行政院所屬各機關公務出國人員出國報告書

（出國類別：其他）

「參與新興科技之國際標準化活動」出席「IEC 直流充電系統工作組 (IEC/TC 69/PT 61851-23、61851-24)」國際標準工作組會議報告

服務機關：經濟部標準檢驗局
姓名職稱：童建強技士
出國地點：加拿大標準協會(CSA Group)
出國期間：中華民國 102 年 4 月 14 日至 21 日
報告日期：中華民國 102 年 7 月 15 日

目　次

摘要

本次會議爲 IEC 國際標準組織就電動車輛直流充電系統之安全要求(IEC 61851-23)及通訊(IEC 61851-24)等 2 種國際標準草案進行細部標準內容討論及修正，以成爲最終版國際標準草案。

會議召開時間爲 102 年 4 月 15 日至 4 月 19 日共 5 天，由加拿大標準協會(CSA Group)協辦此會議，與會代表主要來自歐、美、亞洲等國際主要車廠。

此次參加會議緣由爲本次會議 IEC 61851-23 及 IEC 61851-24 國際標準工作組祕書處日本自動車研究所(Japan Automobile Research Institute, JARI)來函邀請我方參與該項會議。

參與本次 IEC 61851-23 及 IEC 61851-24 電動車輛充電系統國際標準草案共 5 天的討論會議，實爲難得之機會。藉由參與本次 IEC 標準草案討論會議，可蒐集電動車輛國際標準制修訂之最新動態及未來之標準技術發展的趨勢，並可與歐、美、日、韓等各國車廠及研究單位建立日後良好之互動管道。

此外，爲配合政府推動電動車輛產業發展，建構良好的電動車輛運行環境，本次會議所獲得的標準資料，可作爲電動車輛相關國家標準後續編擬之重要依據，並依此標準建置相關檢測驗證能力，以協助國內電動車輛產業相關產品(例：電動車輛、充電站等)儘速通過測試與驗證，將可提升我國電動車輛產業產品等級，並與國際接軌，取得有利之國際競爭力。

壹、前言與目的

一、前言

爲因應全球暖化、石油危機使得世界各國均針對節能減碳議題進行一連串的政策推動，以及因人口逐漸成長全球日前已突破 70 億人口，尤其在人口較爲密集的地區及城市在綠色運輸及空氣污染防治等環境保護議題更加重要。因此各國政府正積極尋求高能量效率、零污染排放之電動車輛，成爲各國取代燃油車輛選擇，可同時達成節能減碳、減少能源依賴、增進環境品質等諸多功效，也成爲各國車輛產業重新佈局的契機。

依目前國際現況，電動車輛在產業、技術能力、標準化及政策面上均達一定能力及區域性規模，且各國已經推動第一階段的示範運行計畫，並逐漸進入到量產及擴大相關示範運行規模的階段(如德國 eNterop 計畫 2012 年 7 月起，由 BWM 車廠所主導之電動車輛示範運行計畫，主要目標爲 2020 年前使德國具有 1 百萬輛電動車)。尤其在關鍵技術上如整車性能、鋰電池系統及充電系統上在技術上均有所突破，使得純電動車顯然成爲節能減碳、環境保護、控制交通排氣污染的明日之星。此外應用面也從一般家用車輛，擴展到大眾運輸車輛、商用車輛及輕型車輛(例：電動巴士、電動貨車、電動機車等)，可逐漸提昇環境保護、交通運輸及能源經濟等整體效益。

目前世界先進各國，尤其以歐美日爲首的國家以及車廠，均積極主導及推動電動車輛標準化工作。尤其以歐美七大車廠爲主的聯盟共同開發以電力線作爲通訊介面的混合式交/直流充電介面(combo system)，另一方面日本與中國大陸則個別開發以 CAN(Controller Area Network)作爲快速直流充電系統之通訊介面。因此國際標準在充電系統上即規定有 4 種介面及通訊規定，上述之充電介面形式參照圖 1。

	Combo-System				CHAdeMO	China DC
	Combo 1	Combo 2	Type 1	Type 2		
Connector						
Inlet						
Primary markets	USA / Europe				Japan Also USA / Europe	China
Availability	2012 / 2013				Available	Prototype available
Autobody cut-outs	1				2	2
Communi-cation	PLC				CAN	CAN

資料來源：BMW 2013.03.04 Meeting minutes with BSMI

圖 1　國際現行直流充電系統介面/通訊

我國目前現有的電動車輛或車輛體系上以歐(例：BMW)、美、日系(例：裕日 NISSAN、豐田 TOYATA、三菱 MITSUBISHI)爲多，另外國內亦有電動巴士業者(例：華德動能、小馬租車)使用中國大陸之充電介面。

因此及早建構完整的電動車輛充電系統之介面、通訊及安全要求國家標準，可作爲後續各部會如交通部、環保署、經濟部或縣市政府推動電動車輛示範運行或低碳減排相關計畫補助之依據。

此外，除電動車輛充電系統標準外，與電動車輛週邊相關的標準，諸如電動車與電網間通訊介面標準，ISO/IEC 15118 系列標準規範電動車輛與電網間的通訊，與本次參加會議所討論的標準 IEC 61851-24 電動車輛直流通訊之要求具有一致性要求，目前最 2013 年 4 月最新公告的 ISO/IEC 15118-1「Road vehicles – Vehicle to grid communication interface – Part 1: General information and use-case definition」目前也規劃納入 CNS 國家標準制定工作。

國際目前有關電動車輛之之電器設備，諸如充電系統及配電設備，則由電動道路車輛及電動道路貨車技術委員會(IEC TC69 Electric road vehicles and electric industrial trucks)下轄之電源供應及充電器工作組(IEC TC69/WG4 Power supplies and chargers)進行標準制修訂，本次會議即是由 WG4 工作組下之相關計畫團隊(project team, PT)(PT 61851-23、PT 61851-24)進行電動車輛充電系統相關標準之研

擬及會議召開，類似國際標準的起草團隊。

我國電動車輛相關 CNS 國家標準均以國際標準爲主，截至 101 年 12 月底，已完成制修訂電動車輛整車(不含電動機車)、充電系統、電池、馬達/控制器及電磁干擾/耐受等 44 種國家標準，作爲國內現階段智慧電動車發展之參考依據，相關標準內容詳如圖 2。後續將掌握 IEC 61851 系列標準制定進度，依此等標準調和爲 CNS 國家標準。

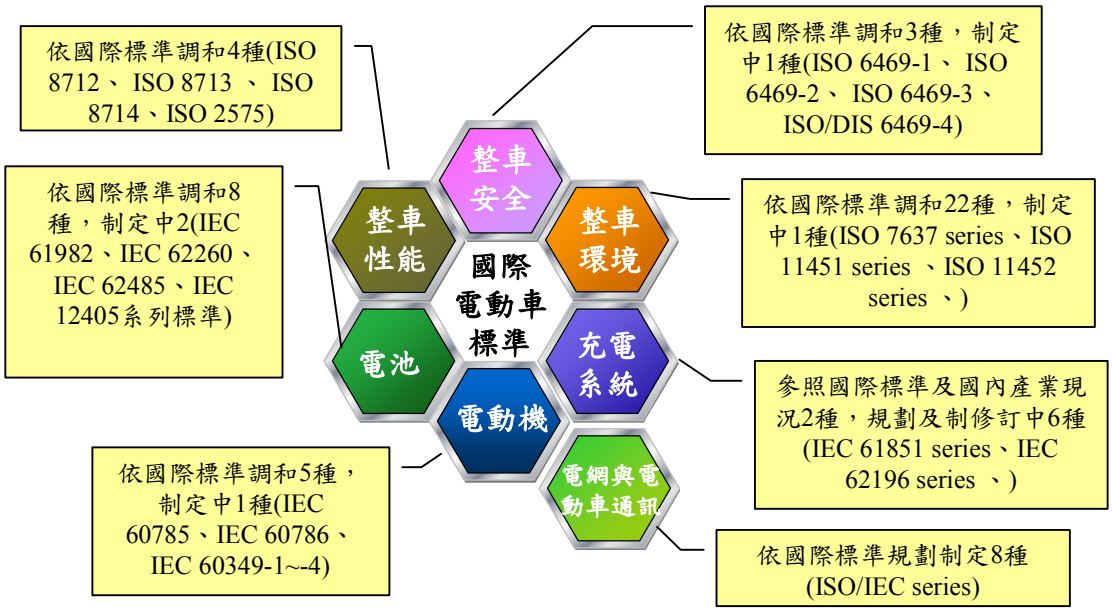


圖 2　我國電動車輛國家標準與國際標準調和現況

二、目的

本案爲執行行政院國家科學委員會補助本局「參與新興科技之國際標準化活動」科發基金計畫，項下之出席 IEC 直流充電工作組會議(IEC/TC 69/PT 61851-23、61851-24)，討論 IEC 61851-23 及 IEC 61851-24 電動車輛直流充電介面及通訊標準草案技術內容。藉由參與該系列標準會議可掌握國際最新相關標準發展動態及方向，並獲取及研析國際最新的產業趨勢、技術標準發展方向等，並提出因應之建議，提升標準業務之承辦同仁對於國際趨勢之掌握能力。此外，未來將參照 IEC 61851 系列標準調和爲國家標準，確保國內各廠牌電動車輛與充電系統間具有一致性的安全及通訊，並使國內相關產業依循最新國際標準通過相關檢測驗證，增加產品實質的競爭力成爲帶動能源經濟價值鏈的關鍵因素。

三、行程簡介

本次會議召開時間爲 102 年 4 月 14 日至 4 月 21 日，會議地點爲加拿大標準協會，由加拿大標準協會協辦此會議，本次會議一同出席者有財團法人台灣大電力研究試驗中心張庭綱博士。參與會議之行程表詳如表 1，本次會議內容詳如圖 3 及圖 4。

表 1　赴美國行程表及參訪目的

起迄日期	到達地點	工作項目主題
4 月 14 日(日)	台北→加拿大多倫多	去程
4 月 15 日(一) 4 月 19 日(五)	加拿大標準協會(CSA Group)	參加 IEC/TC69/PT 61851-23
4 月 19 日(五)	加拿大標準協會(CSA Group)	參加 IEC/TC69/PT 61851-24 會議
4 月 20 日(六) 4 月 21 日(日)	加拿大多倫多→台北	返程

TC69/PT61851-23/DC067

2013-01-31

INTERNATIONAL ELECTROTECHNICAL COMMISSION

TECHNICAL COMMITTEE NO. TC69: ELECTRIC VEHICLES AND ELECTRIC INDUSTRIAL TRUCKS

IEC/TC69/PT 61851-23: Electric vehicles conductive charging system – D.C. electric vehicle charging station

IEC 61851-23 Ed. 1.0: Electric vehicles conductive charging system – Part 2-3: D.C. electric vehicle charging station

The 7th IEC/TC69/PT61851-23 Meeting

Draft Agenda

Date & Time:	Monday, April 15, 2013	10:00 - 17:00	Compliance test sub-group meeting
	Tuesday, April 16, 2013	10:00 - 17:00	PT 61851-23
	Wednesday, April 17, 2013	9:00 - 17:00	
	Thursday, April 18, 2013	9:00 - 17:00	
	Friday, April 19, 2013	9:00 - 12:00	
Meeting venue:	CSA Group 5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6 Tel: 416-747-4000 Toll-Free: (800) 463-6727 http://www.csa.ca/		

Item	Description	Document
1	Opening of the meeting	
2	Approval of the agenda	DC067
3	Adoption of the last meeting minutes	DC057a
4	Result of voting on 69/227/CDV	** Closing date for voting: 2013-2-22*
5	Discussion of NC comments on CDV	** Comment sheet with PL observation will be sent by 2013-4-1*
6	Approval for FDIS and next steps	
7	Any other business	
8	Close of the meeting	

NOTE: IEC/TC69/PT61851-24 will be held in the afternoon of April 19 at the same place.

