

WES 8103:2014

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**Standard for Certification of Welding Coordinators**  
**銲接管理者認證標準**

**WES 8103: 2014**

由台灣銲接協會翻譯及發行

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Standard for certification of welding Coordinators (English Version)**  
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在有疑慮的狀況，以原始日文版標準為準

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## Standard for Certification of Welding Coordinators

### 銲接管理者認證標準

#### Foreword 前言

In order for the manufacturers to fabricate the welding constructions which satisfy the quality requirements of the customer/user and maintain safe performance of the welding constructions through their service life, the welding coordinators having adequate technical knowledge, job competence, and experience in welding-related activities shall be engaged in the welding coordination properly in the manufacturing organization.

為了使製造廠家所生產銲接結構能滿足客戶/使用者的要求，以及確保銲接結構在其服役期間內的安全性，製造廠家必須要有具備適當技術知識、工作能力和銲接相關經驗的銲接管理者適切的參與銲接管理。

In other words, good quality of welding constructions can be secured only through proper welding production executed under responsible control by the welding coordinators who are engaged taking responsibility in deciding design, welding production plans, welding procedure specifications, and inspection procedure specifications.

換句話說，銲接結構的良好品質只有在銲接管理者負責的管控下，透過適當銲接生產的執行方能確保；而銲接管理者的責任包括決定設計、訂定銲接生產計畫、銲接程序規範書和檢查程序規範書。

**WES 8103** was established in 1970 for certifying such welding coordinators. This standard was revised in 1985, 1998 and 2001. In 2004 in conjunction with the establishment of **JIS Q 17024**. 2004, the terms of "Renewal" was revised to as "Re-certification" and the "Credit system" for the re-certification was introduced.

WES 8103標準建立於1970年作為銲接管理者認證之用。此標準在1985年、1998年和2001年陸續修訂，在2004年由於又建立了JIS Q 17024標準，“更新(Renewal)”用語配合修訂為“再認證(Re-certification)”一辭，有關再認證的“積點制度(Credit system)”也隨之建立。

The revisions in 2006 and 2008 were the modifications of the access condition and other minor parts of the scheme. The revision of this time (in 2014) is made in conjunction with the revisions of JIS Z 3400 and JIS Z 3410, both of which are referred to this standard since 2001.

在2006年和2008年的修訂則是有關參加資格的修改和其他次要的修訂。在2014年WES 8103也隨著JIS Z3400和JIS Z3410兩項標準的修訂而修訂，因為自2001年起WES 8103開始引用這兩項JIS標準的內容。

#### 1. Scope 範圍:

This standard shall be used to regulate the certification of welding coordinators on the basis of the welding coordination personnel prescribed in Subclause B6.3 of Annex B or Subclause C6.3 of Annex C of JIS Z 3400 (corresponding to Subclause 7.3 of ISO 3834-2 or Subclause 7.3 of ISO 3834-3) and JIS Z 3410 / ISO 14731 (Welding coordinator -Tasks and responsibilities).

本標準以JIS Z3400 (與ISO 3834-2標準7.3或ISO 3834-3標準7.3相符合)附錄B的B6.3和附錄C的C6.3，以及JIS Z 3410/ISO 14731(銲接管理者—任務與責任)提及的銲接管理人員為基礎，用以規定銲接管理者的認證。

#### 2. Reference standards 參考標準

The following standards including Annexes shall constitute part of this standard by way of being referred to in this standard.

本標準引用下列標準，這些標準及其附錄皆構成為本標準的一部分。

**JIS Z 3400:2013/ISO 3834:2005** "Quality requirements for Fusion welding of metallic materials"  
"金屬材料熔融銲接的品質要求"

**JIS Z 3410:2013/ISO 14731:2006** "Welding coordination -Tasks and responsibilities"  
"銲接管理者—任務與責任"

### 3. Definitions 定義

Definitions of important terms used in this standard shall be as given in the following.

