of the accreditation processes at programme level part of the core functions of the Agency?**

This was already outlined in previous paragraphs of this report.

Conclusion – Yes, evaluation of HEIs and accreditation of programmes are core functions of the agency.

4.3 - Resources

- **What resources does the Agency have at its disposal to carry out its accreditation processes?**

Human resources

CTI explained that it has currently 14 full time equivalents (FTE) of staff for its various activities.

9,5 FTE are calculated as being provided from the 32 members of the “Commission des Titres d’Ingénieur” who are not paid by CTI but by their different employers. They contribute with different shares of their time to the work capacity of CTI.

16 members are from the socio-economic sector and designated by professional organisations, including:

- eight members chosen by employers' organisations
- eight members chosen by associations and professional organisations of engineers

16 members are from the academic sector, including:

- eight members chosen from among the staff of public scientific, cultural and vocational schools and institutes under the Ministry of National Education
- eight members chosen for their scientific and technical competence including members from institutions under ministries other than the National Education.

The permanent administrative staff of CTI consists of 3 very experienced academic graduates responsible for the programme management and the day to day administrative work. It is envisaged to hire a fourth full time employee as CTI has to cope with an increasing workload, partly caused by an increase of transnational accreditations.

A third share of human resources stems from the CTI's registry: It consists of 3 persons who belong to the Ministry of Higher Education and are working part-time for executing CTI operations. They register the applications from the institutions, verify their eligibility, register

the deliberations of the CTI and organize the “habilitation” process (see appendix 2 of the application); they have the responsibility of publishing the annual decree in the Official Journal of the French Republic («Journal Officiel »), listing all the programmes officially authorized to award the “titre d'ingénieur diplômé “.

The work time contribution of the pool of national and international experts is not counted in this calculation.

Financial resources

The ENAEE RT of 2007 had criticised a lack of financial support. The ENAEE AC formulated a respective recommendation to increase the financial resources when it authorized CTI to award the EUR-ACE label. At that time the operational budget of CTI was guaranteed mainly by support of the Ministry of Education and by European contracts and partnerships. A decision had been taken afterwards by the CTI plenary assembly to obtain money from the schools being evaluated, from the professional world, and from the umbrella ministries.

As explained, CTI still relies to a great deal on unpaid services from the members, experts and delegates but has significantly increased its income and stabilized its budget. Besides the Ministry of Education with 41%, the French Engineering HEIs supply an equal contribution of 41% to the budget of CTI. Accreditation activities abroad also contribute to the budget, at least they are calculated and billed on a full-cost basis.

Conclusion – CTI currently seems to have a satisfactory and sustainable situation with regard to its human and financial resources.

– What provisions have been made for the development of the processes and procedures?

The membership of CTI in ENQA, ECA, ENAEE and EQAR, resulting in regular external evaluations, and the comprehensive quality assurance system of CTI contribute to a a better execution of CTI's mission and to continuous improvement of standards and procedures.

Since 2007 CTI has introduced a lot of changes. The 2012 implemented annual collection of 90 key data of each CTI accredited French HEI as well as the various questionnaires and conferences and the regular revision of the documents for evaluation and accreditation standards and procedures every third or fourth year are strong means for quality and efficiency improvement. It can be expected that the current revision process, expected to be finished by February 2016, will lead to further amendments.

Conclusion – Since 2007 CTI has significantly increased its commitment to quality assurance and continuous improvement of standards and procedures.

4.4 - Mission Statement

- **Is the Agency's mission statement publicly available? Are its central points acceptable?**

CTI's mission is defined by law. The mission statement and comprehensive other information about the law and historical context of CTI's activities, about structure, standards and procedures are publicly available on the CTI web-site: www.cti-commission.fr

Conclusion – Yes, CTI's mission statement is publicly available, the core points are very acceptable.