圖 3　IEC 61851-23 會議行程(4 月 15 日至 4 月 19 日)

TC69/PT61851-24/DCP053

2013-01-31

INTERNATIONAL ELECTROTECHNICAL COMMISSION

TECHNICAL COMMITTEE NO. TC69: ELECTRIC VEHICLES AND ELECTRIC INDUSTRIAL TRUCKS

PT 61851-24: Electric vehicles conductive charging system - Digital communication between a d.c. EV charging station and an electric vehicle for control of d.c. charging

IEC 61851-24 Ed. 1.0: Electric vehicles conductive charging system – Part 24: Digital communication between a d.c. EV charging station and an electric vehicle for control of d.c. charging

The 5th IEC/TC69/PT61851-24 Meeting

Draft Agenda

Date & Time: Friday, April 19, 2013 13:00 - 16:00

NOTE: PT61851-23 meeting will be held from 10:00 April 15 to 12:00 April 19 at the same place.

Meeting venue: CSA Group
5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6
Tel: 416-747-4000 Toll-Free: (800) 463-6727 http://www.csa.ca/

Item	Description	Document
1	Opening of the meeting	
2	Approval of the agenda	DCP053
3	Adoption of the last meeting minutes	DCP050a
4	Result of voting on 69/223/CDV	** Closing date for voting: 2013-2-1*
5	Discussion of NC comments on CDV	** Comment sheet with PL observation will be sent by 2013-4-1*
6	Approval for FDIS and next steps	
7	Close of the meeting	

圖 4　IEC 61851-24 會議行程(4 月 19 日)

因本次會議爲討論電動車充電系統安全要求及通訊介面規定之國際標準，另外其他如電動車輛交/直流充電介面(IEC 62196 系列標準)要求、電動車輛與充電系統間通訊(ISO 15118 系列標準)均與本次 IEC 61851 系列標準息息相關。有關電動車輛相關之 IEC 及 ISO 標準規劃及分工詳如圖 5，IEC 61851 系列標準以及 ISO/IEC 15118 系列標

等將相互配合於 2013 年底前陸續完成公告，將作爲國際間電動車輛充電系統、電網及電動車輛三者間各項規定的重要參考標準，更使得 ISO 及 IEC 兩組織在密切合作分工下，相關國際標準終將成爲一套具系統性及廣泛性的標準，以利達成推動標準之最終目的。

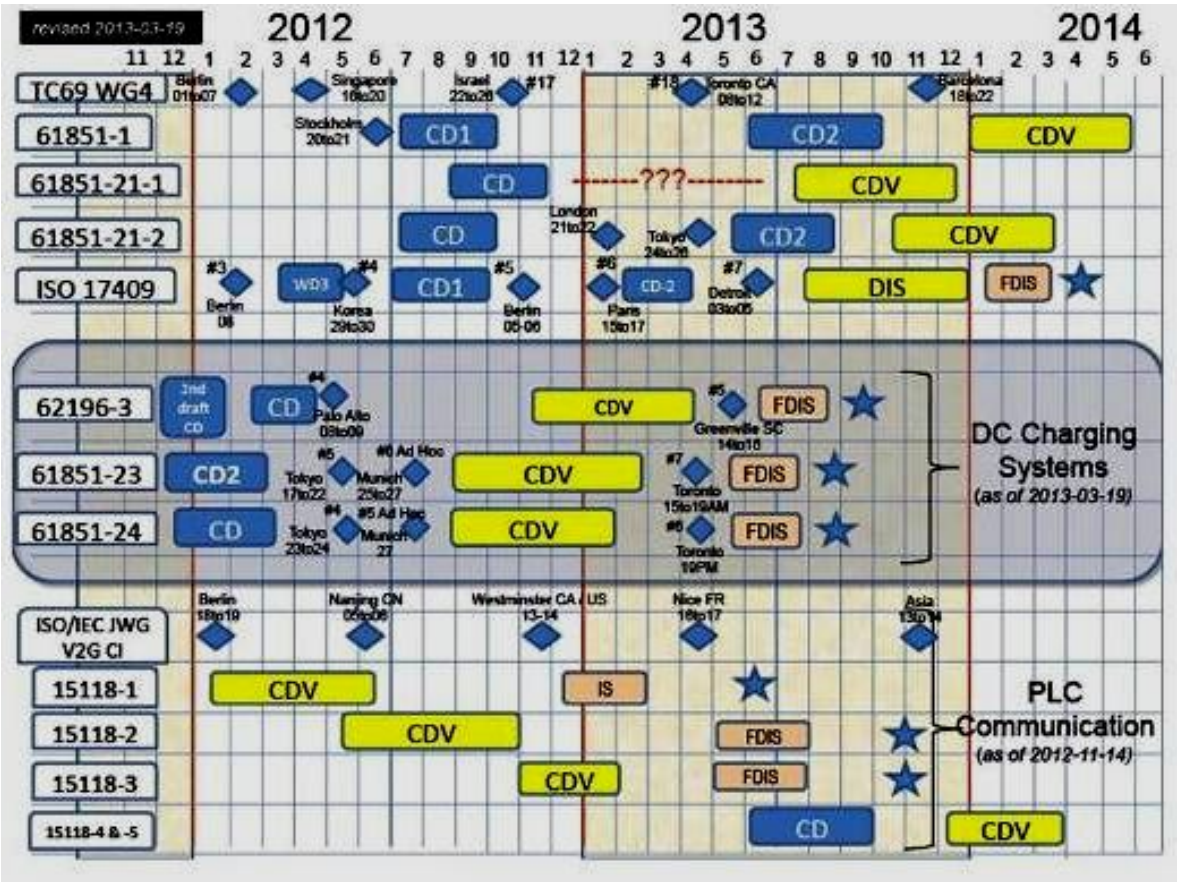


圖 5　電動車輛充電系統相關 IEC、ISO 國際標準制定現況

此次參加會議緣由爲經濟標準檢驗局於民國 100 年開始執行「建置電動車輛標準檢測驗證平台計畫」，執行計畫期間，協助執行該計畫之法人與國外各單位如日本自動車研究所(JARI)、德國 BMW 及 Volkswagen 積極進行國際合作及訊息交流，且此等單位亦爲電動車輛國際標準相關工作組之秘書處(例：日本自動車研究所爲 IEC 61851-23 及 IEC 61851 工作組秘書處；德國 Volkswagen 爲 ISO/IEC 15118 系列標準工作組秘書處)，因此得以受邀參加此次所召開之會議。

貳、出席會議摘要

一、 參與「新興科技之國際標準化活動」出席「IEC 直流充電系統工作組(IEC/TC 69/PT 61851-23、61851-24)」國際標準工作組會議

(一) 會議過程

本次會議討論 IEC 61851-23 及 IEC 61851-24 等 2 種國際標準草案，爲期 5 天，第 1 天至第 5 天上午針對 IEC 61851-23 草案內容進行討論及決議。第 5 天下午就 IEC 61851-24 進行討論及決議。

1. 會議內容

(1) 會議說明

本次會議爲 IEC 61851-23 及 IEC 61851-24 國際標準工作組針對電動車輛充電系統及通訊標準內容行討論。會議現場及討論情況如圖 6 至圖 8。

會議開始首先由會議主席 Serge ROY(日方代表)開場說明本次會議緣由(詳圖 9)。並由此次會議協辦單位加拿大標準協會(CSA Group)人員(詳圖 10)說明承辦本次會議之經過後，隨後由與會人員逐一自我介紹。本次會議人員主要來自德、法、美、日等電動車廠或研究單位之專家及代表，參與本次會議人員及取得之名片詳附件 1 及附件 2。經與會人員自我介紹後，由主席先就本次會議規劃內容簡要說明後，即開始討論 IEC 61851-23 及 IEC 61851-24 草案。

圖 6　會議現場

圖 7　會議討論情況

圖 8　與財團法人台灣大電力張庭綱博士於會議場外合影

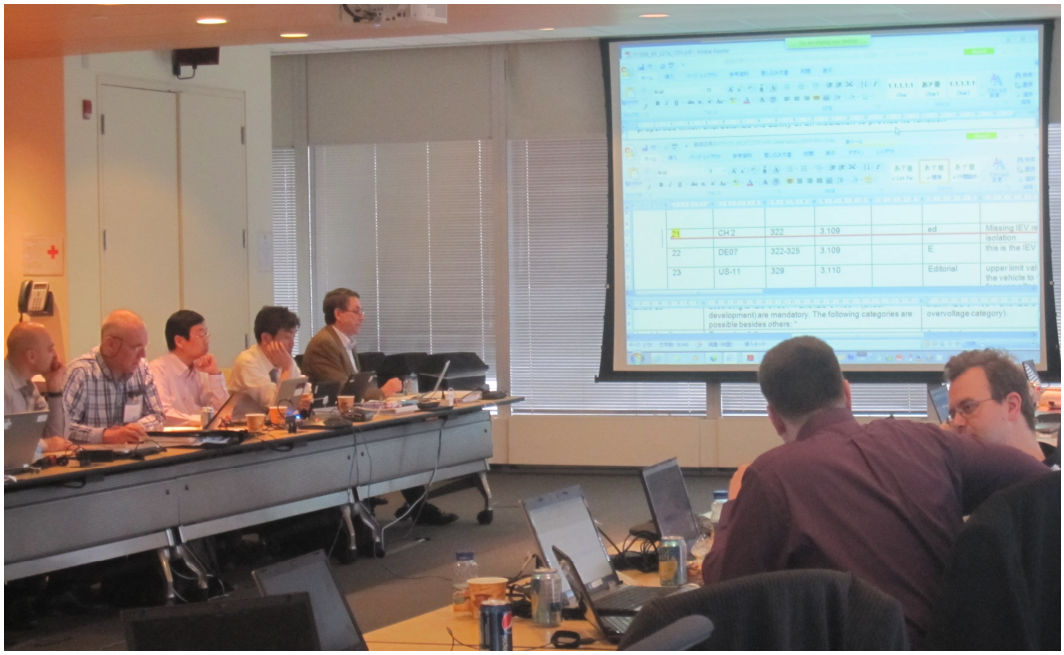


圖 9　主席(Serge ROY)說明本次會議情況

圖 10　加拿大標準協會人員(Cliff Rondeau)說明承辦情形

(2) 本次會議討論順序及內容如下：

- IEC 61851-23 標準一致性測試工作計畫：

  爲確保各國在執行第 1 版 IEC 61851-23 標準時，各國能夠有一致性之測試結果以及判定基礎。由日本、中國大陸、美國、德國及荷蘭等組成一致性測試工作組，各自就標準內之充電系統進行一致性測試。在 2013 年 1 月日本及中國大陸代表已將系統 A 及系統 B 之一致性測試標準方案提交予工作組秘書處，德國及美國所組成的系統聯合工作組也開展相關的測試工作。

  本次會議首先進行一致性測試標準工作組的啓動說明。預計 7 月 22 日將對一致性測試文檔進行詳細的討論。最後計畫在 2013 年 9 月底之前將一致性測試標準文件提至後續 IEC 61851-23 第 2 版中進行討論(不列入本次第 1 版內容中)。一致性會議工作組啓動說明內容如下：

  - 各國專家共同討論以確定一致性測試規範中測試專案。
  - 日本專家根據 IEC 相關測試標準節次，介紹其推薦的一致性測試規範草案內容格式，包括參考標準、測試法、判定依據、驗證法等 4 個方面。
  - 日本及中國大陸代表分別介紹系統 A 及系統 B 的一致性測試方案。
  - 德國代表介紹其目前測試工作進展，討論其所提出的簡易 EV-load 模擬示意圖，詳圖 11，IEC 61851-23 附錄 CC 一致性測試系統將基於該示意圖展開相關檢測工作。
  - 討論一致性工作組的下一步工作，建議將各國的