本標準使用重要名詞的定義如下：

- (a) **competence:** The capability of the welding coordinators that is represented by his/her knowledge, job competence and experience being satisfied in conformity with the requirements of this standard.  
**勝任能力：**銲接管理者的專業知識、工作能力和經驗所展現的能力符合本標準的要求。
- (b) **the Society:** The Japan Welding Engineering Society  
**協會：**指日本銲溶接工程協會。
- (c) **certification:** Action by the Society, demonstrating that the competence of the welding coordinator is sufficiently in conformity with this standard.  
**認證：**由本協會執行，證明銲接管理者的能力充分符合本標準的要求。
- (d) **certificate of competence:** The document granted by the Society to the certified welding coordinator  
**能力證明書：**由協會授予銲接管理者以證明其能力之文件。
- (e) **applicant:** Person who seeks to obtain the certification of competence from the Society.  
**申請人：**向協會申請能力認證之人員。
- (f) **registered welding coordinator:** The welding coordinator who has been accepted in the assessment examination and registered by the Society.  
**已登錄之銲接管理者：**經考試合格且被協會登錄之銲接管理者。
- (g) **surveillance:** The Society's act of confirming, by the document submitted by registered welding coordinator, that registered welding coordinator successively satisfy the requirements of this standard.  
**監控作業：**協會確認由已登錄之銲接管理者提交的文件，確認其滿足本標準的要求。
- (h) **recertification:** The capability of the registered welding coordinators being successively certified after the validity of his/her certificate with the assessment specified in this standard by the Society.  
**再認證：**已登錄之銲接管理者在其能力證明書有效期到期後，依本標準有關評估之規定，持續獲得認證。
- (i) **Credit system:** As an alternative to the recertification examination specified in this standard, the Society may implement a structured credit system for recertification. For guidance purpose, an example of credit system is given in the Annex. The registered welding coordinator who is able to submit the documental evidence of 36 points or more accounted in accordance with the Table 1 in the Annex within the latest five years before expiring the registration period, may be exempted from the recertification examination.  
**積點制度：**架構嚴謹的積點制度可作為本標準之再認證考試的替代方案。在附錄中有積點制度的範例供參考，已登錄之銲接管理者提交展延登錄效期申請前5年內的文件證據，依附錄之表1計算點數達36點(含)以上，可以豁免再認證考試。

- (j) **manufacturer:** person or organization responsible for the welding production.  
製造廠家：對銲接生產負責任的人員或機構。

#### **4. Levels of certification of welding coordinators 銲接管理者認證的等級**

4.1 The levels (hereinafter referred to as the level(s)) of certification of welding coordinators shall be determined by the inspection and assessment examination stipulated in this standard.

銲接管理者認證的等級應依本標準之規定藉由審查和評估考試做決定。

4.2 The levels shall be classified into Senior Welding Engineer, Welding Engineer, and Associate Welding Engineer depending on the task, responsibility, technical knowledge and job competence of the welding coordinators. (See Table 1)

銲接管理者的等級依任務、責任、技術知識和工作能力區分為資深銲接工程師、銲接工程師和副銲接工程師(參見表1)。

Table 1. Tasks, responsibilities, technical knowledge and job competence of welding coordinators

