STRATEGIC BUSINESS PLAN (SBP)

IEC/TC OR SC:	SECRETARIAT:	DATE:

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF TC

To provide standards for all secondary cells and batteries related to product (dimension and performance), safety (including marking and labelling), testing, and safe application (installation, maintenance, operation) irrespective of type or application or configuration (hybrid, stand alone, module).

Main applications are:

- automotive (car, motorcycle, truck) for starting, lighting, ignition, start/stop
- industrial (telecom, UPS, reliable power supply, emergency lighting and traction)
- electrical vehicles (full electrical vehicle, hybrid car, light electrical vehicle, bicycle)
- portable (computer, tool, lamp)
- onboard batteries (aircraft, railway, ship, motor-home)
- energy storage (renewable, on- grid and off-grid).

All electrochemical technologies are considered such as Lead acid, Nickel based (NiMH, NiCd) and Lithium based. New battery technologies and chemistries such as flow batteries and high temperature batteries (e.g. sodium sulfur, sodium nickel chloride) are included.

The work is shared between TC 21 and SC 21A according to technologies and applications.

For standardization of applications and system integration, TC 21 is cooperating with the responsible Committees, TC 8, TC 9, TC 34, TC 69, TC 82, TC 105, TC 116, TC 120 and ISO TC22/SC21.

B. MANAGEMENT STRUCTURE OF THE TC

The work of the Committee is shared between TC 21 and SC 21A.

SC 21A is focused on standards regarding product specifications and test requirements such as dimensions, markings, performance tests and safety tests for sealed and vented Ni-based and Lithium based secondary cells and batteries.

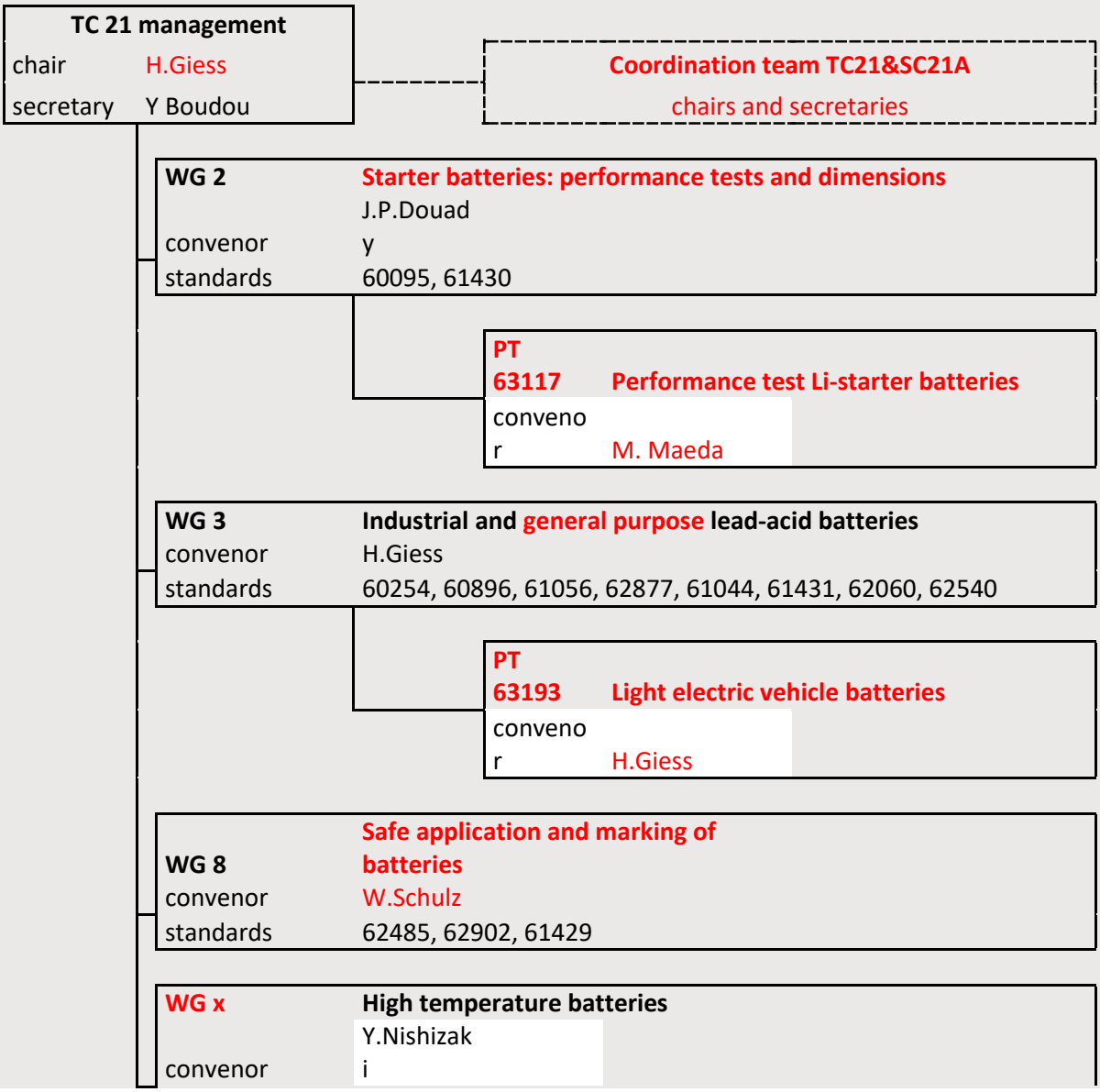
SC21A is also focused on standards for aircraft batteries.