4.5 Independence

- **How is the independence of the Agency ensured?**

The CTI application for re-authorization outlines that “a number of elements enable CTI to function in an independent manner:

- The balanced distribution of stakeholders among CTI membership (with equal representation from public higher education establishments, private higher education establishments, employer and employee organizations, and graduate associations) protects it from outside dominant interventions.
- CTI's members are appointed according to their own personal competences and sign a deontology chart, which assure their independence and their integrity. They are appointed by the Minister upon proposal of their organization, for a period of four years, renewable once. Once appointed, CTI's members cannot resign or be dismissed unless they resign for personal reasons, or if they no longer meet the conditions required for their appointment.
- The CTI resources come from two main origins: ministry grants and contributions of the accredited HEI's. Each one of them accounts for a 41% of CTI's resources, which ensures CTI's financial independence from both the ministry and the HEIs.
- CTI has established and has adopted its by - laws in 2011 which establish, in all independence, its internal operating procedures.
- The chairman and 2 vice - chairs are elected by CTI's members for a renewable period of two years. The board members, the representatives and the external experts are appointed by a CTI vote in the plenary meeting.
- In France, no regulatory texts exist concerning the content and quality criteria of engineering education. The accreditation standards and procedures are defined by CTI in all independence. They are prepared by working groups including the stakeholders, supervised by CTI and then are adopted in plenary sessions and published under CTI's exclusive responsibility (primarily on its website)”

Conclusion – Yes, based on the above information and on discussions with CTI representatives the ENAEE RT arrived at the conclusion that the independence of CTI is satisfactorily ensured.

4.6 Accountability Procedures

– How is the accountability of the Agency secured?

In 2008 an external quality review of CTI by NVAO recommended to assemble the various CTI quality initiatives into a comprehensive system. Following this recommendation CTI's internal quality assurance system was constituted and adopted by the general assembly in February 2009. As detailed in appendix 1 of the CTI application for re-authorization to award the EUR-ACE Label CTI meanwhile has a very comprehensive quality assurance system involving all stakeholders and processes and aligned with the ESG. This system includes a quality policy, internal and external feedback mechanisms and an internal reflection mechanism. The system operates according to a one year PDCA cycle.

In addition, CTI has developed other mechanisms and practices in order to show its accountability towards its main stakeholders:

- "A periodic survey on the validity of CTI's programme outcomes: it is conducted every three years in collaboration with the French Engineers and Scientifics Association (IESF- Ingénieurs et Scientifiques de France) in order to analyze the significance and validity of CTI's final programme outcomes
- A Strategic Advisory Board CTI (Conseil d'Orientation Stratégique - COS). This consultative organ has been recently put in place by the agency in order to provide mid and long term orientations on the evolution of CTI's mission and strategy. The COS includes 25 members
- Certified HEI's data sheet ("données certifiées"). In collaboration with its stakeholders, CTI has chosen 90 data items, which mean to characterize a particular HEI; each year the values of these items must be given to CTI by the dean of each French Engineering HEI." (quoted from the CTI application)

Conclusion – Yes, the accountability of CTI is secured.

4.7 Miscellaneous Criteria

– Does the Agency pay careful attention to its declared principles at all times and ensure that both its requirements and processes are managed professionally?

CTI pays careful attention to its mission and declared principles at all times. It has implemented a comprehensive internal quality assurance system. All stakeholders are involved in continuous improvement and decision processes. In general every third or fourth year the various documents and references are revised. Currently the revision of the 2012 edition of the RetO and other related documents is in progress. A special working group is in

charge of this revision process. The final decision in the CTI plenary assembly is envisaged for spring 2016. CTI undergoes regular external evaluations by ENQA, EQAR and ENAEE. Their results and recommendations are taken into account.

As far as it was possible to check and observe by the ENAEE review team, all processes are managed very professionally based on decades of experience and the very qualified and committed staff, commission members and experts involved. CTI has a regulation to avoid conflict of interest. Each member of the commission and an audit team must sign a responsibility form (“Charte de travail et de deontologie des membres et experts de CTI”) in order to declare the acceptance of the code of practice for the CTI assessment.

Conclusion – Yes, requirements and processes of CTI are managed professionally.

– Does the Agency satisfactorily ensure that its judgements and decisions are reached in a consistent manner, even if formed by different groups?