表1 銲接管理者的任務、責任、技術知識和工作能力

Level 等級	Tasks and responsibilities 任務和責任	Technical knowledge and job competence 技術知識和工作經驗
Senior Welding Engineer 資深銲 接工程 師	All activities prescribed in Subclause 4.1 and 4.2 in <b>JIS Z 3410 (ISO 14731)</b> .	Comprehensive technical knowledge on welding described in Subclause 6.1 and 6.2 a) of <b>JIS Z 3410 (ISO 14731)</b> , and job competence able to manage / and coordinate welding production and process control.  具備 <b>JIS Z 3410 (ISO 14731) 6.1和6.2(a)</b> 所規定關於銲接的廣泛技術知識，以及能夠管理和協調銲接生產、製程控制的工作能力
Welding Engineer 銲接工 程師	All activities allocated by the manufacturer described in Annex B of <b>JIS Z 3410 (ISO 14731)</b>  <b>JIS Z 3410 (ISO 14731)</b> 4.1和 4.2規定的所有的活動； 以及其附錄B敘述由製造者分派的所有活動	Specific technical knowledge on welding described in Subclause 6.1 and 6.2 b) of <b>JIS Z 3410 (ISO 14731)</b> , and job competence able to coordinate welding production and process control.  具備 <b>JIS Z 3410 (ISO 14731) 6.1和6.2(b)</b> 所規定關於銲接的特定技術知識，以及能夠協調銲接生產、製程控制的工作能力
Associate Welding Engineer 副銲接 工程師		Basic technical knowledge on welding described in Subclause 6.1 and 6.2 c) of <b>JIS Z 3410 (ISO 14731)</b> , and job competence able to supervise welding production and process control.  具備 <b>JIS Z 3410 (ISO 14731) 6.1和6.2(c)</b> 所規定關於銲接的基礎技術知識，以及能夠指導銲接生產、製程控制的工作能力

Notes: In JIS Z 3410, 註：JIS Z 3410之規定

(1) It is prescribed in Subclause 6.1 that the extent of required manufacturing experience, education and technical knowledge shall be decided by the manufacturing organization, and shall depend on the assigned tasks and responsibilities.

在6.1節規定製造經驗、教育和技術知識要求的程度，應由製造廠家依其賦予任務和責任做決定。

(2) It is described in Subclause 6.2 that the responsible welding coordinator shall be allocated from one of the following groups (levels), depending on the nature and / or complexity of the production.

在6.2節規定被賦予職責的銲接管理者應依生產或產品的特性及/或複雜度，介定為下列等級之一。

(a) Comprehensive 廣泛的

(b) Specific 特定的

(c) Basic 基礎的

**5. Access conditions and inspection of access conditions 參加資格及其審查****5.1 Access conditions 參加資格**

The applicants for certification shall have the following welding and related work experience as in Table 2. 認證申請人應具備表2所列銲接及其相關之工作經驗

Table 2. Access conditions 表2 參加資格

Academic career or certification 學歷或認證		Required years of experience in welding engineering/production 銲接工程/生產製造工作年資要求		
		Senior welding engineering 資深銲接工程師 (SWE)	Welding engineering 銲接工程師 (WE)	Associate welding engineering 副銲接工程師 (AWE)
1	University/Institute graduate of master degree (majoring in welding engineer) 大學/研究所碩士學歷畢業(主修銲接工程)	1	1	1
2	University/Institute graduate of master degree (science or engineer) 大學/研究所碩士學歷畢業(科技或工程相關系所)	2	1	1
3	University/Institute graduate of master degree (other than science or engineer) 大學/研究所碩士學歷畢業(科技或工程以外系所)	5	3	1
4	University/Institute graduate of bachelor degree (majoring in welding engineer) 大學學歷畢業(主修銲接工程)	1	1	1
5	University/Institute graduate of bachelor degree (science or engineer) 大學學歷畢業(科技或工程相關系所)	3	2	1
6	University/Institute graduate of bachelor degree (other than science or engineer) 大學學歷畢業(科技或工程以外系所)	6	4	2
7	2-years college graduate (majoring in welding engineer) 專科學歷畢業(主修銲接工程)	5	3	1
8	2-years college graduate (science or engineer) 專科學歷畢業(科技或工程相關系所)	6	4	1
9	2-years college graduate (other than science or engineer) 專科學歷畢業(科技或工程以外系所)	10	7	4
10	Graduate of college of technology 技術學院學歷畢業(主修銲接工程)	6	4	1
11	Graduate of science or engineer special college 科技或工程學院學歷畢業	-	6	2
12	Technical high school graduate 高級職業中學畢業	-	7	2
13	High school graduate (other than technical) 高級中學畢業(高職以外)	-	8	4
14	Academic career other than (1)-(13) above (1)至(13)以外的學歷	-	-	7
15	Welding engineer certificate holder 銲接工程師(WE)持有者	3	-	-
16	Associate welding engineer certificate holder 副銲接工程師(AWE)持有者	-	3	-