一致性測試方案放入後續正在研擬的 IEC 61851-23 第 2 版中，以便使目前 IEC 61851-23 第 1 版標準在今年能順利公告。

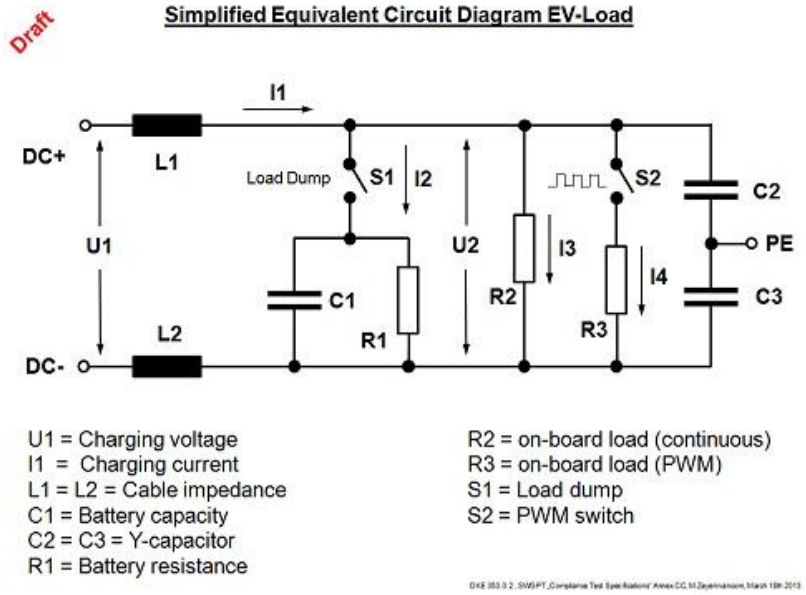


圖 11　簡易電動車輛負載等效電路圖(德國提出)

- IEC 61851-23 工作組會議

  - IEC 61851-23 Ed. 1.0 69/227/CDV 投票情況：

    IEC 61851-23 Ed. 1.0 CDV 投票在 2013 年 3 月 22 日結束。IEC 成員國投票結果爲：共 22 個國家參加投票，21 個國家贊成（贊成率=95.5% > 66.7%），1 個國家反對（反對率=3.7% < 25%）。該草案核准進入最終國際標準草案階段(final draft international standard, FDIS)。

  - 相關工作組情況：

    - 4 月 8 日在多倫多進行的 TC69 WG4 工作會議，討論了包括直流和交流引腳、多輸出、移動充電站等情況（including DC on AC pins decision, multiple output, mobile station）；
    - IEC 62196-3 CDV 投票情況：IEC 成員國投票結果爲

核准該草案進入 FDIS。

- ISO 17409 2nd CD – comments by PT23：ISO 17409 是電力驅動道路車輛－連接至一個外部電源－安全要求，其重點關注充電過程中的安全問題，因此與 IEC 61851-23 直流充電系統密切相關。今年 3 月，IEC 61851-23 工作組向附錄中各系統的負責人蒐集 ISO 17409 第 2 版草案之意見，必須能提出各系統與電動車輛相匹配的具體參數值，並能適用于 ISO 17409 安全要求。目前系統 A 及系統 B 已經將意見回復與 IEC 61851-23 工作組。
- TC17 & TC64: FDIS 投票結果。

－ 討論 IEC 61851-23 中內容涉及專利的問題：

日本專家：IEC 61851-23 之附錄 AA 涉及約 3 個專利，目前正在進行溝通；中國大陸及德國代表均表示對於標準中涉及的專利問題，目前沒有比較完美的解決方法，最好能讓專利持有人放棄專利權利。中國需要提供附錄 BB 涉及專利情況說明，並組織相關人員填寫專利表《ITU ISO IEC Patent Statement and Licensing Declaration Form》發給 IEC 61851-23 工作組。若日本放棄專利，就不一定要參與 CHAdeMO 協會，才能使用其充電系統，國內制定標準只要參閱 IEC 國際標準，就可使用德國及日本之充電介面、通訊及系統。若有任何的專利與系統 A、系統 B 及系統 C 有關，日本、大陸、德國、美國及紐西蘭被要求於四月底前提交專利聲明及許可聲明的表格。

－ IEC 61851-23 工作組後續工作

直流充電標準制修定時程非常緊湊，可能會因部分安全性的意見無法取得共識，並且每次會議都會產生或留下無法即時解決之問題，因此公告時程一再延遲。表 2 爲會後續工作表。標準制定進度時序圖可參照圖 5。

表 2　後續工作表

標準階段	時間	內容
	2013-4-30	將所有回饋意見發送給秘書處 Masako Takahashi
FDIS[2013-01-09]	2013-05-06	提交 FDIS/CO，開始爲期兩個月的投票
	2013-09-18/20	[選項]若 FDIS 被拒絕；則在東京加開一場各國代表會議
IS[2013-04-09]	2013-08	公告成爲國際標準(若投票通過)
*在國際標準正式公告後，IEC 61851-23 工作組可能給解散。 *將在 TC 69 會議上推薦成立 TC69 新的工作組－DC 充電機。		
	2013-11-18/22	IEC/TC69/WG4@Balcelona

－ 討論 69/227/CDV 各國代表所提之技術性意見，較爲重要或具爭議性之問題討論及決議如下：

- IEC 61851-23 與 IEC 61851-1 符合性問題：

  在目前正在研擬中的 IEC 61851-1 第 3 版中，包含了 EVSE 相關要求，但此等內容並沒有在本次會議討論的 IEC 61851-23 草案及已公告的 IEC 61851-1 第 2 版進行討論並解決。因此需要相互協調此等標準。最後一次工作組會議時達成共識，將要求未來研擬 IEC 61851-23 第 2 版時將與 IEC 61851-1 第 3 版內容一致。另外，IEC 61851-1 第 3 版的草案在今年 5 月產出，但是還沒有進入到 CDV 階段，IEC 61851-1 第 3 版規劃在 2014 年中旬公告，會比 IEC 61851-23 第 1 版公告時間晚一年。

- 直流充電機（DC charger）、直流電動車輛充電站（d.c. EV charging station）、直流電動車輛充電站系統（d.c. EV charging system）之定義問題討論。
- 保護導體連續性(PE continuity)檢查：

  對於無隔離之系統，若接地導體連續性檢查失敗，則無隔離之充電站應與交流電源斷開連接。應監測直流充電站與車輛之間的接地導體連續性。對於額定電流直流 60 V 以上的直流充電站，應在在直流充電站與車輛之間保護電阻喪失電氣連續性後 5 s 內完成緊急停機（若針對有隔離之系統，則在喪失連續性後 10 s 內完成緊急停機）。
- 直流輸出過壓問題探討。

  經討論後，決議修改內容爲充電站之輸出電壓在高達 500 V 時，在 DC＋及 PE 間，或在 DC－與 PE 間，超過 550 V 的輸出電壓不得超過 5 s，充電站之輸出電壓在高於 500 V(1,000 V 以下)時，在 DC＋及 PE 間或在 DC－與 PE 間，超過 110 %直流輸出電壓不得超過 5 s，參照 IEC 61851-23 之圖 101。充電站之輸出電壓高於 1,000 V 部分正在研議中。

  直流電動車輛充電站應終結充電電流之供電，並在 5 s 內由其供電端將直流電力中斷連接，以移去過電壓之來源。此亦應適用於直流電動車輛充電站經隔離之輸出部分第一次接地失效的情況。
- 隔離式直流充電站的電擊防護要求：

  德國機動車監督協會 (Deutscher KRAftfahrzeug berwachungsverein, DEKRA)非常關注隔離式直流電動車輛電擊安全防護問題，期望能參考 IEC 61140 中規定防護措施，通過設計二次電路(直流輸出)作爲一

個 IT 系統，從而建立電力隔離保護，另外所有外露的導電部分應通過保護等電位相互連接。通過與電源自動斷開連接進行保護，並在電池充電過程中將所有外露導電部分與 PE 導體進行連接。每個系統均應該明確各輸出端的安全要求，無論連接車輛之數量。安全隔離要求對於 IEC 61851-23 非常重要，將在 IEC 61851-23 第 2 版中進行詳細討論。同時對無隔離之各系統的多同步輸出要求亦在考量中。各附錄系統應明確隔離式直流充電站的電擊防護要求，系統 B 應補充相關內容，並在 4 月底之前提交。

- 過壓等級問題

  德國代表認爲在第 11.4.101 節中所規定的直流輸出過壓等級較高，隔離式直流電動車輛充電站在設計及測試時，應參照 IEC 60664-1 中表 F.1 中過壓等級第 I 級之要求。但此部分所提到的固定安裝，其耐壓能力應由電路電壓標稱值決定。由此推論，直流電動車輛充電站之過壓等級應在第 II 級。但是由於電壓絕對值的不確定性會導致電動車輛在設計中的難度，因此建議隔離式電動車輛充電站應承受的過壓等級爲 2,500 V。對於室外之直流充電站一次側電路，可參照 IEC 61851-1 內容設定其過壓等級爲第 III 級，現場討論現況詳圖 12 及圖 13。

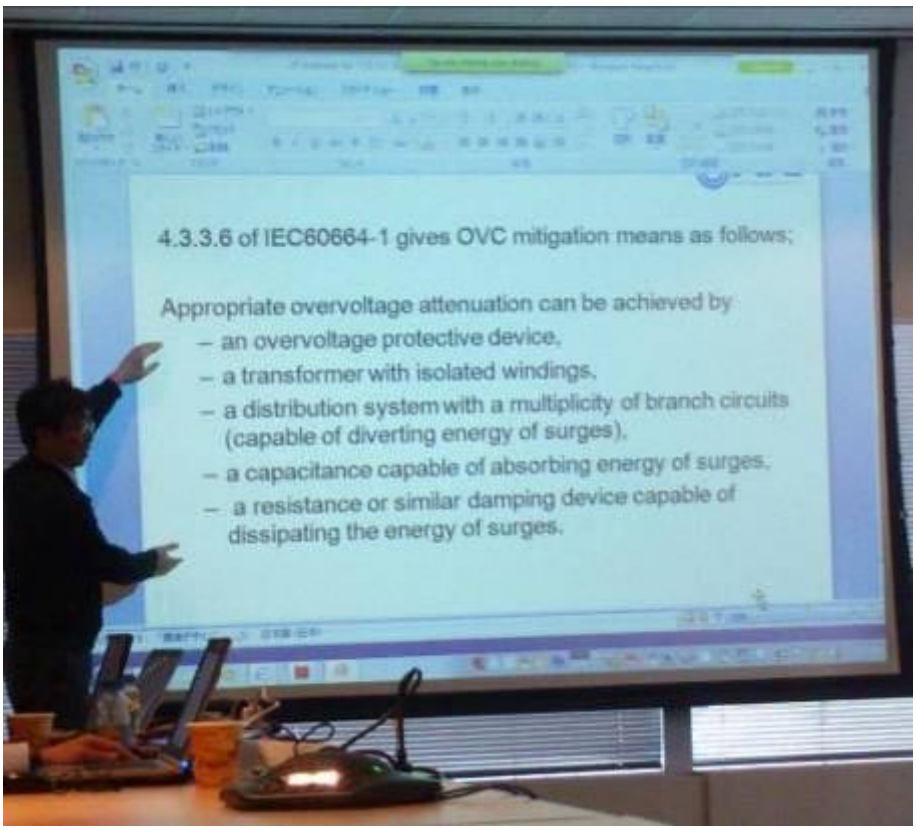


圖 12　過電壓分級討論(IEC 60664-1)

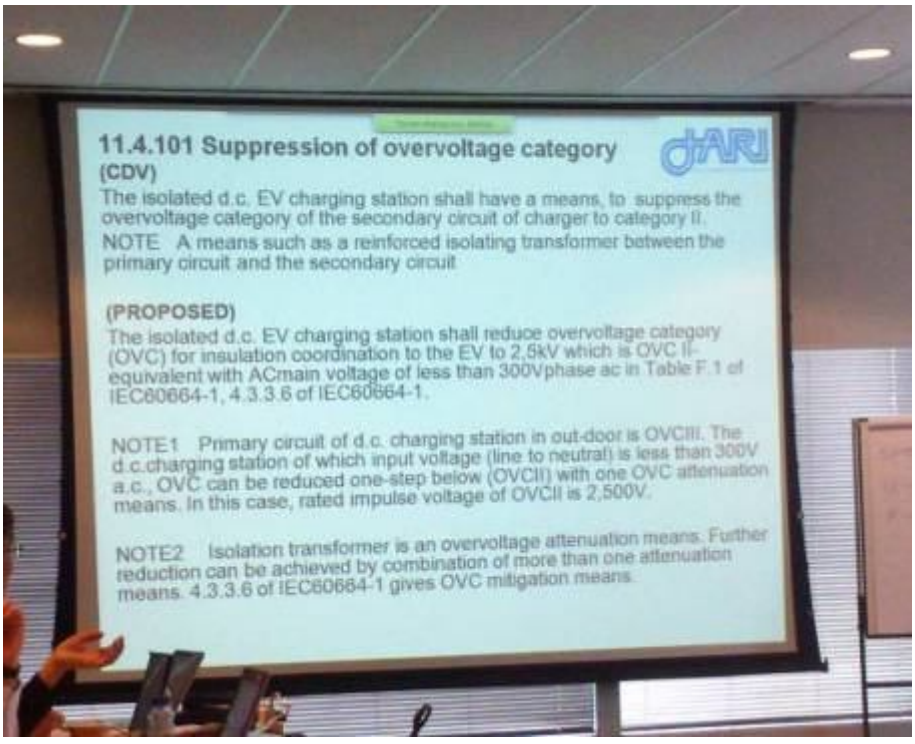


圖 13　過電壓分級討論(過電壓之抑制)