The guide for the self-evaluation reports as well as the comparable procedures and the template for the audit team report in connection with the training of all audit team members form the basis for consistent procedures and judgements. The composition of the Commission with parity between academic and professional members, people from the world of employers and trade unions as well as the intense discussions in the plenary support a coherent decision making process. The fact that at least two members of the Commission, one from the academic and one from the industrial side, are included in the audit teams with usually one of them chairing the team and functioning as rapporteur to the CTI plenary also contributes to coherent, consistent and fair procedures and decision making processes.

Conclusion – Yes, the CTI decisions are reached in a consistent manner.

5. COMMENTS OF CTI TO THE ENAEE RT REPORT

The Board of CTI welcomed the draft of the report on Tuesday 28th of April and did not require any major changes. The submitted few proposals for corrections of factual errors have been taken into account in this final version of the report.

ANNEXES: Agenda and schedules of the two observed audits

Audit CTI Centrale Marseille – 5, 6 et 7 Novembre 2014

Arrivée de l'équipe CTI / ENAEE mercredi 5 novembre au soir.

Logement Hôtel Alizé.

20h Repas avec l'équipe de direction Centrale Marseille, restaurant Les Arcenaulx (réservation pour 20h). Guillaume Quiquerez, directeur de cabinet, viendra à l'hôtel à 19h45.

Toutes les présentations et discussions auront lieu en salle 119 plot 3.

The CTI expert team consisted of:

Rapporteur principal : Mme JOLLY-DESODT Anne-Marie (*Conseillère Relations Extérieures auprès du Directeur de Polytech Orléans Professeure des universités à l'école polytechnique d'Orléans de l'université d'Orléans*)

Autres membres :

M HOUZELOT Jean-Léon (*Professeur des universités, Ecole nationale supérieure des Industries chimiques*)

M SOUYRIS Gaëtan (*Étudiant, 2013-2014 : 3ème année ENSCI Limoges (en 2013-2014)*)

M COMMUNIER Jacques (*Statut indépendant, enseignant ESTP*)

M JACQUOT René (*Professionnel ; groupe BOUYGUES*)

ENAEE Review team: Guenter Heitmann, Cedric Belloc, Iacint Manoliu, Erbil Payzin

Journée de Jeudi 6 Novembre

8h-9h : Accueil sur site, réunion équipe d'audit et consultation des documents

9h Accueil café

9h15- 10h45 Présentation générale de l'école

(Identité, Stratégie, Ambitions recherche – international - entreprise, ressources, organisation, Réponse aux recommandations des précédents audits)

Présents : Equipe de Direction

11h – 11h45 : Focus Formation, ouverture internationale

Présents : Direction et équipe Direction de la Formation et Relations Internationales

12h – 13h30 : Repas sur site (salon d'honneur du CROUS)

Présents : Equipe de direction restreinte, Président du Conseil d'Administration, Président de l'association des anciens, représentants entreprises/partenaires.

- 13h30-14h45 : Visite du site, en présence des acteurs par zone / présentation du patrimoine
Grand amphi, MC2
Plateforme Signal
Plateforme Mécanique
Centre de documentation
- 15h-15h45 : Rencontre avec des enseignants
Présents : représentants des instances, des divers groupes thématiques, de divers collègues
- 15h45-16h30 : Rencontre avec des personnels
Présents : responsables administratifs et services supports
- 16h30-17h15 : Rencontre avec des étudiants
Présents : représentants des instances, associations, délégués, apprentis
- 17h30 -18h30 : Consultation des documents

Repas du 6 novembre au soir : l'équipe CTI, restaurant Les Arcenaulx (réservation pour 20h)