Notes. 註:

1. Required years of experience in Table 2 are the minimum requirement.  
表 2 所列為最低經驗年資要求。
2. Required years of experience in welding engineering / production shall be the years in which the applicant has been fully engaged in the welding-related jobs. If the applicant has not been fully engaged in the welding-related jobs, decision shall be made based on the actual state of the job.  
銲接工程或生產製造經驗年資，必須為認證申請人全職參與的銲接相關工作，如果認證申請人非全職參與銲接相關工作，應依工作實際狀況來做認定。
3. The required years of experience after graduation from the school (1~14) or after granted the certificate (15, 16) shall be required as the years of experience.  
經歷年資是指從學校畢業後的經驗年資要求(1~14)或取得認證後(15~16)的經驗年資。
4. A graduate of university/institute of science or engineering as in 5 include a graduate of a college of technology/engineering who has completed the graduate course of two years and a bachelor's degree certified by National Institution for Academic Degree and University Evaluation.  
在(5)所述之大學或工程科技學院畢業，包括科技或工程學院畢業之碩士(修業二年)或學士，這些學歷須由政府教育與學位之主管機關認證。
5. The academic career of the graduate of science or engineering special college given in 11 shall be approved when the applicant is a graduate from a high school.  
若申請人是高中畢業，參加資格(11)所述之科技或工程學院的畢業學歷應被認可。



## 5.2 Inspection of access conditions 參加資格的審查

The Society shall inspect the application documents submitted by the applicants to examine whether they are eligible in the light of the requirements certification. The inspection of the application documents shall also judge whether the applicants can be exempted from the oral examination stipulated in 6.2 of this standard.

協會應審查申請人提交的申請文件，以評估他們是否符合認證的要求；申請文件的審查亦應裁決申請人是否可免除本標準6.2節規定的口試。

## 6. Assessment examinations 評估考試

### 6.1 Contents of assessment examination 評估考試的內容

The Society shall conduct examinations to assess if the applicants possess sufficient knowledge and job competence to perform the tasks and responsibilities stipulated in JIS Z 3410 (ISO 14731). The examinations shall consist of the written examination and the oral examination. The candidates who have succeeded in the written examination may proceed to enter the oral examination. The main fields of technical knowledge to be examined shall be as follows:

協會應實施考試以評估申請人是否具備足夠的知識和工作能力以履行JIS Z 3410 (ISO 14731)規定的任務和責任，考試應包括筆試和口試，通過筆試的應試者可進入下階段的口試。考試之技術知識的主要領域包括如下：

- (a) Welding processes and equipment 銲接製程和設備
- (b) Materials and their behavior during welding 材料及其銲接過程中的現象
- (c) Construction and design 結構與設計
- (d) Fabrication and application engineering 製造與應用工程

### 6.2 Exemption from oral examination 口試的豁免

Those applicants for Welding Engineer and Associate Welding Engineer who have completed the training courses that the Society has approved as one of the suitable courses for education and training in advance may be exempted from the oral examination in spite of the stipulation of 6.1. 銲接工程師和副銲接工程師申請人完成協會認可教育訓練課程的前提下，可免除6.1節規定的口試。

However, the Society shall not exempt from the oral examination those applicants, including holders of the certificate of completion of the training courses, whose competence, the Society considers, cannot be assessed by the result of inspection of the access conditions in the application documents and by only the result of the written examination.

然而若申請人僅有完成訓練課程證書，或協會審查人員無法從其資格申請文件及其筆試的結果作出能力評斷，不得免除口試。

## 7. Acceptance Criteria 接受標準

Those who satisfy the following requirements of (a) to (f) shall be accepted.

滿足以下(a)~(f)的要求應視為通過。

- (a) The examinees for Senior Welding Engineer who have passed in the both written examinations of Category I and Category II shall be accepted in the written examinations and may proceed to the oral examination.