- IEC 61851-23 中電磁相容性測試問題

  在 IEC 61851-23 第 11.12 節中涉及直流充電系統電磁相容測試，IEC 61851-21-1 及 IEC 61851-21-2 中亦涉及相關的 EMC 問題。目前 IEC 61851 仍未發表相關文件，還不能確定電磁相容性內容是否與 IEC 61851-23 一致，因此本次會議建議移除 IEC 61851-23 中有關電磁相容性內容，將第 11.12 節有關電磁相容之要求參照 IEC 61851-21-2 之規定。

- 附錄 BB 中相關問題，必須在 4 月底之前修改並提交。

- 系統 C 的溫度監測問題

  德國/美國/加拿大成員討論車輛連接器在異常條件下溫度（120°C 及 50°C）的上限問題，但沒有達成協議，討論現況如活動集錦圖 14。

圖 14　系統 C 異常溫度上限問題討論現況

- 洩漏電流定義不明確問題探討：

  德國代表建議第 11.7.2 節整段。因爲洩漏電流的定義不明確。洩漏電流可能發生在電網與電於輸入端或者是充電站輸出端與車輛之間。而電網端已經被涵蓋在

既有的標準中，因此輸出端必須明確加以規定。但經與各國討論後，認爲洩漏電電流的量測在系統 C，已有電容的量測機制，加入此規定可能有點多餘，不需再詳細描述，以免標準太過冗長，故此議建並未被大家接受，希望後續可以提出更具體的建議，現場討論情況如圖 15 所示。

圖 15　接觸電流試驗討論

- 尚未解決之問題

  提出並討論具體的技術問題，諸如可提供多個充電槍與複數車輛充電時之短路測試，以及故障條件時的充電電纜導體尺寸及溫度監測要求。此等問題仍然需要由專家及每個國家的時間來研究及探討，與會者一致認爲，此等問題會在 IEC 61851-23 第 2 版中討論。

- 系統 C 之 CC 介面配置與 DD 介面配置

據消息指出，直流對交流系統 C 的腳位所研擬的安全要求已被接受，將納入 IEC 61851-1 第 3 版。因此，爲 CC 介面配置及 DD 介面配置，標準中表 CC.1 必須再度確認，且此 2 種介面後續將被定義在 IEC 62196-3-1 標準草案(草案正研擬中)。

- 本次會議針對 IEC 61851-23 草案內容進行決議及修正之內容，詳附件 3。

➢ IEC 61851-24 工作組會議

主要討論內容

－ 針對 69/223/CDV 投票結果進行了審查，並證實無反對票，CDV IEC61851-24 第 1 版已被批准通過。雖然目前可以直接跳過 FDIS 階段可直接公告 IEC 61851-24 國際標準，但與會者一致認爲，仍配合 IEC 61851-23 一併進入 FDIS 階段，進行最終投票確認並公告。

－ 針對 IEC61851-24 草案之意見進行討論及決議：

- 附錄 A、附錄 B 及附錄 C 若涉及任何專利，要求所有成員被要求於四月底前提交專利聲明及許可聲明表。
- 通過最終版草案投票或進行下一次會議：

  IEC61851-24 本次完成修訂的草案將在 5 月或 6 月進行爲期 2 個月的國際標準最終版草案投票。

  若 2/3 以上投贊成票且反對票低於 1/4 者，則國際標準最終版草案投票通過，將直接公告出版，並且不需要再額外開會討論。若投票未通過將於 2013 年 9 月 20 日於東京額外加開一場會議討論。

- IEC 61851-24 直流充電系統通訊協定細部修改內容如下：

  ✓ 針對直流充電站與電動車輛間通訊模組、充電模組與控制器之方塊圖(圖 16)重新定義：〝直流充電控制單元(DCCCU)〞修改為〝直流充電控制功能〞，〝車輛充電控制單元〞改為〝車輛充電控制功能〞，〝車輛電子控制單元〞改為〝控制器〞。

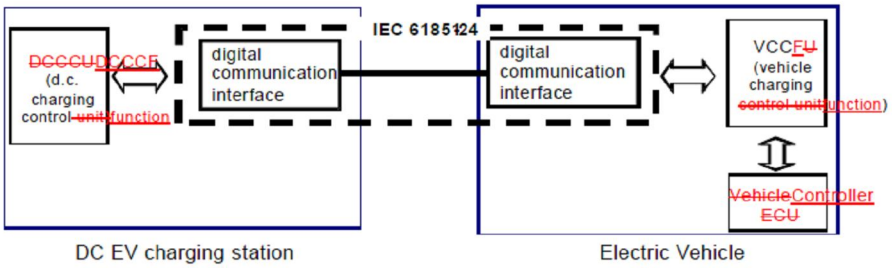


圖 16　直流充電站與電動車輛間通訊模組、充電模組與控制器之方塊圖

  ✓ 因 IEC 61851-24 中對各充電系統之通訊並無詳盡之敘述，故有些國家補充可參考之資訊，諸如日本系統在系統 A 中補充說明 "More detailed information on System A in JIS/TSD0007"，系統 A 之詳盡細節可參照 JIS/TSD0007(詳圖 17)。而 JIS/TS D0007 日本工業標準係參考日本電動車輛產業標準協會 CHAdeMO 之最新內容研擬而成。

  ✓ 本次會議針對 IEC 61851-24 草案內容進行決議及修正之內容，詳附件 3。

➢ 最後在會議結束時 SergeRoy 感謝所有與會者的貢獻，並感謝加拿大標準協會的協助(詳圖 18)，經與會代表確認後本次為期 5 天的會議順利結束。

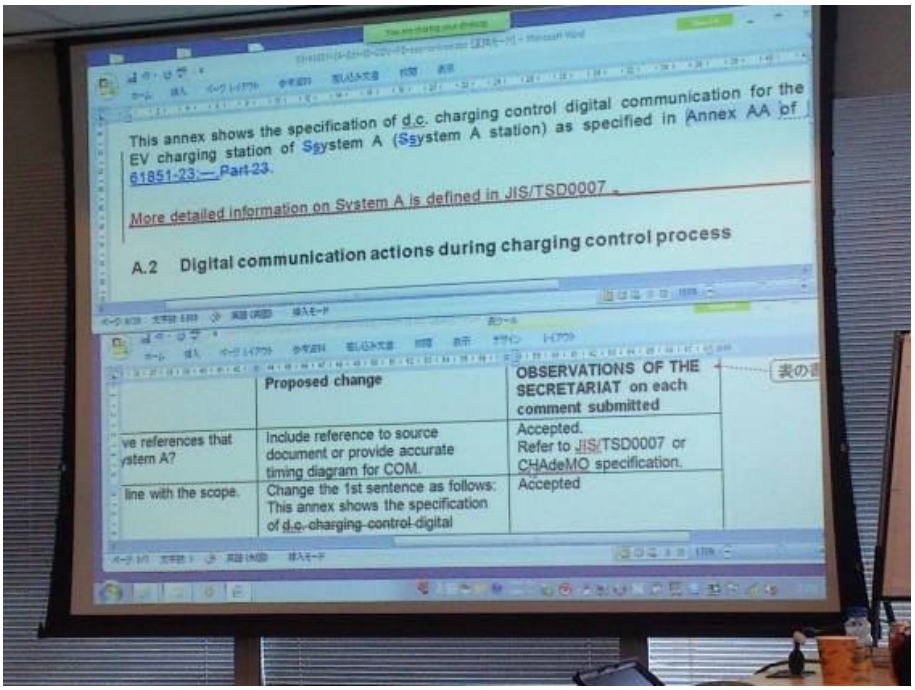


圖 17　IEC 61851-24 之系統 A 引用之 JIS/TS D0007

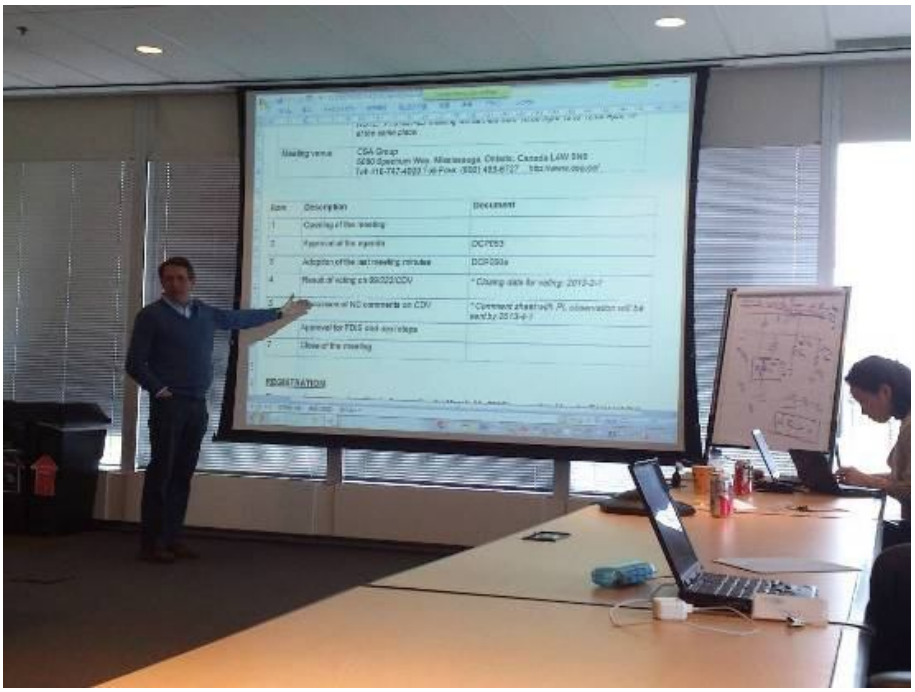


圖 18　IEC 61851-24 會議討論結束後主席說明後續規劃

(二)　會議決議

1. 此次會議內容爲就 IEC 61851-23 及 IEC 61851-24 等 2 種

國際標準逐一討論各國代表所提供之技術性建議,主要決議事項整理如下：

(1) IEC 61851-23 及 IEC 61851-24 共 2 種標準草案,經本次會議各國代表討論及修正後,將提送至國際標準最終版草案階段進行投票。

(2) 若通過投票後,IEC 61851-23 及 IEC 61851-24 將儘早公告,以作爲國際各國電動車輛直流充電介面之重要參考依據。

(3) 會議中 IEC 61851-23 內容經過討論仍有紛岐的地方,待第 1 版公告後,後續將意見紛歧以及要持續進行的工作如一致性測試內容,提至 IEC 61851-23 第 2 版新成立之工作組進行討論。

(4) 經與會代表確認後,若 IEC 61851-23 及 IEC 61851-24 最終版國際標準草案經各會員國投票仍未通過,則將在於 2013 年 9 月 20 日於東京額外加開一場工作組會議進行討論。通過投票則在標準公告後,該工作組任務隨即結束並自動解散。待第 2 版標準草案起草時再行組織工作組,最後於上述事項確認無誤後散會。

參、心得與建議

以下就本次參與會議之心得及建議分別依持續參與國際標準、國家標準及國內產業因應措施,以及國家標準技術委員會後續工作等 3 部分說明。

一、持續參與國際標準

本次會議因緣際會與日本及歐洲車廠交流後,得以受邀參加該次會議實屬不易,應把握每一次參加之機會,本次會議中所涉及之議題爲電動車充電系統安全要求及直流充電通訊,此等標準將影響國際電動車輛充電介面之規定,實爲重要的國際標準,對