~~The SC21A different Working Groups are listed in the SC21A SBP~~.

TC 21 is focused on standards regarding product specifications and test requirements such as dimensions, markings, performance tests and safety tests for lead acid batteries and new technologies such as flow batteries and high temperature batteries (e.g. sodium sulfur, sodium nickel chloride).
TC 21 is also focused on safety standards such as installation, maintenance and operation for various applications (e.g. renewable energy, ~~aircraft~~, Electrical vehicles, etc...) for all secondary batteries.

The WG, PT, MT and JWG of TC 21 and SC 21A are organized as follows:

Structure TC 21



standards	62984

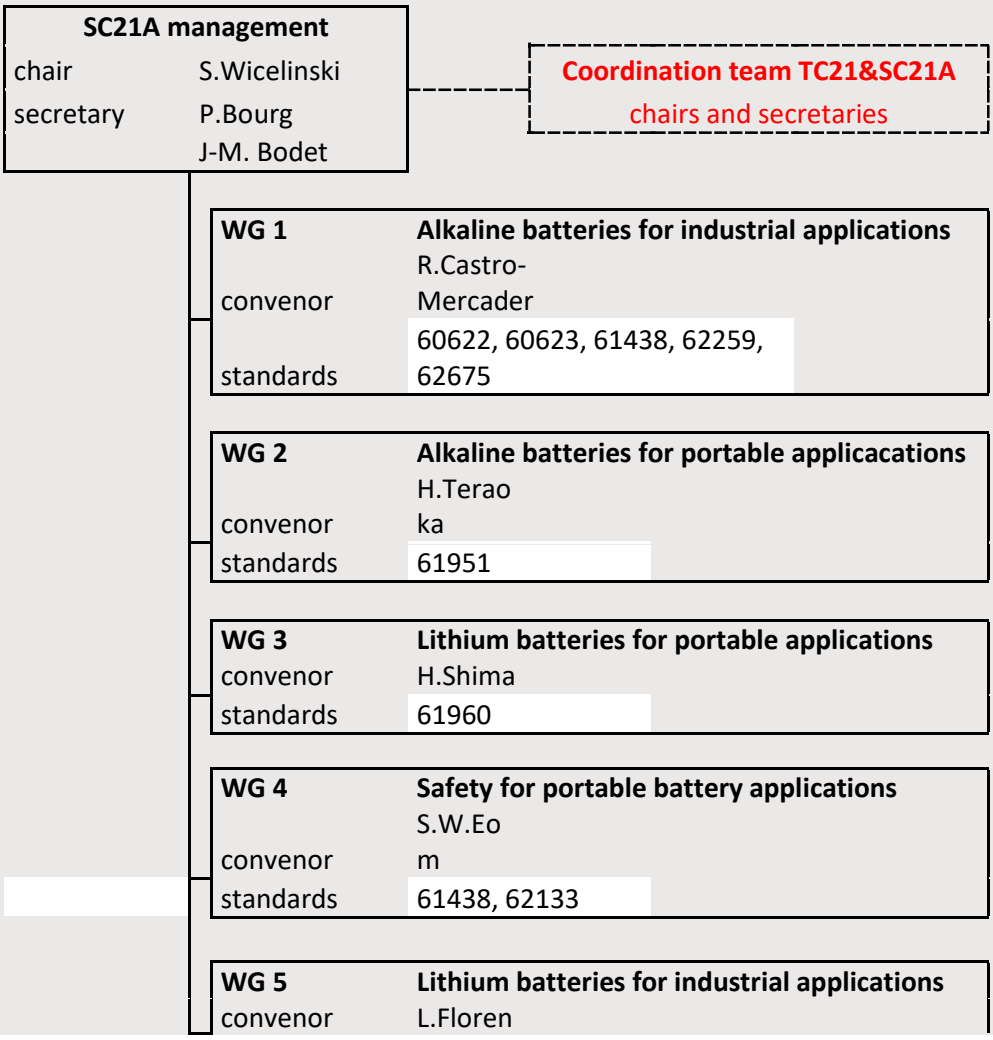
JWG 7	**Flow batteries for stationary applications**
convenor	F.Ueno
standards	62932