資深銲接工程師的考試，通過類型I及類型II的筆試視為通過筆試，可以進入下階段的口試。

A candidate who holds the certificate Level I shall be exempted from sitting for the written examination of category I.

擁有一級證書的候選人應可免除類型I的筆試。

- (b) For the written examination of Category I for Senior Welding Engineer, examinees whose score is 70% or more of the full marks shall be accepted.

資深銲接工程師類型I筆試的合格基準為總分的70%(含)以上。

- (c) For the written examination of Category II for Senior Welding Engineer, examinees whose score is 70% or more of the full marks, and 40 % or more in each question shall be accepted.  
資深銲接工程師類型II筆試的合格基準為總分的70%(含)以上，且每一問題須答對40%(含)以上。
- (d) For the written examination for Welding Engineer, examinees whose score is 70% or more of the full marks shall be accepted.  
銲接工程師的筆試，合格基準為總分的70%(含)以上。
- (e) For the written examination for Associate Welding Engineer, examinees whose score is 60% or more of the full marks shall be accepted.  
副銲接工程師的筆試，合格基準為總分的60%(含)以上。
- (f) Being judged by the oral examination also as possessing sufficient technical knowledge and job competence, in case the oral examination has been conducted.  
口試的實施也包含是否具有足夠技術知識、工作能力的評判。

## **8. The term of registration and validity of certificate of competence** **登錄期間和能力證書的有效期**

### **8.1 The term of registration 登錄期間**

The term of registration of certification shall be five years.  
證書登錄期間為5年。

### **8.2 Grant of certificate 證書的授予**

The Society shall grant certificate of competence (hereinafter refer to as the certificate) to those who have passed the assessment examinations and have completed specified procedures.  
協會須頒發能力證明書(以下提及以證書表示)給通過評估考試和完成規定程序的申請人。

### **8.3 The term of validity of certificate 證書的有效期**

The certificate shall initially be valid for two years. If the certificate holder undergoes surveillance stipulated in 8.4 within this period, and is confirmed to be maintaining the job competence, the validity of the certificate shall be extended for the residual duration of registration.  
證書起始有效期為2年，在這期間證書持有人依8.4節的規定執行銲接相關監督工作且確認持續具有專業工作能力，證書的有效期應展延至登錄期限。

### **8.4 Surveillance 監控作業**

The Society shall conduct surveillance based on the application of registered welding coordinators within six months prior to the expiry of validity of the certificate. Surveillance shall be done by way of checking the written evidence of job engagement. If deemed necessary, interview or other appropriate means shall be taken for confirmation.  
協會對已登錄之銲接管理者在其證書有效期屆滿前6個月內提出的申請應實施監控作業，監控方式為核對參與相關工作的書面證據，如果有必要，應採用面試或其他適當方式以進行確認。

### **8.5 Invalidation of certificate 證書的失效**

The certificate shall lose its validity after expiry.  
證書在其有效期屆滿後失效。

## **9. Invalidation of certification 認證的失效**

Certification shall lose its validity when either (a) or (b).  
當以下(a)或(b)狀況發生時認證失效。

- (a) The certificate has expired. 證書過期  
(b) The Society deems it necessary to cancel the certificate due to discovery of dishonest conduct

at any of the processes from application to certification, willful misuse of the certificate after certification, or complaints received from e.g. customer(s) on immoral or dishonest business performance.

因發現申請至認證的過程中有不誠實的行為、認證後任意濫用證書、或接獲來自客戶關於不道德或不誠實業務行為的投訴，協會認為有必要取消其證書。

## **10. Assessment for recertification 再認證的評估**

**10.1** Registered welding coordinators who wish to obtain the recertification shall apply for the assessment for recertification within one year before the expiry date of registration and before invalidation of the certification.

已登錄之銲接管理者欲獲得再認證，在登錄有效期屆滿前及認證失效前一年內應申請再認證。

**10.2** The assessment for recertification shall be conducted by the ways of (a) and (b).

再認證的評估應以(a)和(b)的方式實施

(a) Inspection of the submitted application document for renewal of certification.