於我國後續推動電動車輛示範運行計劃，完善智慧電動車輛環境建構，都具有極爲重要之參考價值。

值得一提的，本次會議中 IEC 61851-23 及 IEC 61851-24 針對日本、中國大陸、美國、歐洲所提出之通訊系統及安全要求幾乎均全數投票通過，代表著國際電動車輛充電介面會朝 4 種介面發展，並確保各自的通訊具有一致性的通訊及安全要求。

後續若有機會更應積極帶領國內電動車輛廠商及研究單位參與相關會議討論，先由參加會議開始，然後方有機會影響國際標準。

二、國家標準及國內產業因應措施

因應國內積極推動電動車輛示範運行計畫，未來將有不少數量之電動車輛(含電動巴士)進行運行，因此儘早確定直流充電系統介面、安全要求及通訊要求，並建立起完整檢測能量實爲重要之工作。

因此在 101 年電機工程技術委員會已決議參照現行最新國際標準內容研擬成爲我國國家標準，以與國際接軌外，並儘速建置相對應之檢測能力提供國內產業使用，同時配合大力推動國內電動車輛之示範運行計畫，提升我國電動車輛、充電站等產品之國際競爭力。

目前有關直流充電介面(IEC 62196-3)、充電系統安全要求(IEC 61851-23)及通訊(IEC 61851-24)各會員國均已通過技術委員會草案(CDV)之投票，目前即將完成最終國際標準草案投票。相信以目前各國針對這 3 種標準的重視程度，並積極參與討論及修正下，應該可以順利投票通過並公告。現行國家標準工作也已將此 3 種國際標準草案研擬成草案並進行徵求意見中。其中直流充電介面(IEC 62196-3)目前已通過技術委員會審查，後續會與充電系統安全要求(IEC 61851-23)及通訊(IEC

61851-24)標準將視國際標準公告進度一併公告，同時建置所對應之檢測能量，以優先提供國內相關產業使用投入國內外示範運行計畫，使得國內電動車輛產業得以順利運行，如華德電動巴士可搭配 IEC 61851-23 系統 B 之充電介面，或台達電子公司所生產之系統 A(如圖 19)及系統 C 充電站搭配現有日系及歐美車廠進行示範運行，確保國內相關產業於國際標準規定的各種介面可順利運行，並可適時解決運行中所產生之問題，以提升產品在國際上的實質競爭力。

資料來源：電機工程國家標準技術委員會 101 年第 52 次會議(台達直流充電設備驗證現況)

圖 19　台達電子公司所生產之直流充電系統(系統 A)

三、國家標準技術委員會後續工作

目前已規劃針對今年即將公告之 IEC 61851-23、IEC 61851-24、IEC 62196-3 及 ISO/IEC 15118-1 等最新國際標準調和爲國家標準，亦將後續研擬中的 IEC 61851 系列標準及 ISO/IEC 15118 系列標準納入國家標準工作規劃。此外有關與電動車輛、充電系統以及智慧電網三者間的相關標準亦需全盤考量。並積極

與國內現行推動之智慧電動車輛及畫及智慧電網計畫結合，確保由電動車端到電網端具有一致且互通之通訊介面。

此外將會持續召開相關技術委員會討論有關電動車輛相關標準之需求，並制定成爲國內所能適用之國家標準，以符合國內市場需求並與國際接軌。

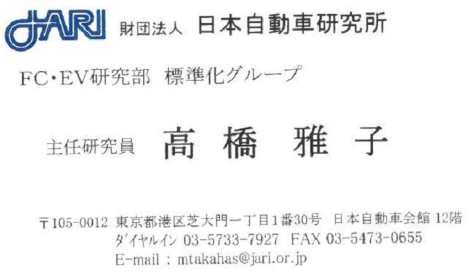
本次會議爲 IEC 國際標準組織工作組會議，但組成的成員來自以 ISO 道路車輛領域(如德、歐、日車廠及車輛研究單位)以及 IEC 電機領域(UL 電氣安規領域)兩大不同領域之國際標準組織專家，參與該項會議可了解兩大標準組織嚴謹之行政工作外，並且針對 IEC 61851 系列標準與其他相關標準連結之分工與進度進行進度追蹤並提供意見，此寶貴經驗可作爲後續國家標準內容涉及不同領域標準的參考作法。

附件 1.參與 IEC 61851-23 及 IEC 61851-24 會議人員名單

List of attendance

	Name	Affiliation	Country
M	Serge ROY	CHAdeMO	JP
M	Takeshi HAIDA	TEPCO	JP
M	Masako TAKAHASHI	JARI	JP
M	Eduard Stolz	Park & Charge	CH
M	Gery Kissel	General Motors Corp.	US
M	Evert Raaijen	ALFEN	NL
M	Gregory Nieminski	Gregory C. Nieminski, LLC	US
M	Joseph Bablo	UL	US
M	Robert Weber	BMW	DE
M	Stefan Raaijmakers	ABB	NL
M	Thorsten Künzig	BMW	DE
O	Tomoya IMAZU	Nissan Motor	JP
O	Carl Chang	Taiwan Electric Research & Testing Center	TW
O	Cliff Fietzek	BMW	DE
O	Cliff Rondeau	CSA Group	CA
O	Iwane INOKUCHI	Nissan Motor	JP
O	John Bilezikjian	Ford Motor Company	US
O	Michael G. Zeyen	Vancom	DE
O	Slav Berezin	General Motors	US
O	Todd Hamden	CSA Group	CA
O	Torsten Gruhn	Bender	DE
O	TUNG, CHIEN-CHIANG	Taiwan Electric Research & Testing Center	TW
O	ZHANG Xuan	China Electric Power Research Institute	CN
	[Web participant]		
O	Doug Burkett	Ford Motor Company	US
O	Papiya Bagchi	Ford Motor Company	US

附件 2.會議與會人員之名片



附件 3.IEC 61851-23 會議決議修正內容(1/3)

	National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
							possible besides others: "	Change as follows: D.C. EV charging stations and systems may be classified as follows:
37	FR 2		6.101.1.1		E/T	In the same clause 2 wording isolation is misleading.	To read as follows: - d.c. EV charging station with electrical separation according to the type of insulation between input and output; a) basic insulation b) reinforced insulation c) double insulation - d.c. EV charging station without electrical separation d.c. EV charging station	~~Accepted~~ Not accepted. See DE05.
38	DE12	418-423	6.101.1.1		T	Term "isolated" not appropriate. Categories should be chosen according to protection classes	Replace as follows: "– electrically separated d.c. charging station – non-separated d.c. charging station (under consideration)"	Not accepted. See DE05 ~~See FR 3~~
39	CH 8b	444	6.101.1.4			NOTE 2 EVSEs classified for outdoor use can be used for indoor use, provided ventilation requirements are satisfied.	NOTE 2 d.c. EV charging station classified for outdoor use can be used for indoor use, provided ventilation requirements are satisfied.	Accepted
40	DE13	464			E	Text and Header seems to be flipped	Change Header to "Replacement" and line 465 to "Adaptors"	Not accepted. The subclause title is "Adaptors," same as Part 1. Replacement is made to the text.
41	NO5	472	6.4		Te	Non-regulated d.c. charging station will require a converter/regulator at the EV-side. Because charging with no regulation = no safety.	Change what is written as "non-regulated charging" is in contradiction to what safe charging is about. (A d.c. supply station with a fixed voltage and a max current will require a regulating feature at the EV-side.) State a requirement for the impossible combination/connection in between a non-regulated charging station and a "direct coupled" (without regulation) EV-battery, as is the case for all of the three systems described in Annex AA to CC.	~~Add the following note:~~ ~~For non-regulated charging, on-board charger has a function to regulate charging.~~ Not accepted. No change is necessary. For non-regulated charging, on-board charger has a function to regulate charging.
42	US-13	476 497	6.4.1 6.4.2		Tech	The term d.c. **charging system** is not defined in 61851-1 or this Part. What does the "system" include? Does it refer to the d.c. EV charging station covered by the Scope of this Standard or the electric vehicle or both?	Add a definition in clause 3 for clarity.	Accepted Add a definition of "d.c. EV charging system." d.c. EV charging system a system composed of a DC charger, cable assembly and EV and digital communication for charging control Check the definition of Part 1 Ed. 3
43	CH 9	478			Ed	Please use all the time the same term **protective conductor PE**	See also Line: 355, 478, 517, 518, 521, 768, 924, 926, 927, 928, 930, 1390, 1403	~~Either protective conductor or PE is sufficient.~~ ~~Use "protective conductor" in the text body, and "PE" in figures.~~ Accepted
44	NO6	480 or 526-533	6.4.1 or 6.4.3.4		Te	De-energization of the system should include a function to discharge the output capacitors of the last power stage before output terminals (charging cable). Isolation (relay) form the power stage could.	Consider to include active discharge requirement of the output terminals/charging cable. Maybe the requirements of clause 7.2.3.1 Disconnection of EV, are to be seen as sufficient.	Accepted. Add as follows: Requirement for disconnection of EV is defined in 7.2.3.2.
45	NO7	482 or 550-556	6.4.1 or 6.4.3.102		Te	Systems should be able to control and measure bidirectional currents, in a use case where the EV-battery is utilized as a source. Then it is either a need for both positive and negative numbers for current or a separate word/signal within the communication specifying the direction.	Consider to include an appropriate text for describing the possible bidirectional current flow and how this would need to be recognized by the system. (Not to be mixed with an uncontrolled reverse power flow.)	See NO3
46	US-14	500	6.4.2		Tech	The term "**supply equipment**" is used. Unclear what supply equipment this references. Is this the supply equipment from the AC (mains) supply or the EVSE?	Use complete term "electric vehicle supply equipment" or "EVSE", as defined in Part 1. Or add the correct terminology.	Replace "supply equipement" by "~~d.c. EV charging station~~DC charger."
47	US-15	501	6.4.2		E	Make it clear that the charge selection noted is to be made by the customer/operator	Customer / operator selection of charging current.	~~To be discussed~~ No change
48	NO8	520	6.4.3.2		Te	10 seconds for an Emergency shutdown should not be categorized as an emergency. An Emergency shutdown should not take more than one second.	1. Reconsider the severity if the loss of electrical continuity of the PE conductor shall qualify and be classified as an emergency or lower the time requirement to perform an Emergency shutdown. 2. Make a clearer distinction of the requirements for systems with PE connected to the EV and systems where	~~To be discussed~~ Not accepted 1) This is isolated system, so no hazardous situation occurs. Divide the paragraph for "isolated system" and for "non-isolated system". See revised draft.