JWG 82 Pb-Ni	**Lead acid and Ni-based batt. for automotive appl.**
convenor	M.Tsushima
standards	61982

JWG 69 Li	**Lithium batteries for automotive applications**
convenor	Y.Nitta
standards	62660

JWG 82	**Batteries for renewable energy storage**
convenor	H.Giess
standards	61427

Structure SC 21A



	ce
standards	62619, 62620

PT 63057	**safety of Li- starter batteries**
convenor :	M.Maeda

WG 6	**Enviromental issues of alkaline and Li-batteries**
convenor	H.Terao
standards	ka

WG x	**Aircraft batteries**
convenor	P.Bourg
standards	60952

C. BUSINESS ENVIRONMENT

The key areas of standardization activities relate to:

- SLI (Starting - Lightning - Ignition) also named “Starter” Batteries,

  Lead Acid Starter Battery evolution is tied closely to the technical and commercial needs of the Car industry with weight and cost savings, material recycling issues, frequent and more severe discharge cycles being the key development drivers. Lithium batteries are started to penetrate this market.

- hybrid/electric vehicle cells,

  Dominated by Lithium batteries, a standardisation of dimensions is not really achieved.

- traction batteries,

  The segment of Motive Power (or traction) Batteries is more stable both in terms of product design and applications. Their development are to a certain extend prisoners of a large installed base of material handling vehicles and equipment where size and shape compatibility does not allow to initiate radical product renewals. This fact is reflected also in Standard work defining mostly outside dimensions and battery terminals. Lithium batteries are started to penetrate this market and therefore a standard for safety applications is under work.

- stationary Batteries of vented and valve regulated (VRLA) type

  Lead Acid Stationary Batteries are still the preferred storage system to assure decentralized electric power in emergencies. Their evolutionary drive is related to the needs of the telecommunication and uninterruptible power supply industry with both applications having now fully embraced the VRLA technology and concentrating of cost reduction issues, increased ambient temperature by reduced air conditioning and increased cycle ability due to increased number of power failures

- renewable and energy storage

  Applications for Photovoltaic Energy storage is still growing but strongly tributary from political issues such as Third World development funds, alternative rural electrification policies and competing technical solutions.

  Energy storage for time shift, peak shaving and grid stabilisation becomes important. Test methods were worked out. Standards for safety in applications, especially for Lithium batteries, are ongoing.

In these market segments, customer and technical innovation driven product renewal continuously entail new standards for dimensions, interfaces, test methods and safety requirements.

Additional issues to be taken also in consideration are increased regulatory influences concerning the safety of batteries as voltage sources, marking and the continued drive to outlaw heavy metals i.e. Lead and Cadmium, from consumer products.

D. MARKET DEMAND

The main customers of standards developed by the TC 21 and SC 21A are:

-manufacturers of batteries

-end users (e.g. telecom, consumers, grid operators, ...)

-manufacturers of equipment (e.g. tool manufacturers, UPS manufacturers, ...)