審查更新認證提交的申請文件。

(b) Recertification examination (which includes exercises related to the latest welding technology)

再認證考試(包括最新銲接技術的演練)

When the Society assessed necessary, taking into account the results of the inspection of (a) and the examination of (b), a secondary assessment may be added.

The secondary assessment procedure shall be stipulated separately.

當協會評估有必要，除採計(a)項審查及(b)項考試的結果外，可增加第二次的評估。第二次評估程序應另行規定。

**10.3** The Society may implement a structured credit system for the assessment of recertification as an alternative to the recertification examination.

協會可以結構嚴謹的積點制度取代再認證的評估，作為再認證考試的替代方案。

**10.4** Upon passing the assessment for recertification described in 10.2 a) and b) or 10.3 above, and the submission of the registration form to the Society before the required date, the welding coordinators shall be registered as newly certified after the expiry of the previous registration.

當銲接管理者通過上述10.2 (a)和(b)或10.3之再認證評估，並在要求日期前提交登錄表格給協會，在前次登錄到期後應視為新的認證並進行登錄。

**Annex (informative) 附錄 (參考)**  
**Credit System (積點制度)**

**Introduction:** This Annex (informative) describes the example of structured credit system for the recertification of welding coordinators, and is not a part of the normative document.

**簡介:** 本附錄(參考)說明用於銲接管理者再認證之積點制度的範例，並非正式文件的一部分。

**1. Purpose and scope of the credit system 積點制度的目的與範圍**

Registered welding coordinator who is able to demonstrate efforts to keep abreast of technology related welding and to submit the evidences of those scores accounted by the **Table** below is thirty six (36) points or more, may obtain recertification by application prior to the expiration date of the registration.

已登錄之銲接管理者能夠持續努力展現保有銲接相關技術的成果，並提交積點相關的證據，依下表計算積點達36點(含)以上，可在登錄滿期日前以申請方式獲得再認證。

Therefore, this Annex shall be only applicable to the registered welding coordinators.

然而，本附錄應只適用於已登錄之銲接管理者。

**2. Application 申請**

Applicant who wants to apply the credit system shall submit the Application Form of Credit System with the Application Form of Recertification. He/she shall also submit the necessary documents which evidently prove the activities involved and being accountable in accordance with the Table below.

欲申請積點制度的申請人，應隨再認證申請表一併提交積點制度申請表，依據下表提交必要文件作為證據，證明下表內提及與可被採計的事項。

**3. Documentary evidence 文件證據**

3.1 Document or certificate signed by the representative of organization of a technical seminar or conference for attendance or presentation of the technical paper or chairpersonship.

參加技術研討會或討論會、發表技術論文、擔任主席，由舉辦機構代表人簽署之文件或證書。

3.2 Copy(ies) of publishing paper or writing book on welding or a related technology.

所發表銲接及其相關技術之論文或書籍的影本。

3.3 Document issued by the representative of organization which received the consultation relating to welding technology.

機構代表人簽署之文件，證明其機構接收申請人銲接技術相關諮詢。

**4. Assessment and notification of assessment 評估及其注意事項**

Recertification committee who is given the terms of reference of assessment by the Qualification committee of welding coordinators shall make an assessment the application package.

Recertification committee may contact by telephone or mails, or meet to an applicant if necessary.

由銲接管理者檢定委員會提供再認證委員會評估標準依據，針對申請人之資料進行評估，再認證委員會如果有必要可以電話、郵件、約見方式與申請人聯繫。

The result of the assessment shall be notified to the applicant.

評估的結果應通知申請人。

**5. Appeal and complain 上訴與投訴**

Applicant who is not able to accept the results of the assessment may submit the application form for the appeal describing the reason to the Society.