Journée de vendredi 7 Novembre

- 8h-9h : Accueil : consultation des documents
- 9h-9h45 Formation par apprentissage
Présents : Direction, Direction formation, directeur du CFA, responsable du recrutement, tuteurs enseignants
- 10h-11h45 : L'école au cœur de son écosystème:
 - Technopole /Pôle de l'étoile / Entreprise / Grands projets du territoire
 - Adossement recherche
Présents : Directeur, Directeur de cabinet, Directeur de la recherche, responsable entrepreneuriat, incubateur
- 12h-13h : Repas sur site – Equipe Audit / Partenaires entreprises Apprentissage
- 13h30-15h: Visite du site recherche de St Jérôme
Plateforme chimie
Institut Fresnel / espace photonique
- 14h45-15h Synthèse

Agenda for the ITECH Lyon evaluation- 18 to 20 February 2015

Expert team and observers : Joffrey DUTTO (student), Denis LEMAITRE (expert), Maurice PINKUS (CTI member and Vice-President), Agnès SMITH (CTI member, chair of the panel), Julie Nolland (programme manager CTI), Guenter Heitmann (observer ENAEE), Cedric Belloc (observer ENAEE), Iacint Manoliu (observer ENAEE), Marc Lhereux (interpret)

Wednesday 18 February 2015 : Debriefing of the expert team on the content of the SER and the mission

Time	Object	Place
From 14 h	Arrival of Cti experts and the ENAEE members	ITECH
17 h – 19 h	Internal debriefing (experts and ENAEE members). Exchanges on the content of the SER and preparation of the visit	ITECH Salle du Conseil (Council room)
19 h	Arrival to the Hotel	Hotel Campanile
20 h	Diner (expert team and ENAEE members)	Restaurant Campanile

Thursday 19 February 2015: presentation of the institution and of the engineering programme. Meeting with the industry representatives and the CA president (Council room**)**

Horaire	Objet	Interlocuteur(s) de l'ITECH
8h30	Arrival of the CTI experts and ENAEE members	
8h45 – 10h15	Presentation of the engineering institution	Director
10h15 – 10h30	Coffee break	
10h30 – 11h30	Meeting with the president of the CA	President of the CA Mr Louis-Philippe Reynaud
11h30 – 12h15	Meeting with the teaching and research staff	Anne-Catherine Brulez, Christine Corroy, Laëtitia Moulin, Jean-Pascal Philibert
12h15 - 12h30	Break	
12h30 – 13h30	Lunch	Plateaux repas en compagnie de Louis-Philippe Reynaud, Jérôme Marcilloux et Alain Reynier
13h30 – 14h30	Visit of the facilities	Jérôme Marcilloux , Anne-Catherine Brulez et Jean-Pascal Philibert
14h30 – 16h00	Presentation of the cursus (part 1)	Directeur des études (Alain Reynier), enseignants (Isabelle Deschères , Cian)

		Ashworth, Michèle Lepais, Laëtitia Moulin et Florence Gaultier)
16h00 – 16h15	Coffee break	
16h15 – 16h45	Presentation of the cursus (part. 2) and/or consultation of documents	Alain Reynier
16h45 – 17h30	Consultation of documents	
17h30 – 18h30	Meeting with the industry representatives and the president of the alumni associations and the center of training for the apprenticeship track	
18h30 – 19h15	Debriefing (Cti and ENAEE experts)	
A partir de 19h15	Return to the hotel	Hotel and restaurant reserved by ITECH (Campanile + diner with Jérôme Marcilloux)

Friday 20 february 2015 : meeting with the stakeholders (Council room)

Horaire	Objet	Interlocuteur(s) de l'ITECH
8h30	Arrival of the experts and ENAEE members	
8h45 – 9h30	Presentation of the research	Jérôme Marcilloux
9h30 – 9h45	Break	
9h45 – 10h30	Meeting with the administrative and technical staff	Nathalie Pinton, Jean-Luc Rousset, Estelle Vlieghe, Joëlle Bérard
10h30 – 10h45	Break	
10h45 – 11h30	Meeting with the students	Mathieu Arnal , Eve Desponds, Audrey Comas, Léa Manin Pierre Sanchez, Lucile Perrault
11h30 – 13h00	Debriefing (Cti and ENAEE experts)	
13h00– 13h15	Final speech by the direction and departure for those who wish	
13h15 – 14h00	Lunch for those who wish	Lunch (self-catering tray)