	National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
							PE is not stretched to the EV. A general requirement for a continuous monitoring of isolation is missing.	2) The mentioned "systems where PE is not stretched to the EV" is not applicable in this standard.
49	US-16	522	6.4.3.2		E	Definition 3.116 defines the protective conductor as PE. This clause implies that PE and the protective conductor different. Clarify either 6.4.3.2 or 3.116.	See US comment 13. Does 6.4.3.2 refer to a protective conductor or PE? Protective ~~conductor~~ earth continuity checking Protective ~~conductor~~ earth continuity between the d.c. EV charging station and the vehicle shall be monitored. For the rated voltage of d.c. 60 V or higher, the d.c. EV charging station shall perform an emergency shutdown (see 6.4.3.114) in 10 s after a loss of electrical continuity of the protective ~~conductor~~ earth between d.c. EV charging station and EV (emergency shutdown). In case of loss of PE continuity, the non-isolated d.c. EV charging station shall be disconnected from a.c. mains.	See US3XX ~~Change the 3rd sentence as follows:~~ ~~In case of non-isolated d.c. EV charging station, when the continuity of protective earthing is interrupted, the station shall be disconnected from a.c. mains.~~
50	US-17	530	6.4.3.4		T	"EV charging station shall terminate the supply of charging current without current control, and disconnect the supply of fault circuit." It is unclear why "without current control" is specified.	Modify as follows: EV charging station shall terminate the supply of charging current ~~without current control~~, and disconnect the supply of fault circuit.	~~To be discussed~~ Accepted
51	DE14	536	6.4.3.101		E	for clarification	change to: "D.C. supply of EV"	Change to "D.C. supply for EV."
52	JP1	542	6.4.3.101		Ed	Error of clause number	101.1.8.1, 101.1.8.2 and 101.1.8.3 => 101.1.6.1, 101.1.6.2, 101.1.6.3 and 101.1.6.4	Accepted
53	US-18	543	6.4.3.101		E	"in either case" should be deleted. There is only one case noted in the clause.	See comment	Change to "in either case mentioned above"~~Accepted~~ ~~Delete "in either case."~~
54	US-19	550 -555	6.4.3.102		T	Measuring current and voltage In order to keep a stable output current to vehicle and to avoid overvoltage at the vehicle interface, the d.c. EV charging station shall measure the output current and output voltage with an accuracy of: voltage: ± 10 V current: ± 5% of the actual current if the actual current is above (>) 50 A ± 2,5 A if the actual current is less than or equal to (≤) 50 A For current <=50A: At low currents +/- 2.5 amp can be significant error. State as percent of actual value.	For Current <= 50A: The measured current reported shall be within ±1.5% of reading (but not better than ± 0.5A).	Partly~~not~~ accepted. Add a new clause for measurement accuracy in Annexes AA, BB and CC: JP, CN, US/DE should submit the text to be added to JARI by the end of April. The accuracy of ±1.5 % is not necessary for System A and depends on the system. ~~Add as specific requirement of System C, if necessary.~~ See revised draft.
55	CH 10	551	6.4.3.102		Ed	In order to keep a stable output current to vehicle and to avoid overvoltage at the vehicle interface, the d.c. EV charging station shall measure the output current and output voltage with an accuracy of:	In order to keep a stable output current to vehicle and to avoid overvoltage at the vehicle inlet, the d.c. EV charging station shall measure the output current and output voltage with an accuracy of: Vehicle interface have to be replaced by vehicle coupler or vehicle inlet or vehicle connector: See also Line: 774, 1622, 1626, 1635, 1639, 1682, Control and clarify	See US19 ~~Accepted.~~ ~~Replace "vehicle interface" in the 1st sentance with "vehicle connector".~~ ~~As for lines 1622-1682, change to "vehicle coupler" (to be confirmed by China).~~
56	CH 11	554	6.4.3.102		Te	voltage: ± 10 V should be indicated in%. At 60 volts, 10 volts is 20%. At 1000 volts it is 1%. To big difference!	voltage: ± 2% or ± 2.5% of the actual voltage if the actual voltage is above (>) 120 V ± 2% if the actual voltage is less than or equal to (≤) 120 V	See US19 ~~To be dicussed.~~ ~~It may be "± 2 % of the maximum rated voltage."~~
57	US-20	559	6.4.3.103		E	Delete 6.4.3.103 because it is called out in the Part 1 standard.	See comment	Not accepted. It is not defined in Part 1, Ed. 2.
58	JP2	576	6.4.3.104	NOTE 3	Ed	Change of term for coherence	lock function => locking function	Accepted
59	FR 3		6.4.3.106	Heading	T	The heading refers to isolation while text refers to insulation.	To read as follows: 6.4.3.106 Insulation test before charging	~~To be discussed~~ Accepted
60	NO9	582 ->	6.4.3.106		Te	A general requirement for continuous isolation monitoring is missing. As well a note about the supposed necessity for the on-board EV isolation system to switch off while d.c.	Consider to include additional general requirements for isolation monitoring. It should get clear that a non-isolated system would always need PE stretched all the way to the EV (or below 7.5.102).	Not accepted. Requirements for isolation monitoring system are defined for each system.

附件 3.IEC 61851-23 會議決議修正內容(2/3)

	National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
						charging starts and takes place.		
61	CH 12	583	6.4.3.106		Ed	The d.c. EV charging station shall confirm the insulation resistance between its d.c. outputcircuit and earth, including the charging station enclosure, before the EV contactors are allowed to close.	The d.c. EV charging station shall confirm the insulation resistance between its d.c. output circuit and **proteotive oonduotor** PE, including the charging station enclosure, before the EV contactors are allowed to close.	Accepted to change from "earth" to "protective conductor to the vehicle chassis."
62	DE15	584			T	earth as a stand-alone word is unclear According to clause 411.3.1.1 it is an protective earthing, a protective conductor or earthing conductor	Replace "earth" by "PE conductor"	See CH12
63	US-21	597	6.4.3.106		Tech	Refers to **d.o. EV charging system** in Annexes. Should this be **d.o. EV charging station** instead?	Change reference to **d.o. EV charging station.**	Not AAccepted. Change also to "rated output voltage The rated voltage of d.c. EV charging system is determined taking the EV charging station and EV into consideration.
64	US-22	600	6.4.3.107		T	The term "emergency shutdown" is used but not defined until clause 6.4.3.114.	The term seems to be defined in clause 6.4.3.114. Define "emergency shutdown" in section 3 similar to the following: shutdown that results in the disconnection of input power to the charge station	Add as follows to clause 3: 3.10x emergency shutdown shutdown of d.c. EV charging station that results in the termination of charging, caused by a failure detected by the d.c. EV charging station or the vehicle. NOTE - The emergency shutdown may not result in the disconnection of input power in case e.g. the vehicle detects its own abnormality and request the d.c. EV charging station to stop charging.
65	NO10	609-610	6.4.3.107		Te	Clarity: What is the meaning of *"rated current"* Nominal demand from vehicle or Maximum possible from station?	Consider to include the more specific term, e.g. *"more than 10% of the maximum rated current of the charging station."*	To be discussed Accepted.
66	DE16	620			G	It is unclear which type of charging stations are responsible for locking the vehicle connector	PIs add some notes on classification of charging stations regarding functions to be performed on the vehicle side	Accepted. Add as follows to the 1st sentence: ", such as System A and System B."
67	US-23	628	6.4.3.109		T	The requirement states that the power supply for control circuit shall not be interrupted. What is the rationale for this part of the requirement?	Modify as follows: If an earth fault, short circuit or overcurrent is detected in power circuit of d.c. EV charging station, the power circuit shall be disconnected from its the charge station supply., but the power supply for control circuit shall not be interrupted unless the power circuit interruption is due to a loss of a.c. mains.	Not Partly accepted. Change the first "power circuit" to "output circuit" Power supply for control circuit should be maintained, to a maximum extent, for monitoring the connector voltage, etc.
68	FR 4		6.4.3.110		T	The way the short-circuit test is performed needs to be standardized in order to avoid flowing of short-circuit current through cables.		Not accepted. See US-24. The requirement in the draft is sufficient. It should be required in the compliance test specification that the function is indeed implemented.
69	US-24	631	6.4.3.110		T	Define short circuit test.	Prior to enabling its high voltage DC output, the EVSE shall check for a short circuit between the high voltage DC+ and DC- in the charge cable, connector, vehicle inlet and vehicle cabling up to the vehicle DC charging disconnect. Short circuit is defined as minimum current of 1 amp up to 4% of max output current rating with a maximum of 5 amps. Delete line 635.	Not accepted. To be discussed for Ed. 2. The short circuit of d.c. output circuit can be protected by fuse. This cause is functional requirement for d.c. EV charger and it depends on the design policy of each Annex. Besides, as the measurement accuracy of minimum current is specified as 2.5 A in 6.4.3.102, it should read "as minimum current of 2.5 A up to 4% of max output current rating with maximum of 5 amps."
70	CH 13	641	6.4.3.112		Ed	If more than one wire and/or connector contact is used in parallel for dc current supply to the vehicle, the EVSE shall have a mean to ensure, that none of the wires will be overloaded.	If more than one **Conduotor/wire and/or vehiole oonnevtor** contact is used in parallel for dc current supply to the vehicle, **the d.o. EV oharging station** shall have a mean to ensure, that none of the conductors/wires will be overloaded.	Accepted.
71	FR 5		6.4.3.113		T	The heading refers to fault protection while the text refers to protection against overvoltage	To read as follows: **6.4.3.113: Protection against temporary overvoltage**	To be discussed. "Protection against temporary overvoltage with d.c. EVSE/AT may be better.
72	NO11	646-653 or	6.4.3.113 or CC.1		Te	Output voltage values are here given only up to 1000V, but the upper output voltage is 1500V according to the scope, line number 187. What about such a HV-system? (Annex CC, line number 87.)	Consider to lower the output voltage in the scope of this standard, or find other/supplemental references for how to handle fault protection.	Accepted To be discussed Not accepted, but add as follows: "For voltage above 1000 V, under consideration.

	National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
						of voltage does not correspond to a protective provision as described in the IEC 61140. Time limit for having a zero dc voltage is needed.		applicable to this case.
85	CH 15	712			Ed	One second after having disconnected the EV from the supply, the voltage between accessible conductive parts or any accessible conductive part and earth shall be less than or equal to 42,4 V peak, or 60 V d.c., and the stored energy available shall be less than 20 J (see IEC 60950).	One second after having disconnected the EV from the supply, the voltage between accessible conductive parts or any accessible conductive part and and **proteotive oonduotor** PE shall be less than or equal to 42,4 V peak, or 60 V d.c., and the stored energy available shall be less than 20 J (see IEC 60950).	Accepted, but without "PE."
86	US-28	714	7.2.3.1		T	One second after having disconnected the EV from the supply, the voltage between accessible conductive parts or any accessible conductive part and earth shall be less than or equal to 42,4 V peak, or 60 V d.c., and the stored energy available shall be less than 20 J (see IEC 60950). Shouldn't value be less than .2 J	For consistency with automotive requirements, replace 20 J by 0.2 J and delete the reference to IEC 60950.	Not accepted The requirement conforms with Part 1 Ed.2. Part 23 Ed. 2 will conform with Part 1 Ed. 3. Delete 42,4 V peak for this is AC part requirement. Delete "Addition: if the voltage..."
87	CH 16	731	7.5		Ed	Protective measures for mode 4 EVSE The types of d.c. EV charging stations covered by these requirements, including all accessible conductive parts on the equipment shall have the following protective measures as described in the IEC 61140: - protective measures by automatic disconnection of supply by connecting all exposed- conductive-parts to a PE conductor during battery charging, unless protective measure by reinforced or double insulation or protective measure by electrical separation is used for the EVSE.	Protective measures for **d.o. EV oharging stations** The types of d.c. EV charging stations covered by these requirements, including all accessible conductive parts on the equipment shall have the following protective measures as described in the IEC 61140: - protective measures by automatic disconnection of supply by connecting all exposed- conductive-parts to a **proteotive oonduotor** PE during battery charging, unless protective measure by reinforced or double insulation or protective measure by electrical separation is used for the **d.o. EV oharging stations.**	Accepted, but without "PE."
88	US-29	733				See US Comment 4	Use **EVSE,** or **eleotric vehiole supply equipment** to agree with title of clause or **d.o. EV oharging station**	See CH16
89	FR 7		7.5.101		T	See FR comment on § 6.101.1.1	To read as follows **7.6.101: Requirements of the do EV oharging station with eleotrioal separation** Requirements for the dc EV charging station with electrical separation for the protection against electrical shock are defined for each system in Annexes AA, BB or CC. In addition, if the dc EV charging station has multiple dc outputs designed for simultaneous operations, each output circuit shall be insulated from each other by basic insulation or reinforced insulation.	To be discussed Not accepted
90	NL		7.5.101		Technical	The requirement for galvanic isolation between multiple DC outputs designed for simultaneous operation is too strict. The risk of dangerous potential between the car body to earth (f.e. of EVSE housing) of standard single output DC charger is much higher than the risk of dangerous voltages between car bodies in case of multiple output DC charger without galvanic isolation. **Case a) earth fault between oar body and earth with single output DC oharger** Requires the following failures: 1. Isolation fault of car's battery 2. Fault of isolation guard in car 3. PE wire fault charging cable 4. Fault of isolation guard in charger **Case b) earth fault between two oar bodies with multiple output DC oharger without galvanic isolation between outputs.** The case requires for both cars the same faults as case a), meaning 8 faults for case b) instead of 4 faults for case a). This means that if for safety requirements galvanic isolation between multiple outputs would be required, that in that case also a standard single output charger could not be accepted. Meaning that if we accept a standard single output charger that we should also accept a multiple output	Skip requirement for galvanic isolation between multiple outputs. Proposed alternative text: **7.6.101 Requirements of the isolated d.o. EV oharging station** Requirements for the isolated d.c. EV charging station for protection against electric shock are defined for each system in Annexes AA, BB or CC. In addition, if the d.c. EV charging station has multiple d.c. outputs supplied from a single circuit and designed for simultaneous operation, conductive accessible parts, comprising station, charging cables and vehicle connectors, shall have the following protective measures as described in the IEC 61140: - protection by electrical separation, by designing the secondary circuit (d.c. output) as an IT system, in addition all exposed conductive parts shall be interconnected by protective equipotential bonding and; - protection by automatic disconnection of supply and by connecting all exposed conductive parts to a PE conductor during battery charging. - Safety requirements for each outlet as defined for each system, have to be maintained irrespective of the number of vehicles connected. Notes:	To be discussed Partly accepted. Add the following note: NOTE 1 Requirements for multiple simultaneous outputs, which are non-isolated from each other, are under consideration. Requirements will be discussed for Ed. 2