申請人若無法接受評估的結果可提交敘明理由之上訴申請表至協會。

**Table 1. Credit System for Recertification**

表 1 再認證之積點制度

Activity 積點事項	Points 點數
(1) Attending as a lecturer or a chairperson to a technical meeting or conference organized by a society, institution or school which is relating to welding technology <sup>(a)</sup> . Meeting shall be including a seminar, symposium, study group meeting, research committee, discussion meeting, technical visit, shop tour and so on. 在協會、研究所或學校所舉辦與銲接技術相關之技術會議或討論會擔任講師或主席，所謂會議包括研討會、座談會、技術訪問、工廠參觀等。	<b>3 points per one contact hour</b> 執行或參與1小時3點
(2) Preparing and publishing papers on welding or related technology in official journals of national or international technical societies upon request or peer-reviewed technical publication <sup>(c), (f)</sup> . 準備和發表銲接或相關技術之論文在國內正式期刊、或國際技術協會邀請或同行評審的技術出版物。	<b>18 points per one paper</b> 1篇論文18點
(3) Authoring or presenting paper at the meeting or conference defined in the above (1) <sup>(c), (f)</sup> . 在上述(1)定義的會議或討論會投稿論文或發表論文	<b>12 points per one paper</b> 1篇論文12點
(4) Attendance as an audience to the meeting or conference defined in the above (1) <sup>(c)</sup> . 出席參與上述(1)定義的會議或討論會	<b>1 point per one contact hour<sup>(d)</sup></b> 執行或參與1小時1點 <sup>(d)</sup>
(5) Official consultant of welding or relating technology <sup>(a)</sup> to an organization or industry of not belonging to his/her company <sup>(g)</sup> . The consultation made as a usual activity shall not be counted <sup>(g)</sup> . 對公司以外的機構或產業界提供銲接或相關技術的正式諮詢，如果諮詢工作是經常性活動則不予採計。	<b>1 point per one contact hour<sup>(b), (d)</sup></b> 執行或參與1小時1點 <sup>(b), (d)</sup>
(6) Contributing as a social activity of welding technology <sup>(a)</sup> , or making efforts by him/herself to keep abreast of technology relating to welding technology. Each shall be verified by a third-party organization. Receiving a recognition relating to welding technology from a society or institution. Contribution to standardization or activities of a society or institution of welding and relating technology <sup>(e), (f)</sup> . 對協會銲接技術活動作出貢獻、或對銲接相關技術作出努力，有關上述之貢獻或努力應由第三機構驗證：從一協會或研究所接收關於銲接技術的認可；對銲接及相關技術的標準化、協會或研究所的活動作出貢獻。	Determined separately <sup>(e)</sup> 個案決定 <sup>(e)</sup>
<p><b>Footnotes:</b></p> <p>(a) Welding and relating technology is limited to the fields of the knowledge and competence that are required for welding coordinator to possess. 銲接及相關技術限於銲接管理者被要求應具備之技術領域和能力。</p> <p>(b) 50 minutes actual contact hour may account as one (1) hour. 50分鐘執行時間可視為1小時。</p> <p>(c) In article (2), authoring without peer-reviewed or voluntarily authoring shall be applied article (3) 在第(2)項，沒有同行評審或自願的投稿應採用第(3)項計算點數。</p> <p>(d) Studying, investigating or preparing hours for consulting may be including into contact hour, but traveling hour shall not be including. 研究、調查或為諮詢作準備的時數可以包括到執行時數，但不包括交通時數。</p> <p>(e) Assessment for the activities defined in article (6) shall be made by the Recertification Committee separately. Contribution as a social activity may be including patent right of the invention that is valuable for the welding industry. 規定在第(6)項活動的評價應由再認證委員會依個案作認定，對協會活動的貢獻可以包括對銲接產業有價值發明的專利權。</p> <p>(f) In case of co-authoring, individual must have contributed at least 10% of the content of the manuscript. In case of invention or receiving an award of more than one person, individual must have contributed at least 10% of the content. 在共同著作的狀況，個人至少須貢獻原稿內容的10%；在發明或接受獎項有超過1人以上之情況，個人至少須貢獻內容的10%。</p> <p>(g) Excluding any consultation to the same group or relative company. 對同一集團或關係企業提供的諮詢不計。</p>	