附件 3.IEC 61851-23 會議決議修正內容(3/3)

	National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
						charger without galvanic isolation between outputs. Note: this comment has been made in general for multi output DC chargers, this can be only CHAdeMO, only COMBO, but also combined CHAdeMO and COMBO.	1) Safety requirements for vehicle inlet, vehicle cables and exposed conductive parts of the vehicle are covered by ISO 17409 (under development) and ISO 6469-3. 2) In case of using an IMD (Insulation Monitoring Device) and for multiple output see IEC 60364-7-722, clause 722.538.102 (under development). 3) In the following countries, both isolated and non-isolated electric vehicle charging system equipment comply with the requirements in national standards: US	
91	US-30	741 -742	7.5.101		Tech	This paragraph refers to Annexes AA, BB & CC for requirements for protection against electrical shock. While Annexes BB and CC mentions leakage current, isolation monitoring, etc., no details or limits are specified, nor do the Annexes refer back to specific clauses in other parts of this document. This is not adequate.	What are the limits or boundaries for protection against electric shock, both on the primary and secondary sides, and between them for isolated or non-isolated d.c. charging stations where applicable? The references to the annexes should be more specific as to the clause or clauses containing these requirements.	~~To be discussed.~~ See AA.3.1 for System A. CN and US/DE are requested to provide information (For Systems B and C by the end of April) ~~to be defined.~~
92	US-31	746 – 747 753 – 754	7.5.101 7.5.102		Tech	The following Note should replace both Notes in lines 746-747 and 753-754. The term **electric vehicle charging system equipment** is not used in US Codes. (Canada and the US have adopted common safety requirements) Canada will verify.	NOTE In the following countries, both isolated and non-isolated electric vehicle ~~charging system~~ supply equipment shall use a personnel protection devices and system that measures leakage current over a range of frequencies and trips at pre-defined levels of leakage current, based upon the frequency. Such systems shall comply with the requirements in national safety standards: US, CA	Accepted.
93	FR 8		7.5.102		E	IEC 60364-5-54 basically provides requirements for the cross-sectional area of the PE conductor	To read as follows **7.6.103 : PE conducteur cross-sectional area** PE conductor shall be of sufficient cross-sectional area to satisfy the requirements of IEC 60364-5-54.	Accepted. PE conductor => Protective conductor
94	CH 17	756	7.5.103		Ed	PE conductor dimension PE conductor shall be of sufficient rating to satisfy the requirements of IEC 60364-5-54. NOTE In some countries, the size and rating of the PE conductor is specified in national code and regulation.	**protective conducteur PE** **protective conducteur PE** shall be of sufficient rating to satisfy the requirements of IEC 60364-5-54. NOTE In some countries, the size and rating of the **protective conducteur PE** is specified in national code and regulation.	See FR8
95	NO14	760	7.6		Te	Additional requirements: 1. Safety fault reaction time. The maximum allowed time requirement for the system to transfer to a safe state after the fault has been detected. 2. Continuous monitoring, what is regarded as "continuous" when sampling? (E.g. monitoring of critical parameters for a protection function should be sampled more often than a general user input.)	1. Consider including a fault reaction time applicable to all faults regarded as critical for safety. 2. Consider to provide a definition of "continuous" (e.g. at least once per second), or - possibly specify the maximum time intervals for sampling and measurements beside each type of parameter.	Comment is unclear (not for 7.6?). To be explained by NO.
96	DE21	763 ff	7.6		T	The harmonic current limits have been agreed for at least "normal condition / normal operation modes" Therefore using the harmonic current limits under fault conditions makes no sense. The basic standards which are considered as 'EMC' (such as IEC61000-3-2, 3, 11, 12) will be covered but those which relate to power quality only will be excluded. The editors note will be updated.	Delete the whole sentence in row 763 to 765.	Accepted.
97	IT01	766-767		7.6	Technical	The sentence as it is written is meaningless (there is no verb). Anyhow, there is no need for limiting DC earth leakage also in case of fault condition. This is a requirement commonly not present in DC charger. DC fast charger (up to 100 kW and more) is not similar to a common domestic piece of appliance. Protection against DC faults, if needed, can be done in the installation with, eg, a RCD of type B commonly used for similar applications.	Delete rows 766-767. Add this sentence: "Considering the possible DC earth faults, the manufacturer shall give appropriate information about the correct choice of upstream RCD".	Partly accepted. Change as follows: ~~Accepted.~~ The d.c. EV charging station shall be compatible with RCD Type A in the installation a.c. supply network (mains).
98	JP3	773-775	8		Ed	Error of description	Replace lines 773-775 as follows: 8.1 General	Accepted.

	National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
						not a protective device according to IEC 60364 standard series. Isolation monitoring devices (IMD) in general are defined in IEC 61557-8:2007-01. According to 4.1, "insulation monitoring devices shall be capable to monitoring the insulation resistance including symmetrical and asymmetrical components. Earth fault relays are not insulation monitoring devices in the interpretation of this part of IEC 61557" One reason for this requirement is a high fire risk , if symmetrical earth faults are not detected. The measuring principle according to Figure AA.1 is not able to detect symmetrical isolation faults. Therefore, there is a high risk for the occurrences of fire and dangerous touch voltages. This can be only be prevented by fulfilling the requirements of the IEC 60364-4-41 and IEC 61557-8. The detection of symmetrical earth faults is also a requirement by UL2231-1:2012 clause 5.3.1 " If the symmetrical as well as asymmetrical resistance to ground is reduced below a predetermined value"	applied. In case of using an isolation monitor device (IMD), it shall comply with IEC 61557-8 or equivalent. If the actual total physical isolation resistance between DC+/DC- to PE fails below 100 kΩ (without negative tolerance) an optical and/or acoustical signal shall be issued by the d.c. supply to the user and the d.c. supply shall terminate the supply process within 10 s. Delete Table AA.4, it is not necessary if an IMD according to IEC 61557-8 will be used.	body as requirement. Reference for "symmetrical fault=double fault" to be checked.
175	JP14	1551	AA.4.2.4		Ed	Error of reference	101.1.8.2 and 101.1.8.3 => 101.1.6.2.1 and 101.1.6.3	Accepted.
176	JP15	1575	AA.5	Figure AA.5	Ed	- Correction of states according to Table 105 - Correction for missing indication (d1 = OFF for fault during initialization 1)	Change Figure AA.5 as Appendix JP1.	Accepted.
177	JP16	1587	AA.5	Figure AA.8	Ed	Correction of Figure AA.8 in line with 101.1.6.3.	Change Figure AA.8 as Appendix JP2	Accepted.
178	US-46	1595	Annex BB, BB1		Edit	Correct reference to coupler configuration.	Change to Configuration BB (double B)	Accepted.
179	DE46	1608				According to IEC 61557-8:2005 does not detect leakage currents.	Replace in line 1607~~45~~ and 1608~~44~~ "If IMD detects that the leakage current exceeds the setting value" by "If the IMD detects that the isolation resistance drops below the setting value"	~~To be discussed~~ CN will confirm if "IMD" is used to measure leakage current, and what is the "setting value" by April 30.
180	CH 37	1617	BB.3.1.		Ed	When the vehicle connector is inserted into the vehicle inlet, the general vehicle design shall automatically start some function trigger devices to enable vehicle fall into a non-driving state by means of interlocking or other control measures.	Please replace by a better title and text: **Proximity function PP** See **IEC61851-1** 9.18~~.1~~ proximity function means, electrical or mechanical, in a vehicle coupler to indicate the presence of the vehicle connector to the vehicle **R100** If the on-board RESS can be externally charged by the user, vehicle movement by its own propulsion system shall be impossible as long as the connector of the external electric power supply is physically connected to the vehicle inlet. **ISO 6469-2** 5.2 Connection of the vehicle to an off-board electric power supply If the on-board RESS of the vehicle propulsion system can be externally charged by the user, vehicle movement by its own propulsion system shall be impossible as long as the vehicle is physically connected to the off-board electric power supply (e.g. mains, off-board charger). This requirement does not refer to voltage class A auxiliary electric systems.	CN will revise the text in accordance with the proposed definitions ~~To be discussed~~
181	CH 38	1637	BB.3.3		Ed	After energy is transferred to low voltage supply power circuit by off-board charger, EV vehicle control unit determines whether vehicle interface is properly connected by voltage measurement of detecting point 2.	After energy is transferred to low voltage supply power circuit by off-board charger, EV vehicle control unit determines whether vehicle ~~coupler~~ is properly connected by voltage measurement of detecting point 2.	Accepted ~~to be confirmed by CN~~
182	NO18	1678-	BB.3.7.2		Te	What "extreme conditions"?	The clause should possibly distinguish the most plausible	~~To be discussed~~

附件 4.IEC 61851-24 會議決議修正內容(1/3)

Date	Document	Project Nr.
2013-03-29	69/223/CDV	IEC 61851-24 Ed. 1

National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
1 CH 1	89	FOREWORD		Ed	International Standard IEC 61851-23 has been prepared by IEC technical committee 69: Electric road vehicles and electric industrial trucks.	Please correct the number of the Part International Standard IEC 61851-24 has been prepared by IEC technical committee 69: Electric road vehicles and electric industrial trucks.	Accepted
2 JP1	153	1		Ed	Correction for clarification	Change the last sentence as follows: Annexes A ... specific to d.c. EV charging systems…	Accepted
3 CH 2	183	3		Ed	For the purpose of this document, the terms and definitions given in IEC 60050-482, as well as Part 1 and Part 23 of this standard, and the following apply. IEC 60050 Part 482: **Primary and secondary cells and batteries**	For the purpose of this document, the terms and definitions given in IEC 60050, as well as Part 1 and Part 23 of this standard, and the following apply.	Accepted
4 CH 3	186	3	3.1	Ed	digital communication digitally encoded information exchanged between a d.c. EV charging station and an EV, as well as the method by which it is exchanged.	Please clarify Reference: 15118-1 3.28 High Level Communication bidirectional digital communication using protocol and messages specified in ISO/IEC 15118-2 and physical and data link layer specified in ISO/IEC 15118-3. NOTE High-level communication in ISO/IEC 15118 is compliant with the term **digital communication** in SAE J1772/2836/2847/2931. Every sentence in which the term "digital communication" is used must be checked and revised individually whether the use of the term is correct. This comment alone leads to more then 48 comments	No change The specific definition for this standard.
5 CH 4		3	3.1	Ed	Definition of xxx is missing DCCCU d.c. charging control unit		See JP2
6 CH 5		3	3.1	Ed	Definition of xxx is missing VCCU vehicle charging control unit		See JP3

Page 1 of 7

National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
7 CH 6		3	3.1	Ed	Definition of xxx is missing ECU		Change "vehicle ECU" in Figure 1 to "controller."
8 ES 1	210	5	1	Editorial	Mention of a specific trademarked PLC should not be in the main specification, instead it should be in the annex C.	Change "Homeplug Green Phy" to "Power Line Communication (PLC)"	Not accepted. CAN is also the trademark.
9 JP2	216	7	Figure 1	Ed	Change of term according to Part 23.	DCCC~~U~~F (d.c. charging control ~~unit~~ function)	Accepted
10 JP3	216	7	Figure 1	Ed	Change of term according to Part 23.	VCC~~U~~F (vehicle charging ~~unit~~ function)	Accepted
11 JP4	236	7	Table 1	Ed	Change of term according to Part 23.	("e" row) 6.4.3.111 user initiated ~~charge termination~~ shutdown	Accepted
12 CH 7	236		Table 1	Ed	Definition of xxx is missing CCC Current request for the controlled current charging system		Unnecessary. Defined in Part 23.
13 CH 8	236		Table 1	Ed	Definition of xxx is missing CVC Voltage request for the controlled voltage charging system		Unnecessary. Defined in Part 23.
14 CH 9	236		Table 1	Te	Definition of xxx is missing EVSE The abbreviation EVSE is used more than 17 times. The abbreviation EVSE is so general and comprehensive that it can not be used for the definition and/or description of individual parts. This leads to fundamental misunderstandings. The abbreviation is under consideration by TC69 because the abbreviation leads also in the document 61851-1 to big confusions.	Every sentence in which the abbreviation EVSE is used must be checked and revised individually whether the use of the abbreviation is correct. This comment alone leads to much more then 17 comments.	Definition is unnecessary. Defined in Part 1 Ed. 2.
15 CA1	236		Table 1	Technical	"b-1/Communication protocol /Exchange of software version of charging system" COMMENT: software versions would differ for eaoh of the two oommunication protocols in this standard. Need to specify which protocol they pertain to.	b-1/Communication protocol /Exchange of the protocol type and software version of a charging system	Not accepted, but add "a" charging system. (The meaning of comment should be explained.)
16 US-1	236		Table 1	Technical	"b-1/Communication protocol /Exchange of software version of charging system" COMMENT: software versions would differ for each of the two communication protocols in this standard. Need to specify which protocol they pertain to.	b-1/Communication protocol /Exchange of the protocol type and software version of a charging system	See CA1
17 JP5		Annexes A, B & C	title	Ed	Correction for clarification	Digital communication for control of d.c. EV charging system A/B/C	Accepted

Page 2 of 7

附件 4　IEC 61851-24 會議決議修正內容(2/3)

National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
18 NO1		Annex A		Ge	Are there any normative references that can be included for System A?	Include reference to source document or provide accurate timing diagram for COM.	Accepted. Refer to JIS/TSD0007 or CHAdeMO specification.
19 JP6	246	A.1		Ed	Change of wording in line with the scope.	Change the 1st sentence as follows: This annex shows the specification of ~~d.c. charging control~~ digital communication for control of the d.c. EV charging station…	Accepted
20 JP7	251	A.2	Table A.1 (1 of 2)	Ed	Change of term according to Part 23.	(3rd row) Wake up of DCC~~U~~CF and VCC~~U~~F	Accepted
21 CH 10	254		Table A.1		Wake up of DCCU and VCCU	Please correct DCCCU Wake up of DCCCU and VCCU	See JP7
22 JP8	255	A.2	Table A.1 (1 of 2)	Ed	Change of parameter according to Table A.2. (See JP20)	Change the parameter from vehicle (5th row/Handshaking/ DC-B1 → DC-B2) as follows: ~~Total battery~~ Rated capacity of battery	Accepted
23 JP9	255	A.2	Table A.1 (1 of 2)	Ed	Change of parameter according to Table A.2.	Delete the following parameter from vehicle (5th row/Handshaking/ DC-B1 → DC-B2): - Maximum voltage limit	Accepted
24 JP10	255	A.2	Table A.1 (1 of 2)	Ed	Change of term according to Part 23.	Change the parameter from vehicle (5th row/Handshaking/ DC-B1 → DC-B2) as follows: - Maximum ~~permissible~~ charging time	Accepted
25 JP11	255	A.2	Table A.1 (1 of 2)	Ed	Add a parameter according to Table A.2.	Add the following parameter from d.c. EV charging station (5th row/Handshaking/ DC-B1 →DC-B2): - Battery incompatibility	Accepted
26 JP12	255	A.2	Table A.1, Table A.2	Ed	Change of term according to Part 23.	Delete hyphen, e.g. Vehicle-Connector-Lock => Vehicle connector lock	Accepted
27 JP13	255	A.2	Table A.1 (1 of 2)	Ed	Add a parameter according to Table A.2.	Change the parameter from d.c. EV charging station (7th row/Charge preparation/ Isolation test for d.c. power line) : None => Charging system malfunction	Accepted
28 JP14		A.2	Table A.1 (1 of 2)	Ed	Add parameters according to Table A.2.	Add the following parameters from d.c. EV charging station (10th row; Energy transfer/ charging by current demand): - Station malfunction - Charging system malfunction	Accepted
29 JP15		A.2	Table A.1 (1 of 2)	Ed	Add parameters according to Table A.2.	Add the following parameters from vehicle (10th row; Energy transfer/	Accepted

National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
						Charging by current demand): - Charging system fault - Vehicle shift lever position	
30 JP16	260	A.2	Table A.1 (2 of 2)	Ed	Add parameter according to Table A.2.	Add the following parameter from d.c. EV charging station (1st row; Shutdown/DC-B'1): - Charging system malfunction	Accepted
31 JP17	260	A.2	Table A.1 (2 of 2)	Ed	Correction of wording	Change as follows (6th row; Shutdown/DC-B'4): ~~Finalize the data~~ Terminate the digital communication	Accepted
32 NL1	265->	A3	A1 sequence diagram	General	The sequence diagram shows the communication for d.c. charging control during a normal situation without any errors (system A). If the handshake fails at a certain moment or if unexpected values are exchanged it is not clear how the user is informed or how the communication in the sequence diagram support those error situations.	It is recommended to define the communication in case of an error situation and the information provided to the user: Examples are: • Insulation error • Temperature error • Cell voltage error The user should be informed about the reason that the charging process has been aborted. The sequence diagram should show what will happen if an error occurs during the communication. Examples are show message on display or jump to the first action of the communication for a new attempt to charge the vehicle.	Not accepted May be discussed for Ed. 2.
33 JP18	276	A.4	Table A.2	Ed	Correction for clarification	Change as follows: - Title of column: Resolution (range) - Put the range in parentheses	Accepted
34 JP19	276	A.3	Table A.2 (1 of 4)	Ed	Correction of error	Change as follows (1st, 2nd and 6th rows): 100ms ~~or less~~	Accepted
35 JP20	276	A.3	Table A.2 (1 of 4)	Ed	Correction of error, and for clarification	Change the 2nd row (Total capacity of battery) as follows: Parameter: ~~Total~~ Rated capacity of battery Content: Rated capacity of battery CAN ID: ~~H'100.1,H'100.2~~ H'101.5, H'101.6 Unit: kWh ~~or %~~ Resolution: ~~1kWh/bit or 1%~~ 0,1 kWh/bit	Accepted
36 JP21	276	A.3	Table A.2 (1 of 4)	Ed	Correction of error	Change the 6th row (Estimated charging time) as follows: Unit: min ~~or s~~	Accepted
37 JP22	276	A.4	Table A.2 (1 of 4)	Ed	Correction of error	Add "b-2" to the column Table 1 of the 1st row (Maximum battery voltage) .	Accepted

附件 4　IEC 61851-24 會議決議修正內容(3/3)

National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
38 JP23	276	A.4	Table A.2 (1 of 4)	Ed	Correction for clarification	Change the resolution of the 3rd row (Constant of charging rate indication) as follows: 1 %/bit, 100 % (fixed)	Accepted
39 JP24	280	A.4	Table A.2 (3 of 4)	Ed	Correction of error	Change the resolution of the 6th row (Control protocol number) as follows: 1 / bit, Ver. 0 to 255	Accepted
40 NO2	280	Annex A	Table A.2	Te	Control protocol number.	Somewhere in the Annex, a specification of the current protocol version would need to be noted.	Protocol version is unnecessary for this standard.
41 JP25	291	A.5.1		Ge	Unrelated sentence should be deleted.	Delete the following sentence: The d.c. EV charging station and vehicle shall control the software version of charging control.	Accepted
42 JP26	292	A.5.1		Ge	Requirement for vehicle should be deleted.	Delete the following sentence: Control parameters for charging such as the setting point of charging current shall be transmitted from the vehicle to the d.c. EV charging station via communication circuit.	Accepted
43 JP27	319	A.5.3		Ed	Correction for clarification	Change the 1st sentence as follows: Data frames shall be transmitted in ascending order of ID number specified in Table A.2.	Accepted
44 NO3		Annex B		Ge	Are there any normative references to System B? It will be impossible to make a working half of a fast charging system based only on the information provided in Annex B.	Include reference to source document or include a complete CAN signal catalogue and an accurate timing diagram for COM.	~~To be discussed~~ CN will respond to this comment by April 30.
45 NL2	357-> 368	B2	B1 Sequence diagram Table B1	General	In the same documents for system B parameters are defined for error situations like battery temperature, insulation and cell voltage e.g. If there is no description for those situations, different implementations of the standard will be implemented. This should be avoided.	It is recommended to define the communication in case of an error situation and the information provided to the user: Examples are: • Insulation error • Temperature error • Cell voltage error The user should be informed about the reason that the charging process has been aborted. The sequence diagram should show what will happen if an error occurs during the communicaton.Examples are: show message on display or jump to the first action of the communication for a new attempt to charge the vehicle.	~~To be discussed~~ See NL1
46	374	Annex B	Table B.2	Te	BMS communication protocol	Somewhere in the Annex, a	CN will respond to this

National Committee	Line number	Clause/ Subclause	Paragraph Figure/ Table	Type of comment	COMMENTS	Proposed change	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
NO4					version	specification of the current protocol version would need to be noted.	comment by April 30.~~To be discussed~~
47 JP28	382	B.4	Table B.4	Ed	The meaning of "Maximum cell voltage and corresponding battery pack number" (9th row; Battery charge state 1) is unclear. How to indicate this parameter, e.g. x V/No.1, xx V/No.2..?	To be checked	CN will respond to this comment by April 30.~~To be discussed~~
48 JP29	395	B.5	Table B.7	Te	3 transmission rates should cause incompatibility between the vehicle and the charging station. Only the recommended rate (250) should be defined.	Change the transmission rate as follows: ~~50, 125,~~ 250~~(250 is recommended)~~	CN will respond to this comment by April 30.~~To be discussed~~
49 CA2	408, 409		C.1	General	SAE J2836/1 and J2847/1 are not related to DC Charging, only Vehicle to Utility communication	Remove J2836/1 and J2847/1 references	~~To be discussed~~Accepted
50 US-2	408, 409		C.1	General	SAE J2836/1 and J2847/1 are not related to DC Charging, only Vehicle to Utility communication	Remove J2836/1 and J2847/1 references	Accepted~~To be discussed~~
51 NO5	411-419	Annex C		Ge	Reconsider the importance to have the "incorporated features" included.	Delete lines 411 through 419.	~~To be discussed~~Noted Information list is pertinent
52 CA3	423		C.2	Editorial	"Additional parameters are defined in ISO/IEC 15118-2."	Specify exactly 15118-2's paragraphs where these additional parameters are defined, and what they are (additional ones)	~~To be discussed~~See revised draft.
53 US-3	423		C.2	Editorial	"Additional parameters are defined in ISO/IEC 15118-2."	Specify exactly 15118-2's paragraphs where these additional parameters are defined. and what they are (additional ones)	~~To be discussed~~ See revised draft.
54 CH 11	368		Table B.1		Definition of xxx is missing BMS Battery Management System	BMS is contradictory to ISO definition ISO_TR_8713_2012 2.8 battery control unit BCU electronic device that controls or manages or detects or calculates electric and thermal functions of the battery system and that provides communication between the battery system and other vehicle controllers	CN will respond to this comment by April 30.~~To be discussed~~
55 CH 12	413		C.1		• Robust PLC-based communications The use of PLC technology leads to recurring license and patent costs. These costs also burden the high settlement costs. PLC is an outdated technology and needs to be replaced in the foreseeable future.	It is highly recommended to use a further orientated technology as can or lin. The PLC must be deleted completely PLC and Robust is a contradiction in itself	Not accepted Annex C defines system using PLC.