-manufacturers of cars, trucks and vehicles, ships, aircrafts ...(OE)

-designers and installers of battery and battery systems

-test institutes specially for safety and performance tests

-authorities for implementation into regulation

Due to the large list of customers it is important that to integrate those customers into the standardization process. In addition it is important that IEC is promoting TC21 standards to avoid a duplication of the work by IEC or ISO Technical Committees.

E. TRENDS IN TECHNOLOGY AND IN THE MARKET

In lead Acid Batteries the continued conversion of the designs to Valve Regulated operation is noticeable whenever the operational benefits make the design also commercially attractive.

As alternative to EV's and Hybrid EV's with reduced CO_2 emissions, cars with start/stop or optimized electric net are on the market with increasing share, which require AGM or optimized flooded automotive batteries. These designs are dominating the market for automotive batteries in the future.

Stationary Lead Acid Batteries are fully VRLA oriented and their technological development trend is aimed toward further improvements in volumetric energy density and operational ruggedness, in combination with continuous price pressure, which seems not always to be compatible.

Portable lead Acid Batteries, although cost effective and giving good performances, are under heavy technological pressure from non-acidic electrolyte secondary battery technologies.

New battery technology such as “flow battery” and “high temperature battery” are started to be implemented in the market and therefore standardisation process is started.

System aspect of energy storage with integration of secondary batteries becomes more important so that standardization should not be carried out for components only but also for system aspect and integration.

-in general the renewable energy system will need storage system for increasing the energy efficiency, and the shift of energy from generation to demand period.

-energy storage, in decentralised grid in combination with reduced reserve power (less power plants), will ensure an increased peak shaving and grid stabilisation capability. This is not covered by renewable energy systems. The use of energy storage sytems for residentiel is increasing and therfore the standardisation of safety aspects is under work.

LVDC: The IEC work on the project for Low Voltage Direct Current Installation, could have significant consequences on the battery business.

There is a continuous growth in portable consumer devices using various types of rechargeable lithium and nickel systems; with the biggest growth involving devices powered by lithium ion batteries. Several billion lithium ion cells and batteries are manufactured each year for an ever increasing range of applications.

F. SYSTEMS APPROACH ASPECTS (REFERENCE - AC/33/2013)

TC 21 has a long experience with the system approach :

-working out battery standard to be integrated into equipment/vehicle

-cooperation with other TCs of IEC and ISO for working out equipment/vehicle/system standards

See the table as follows:

System Committees (TC21/SC21A as a supplier of standards)	TC 9	Electrical equipment and systems for railways
	TC 18	Electrical installations of ships and of mobile and fixed offshore units
	TC 22	Power electronic systems and equipment
	SC 34D	Luminaires
	TC 61	Safety of household and similar electrical appliances
	TC 64	Electrical installations and protection against electric shock
	TC 69	Electric road vehicles and electric industrial trucks
	TC 82	Solar photovoltaic energy systems
	TC 88	Wind turbines
	TC 108	Safety of electronic equipment within the field of audio/video, information technology and communication technology
	TC 116	Safety of motor-operated electric tools
	TC 120	Electric energy storage system
	ISO TC 23	Tractors and machinery for agriculture and forestry
	ISO TC 20 / SC 1	Aerospace electrical requirements
	ISO TC 22 / SC 21	Electrically propelled road vehicles
	ISO TC 110	Industrial trucks
	ISO TC 207/SC 3	Environmental labelling
System Committees (TC21/SC21A as a customer of standards)	TC 1	Terminology
	SC 3C	Graphical symbols for use on equipment
	TC 56	Dependability

	TC 85	Measuring equipment for electrical and electromagnetic quantities
	TC 82	Solar photovoltaic energy systems
	TC 120	Electric energy storage system
Other Committees (horizontal committees that produce standards used by TC21/SC21A)	TC 89	Fire hazard testing
	TC 104	Environmental conditions, classification and methods of test
	ISO TC 61/SC 1	Plastics
Other Committees (committees that produce standards similar to TC21/SC21A to be in liaison with for technical consistency)	TC 35	Primary cells and batteries
	TC 105	Fuel cells

The specific standards for batteries and cells must stay on the responsibilities of IEC TC 21/SC 21A due to their knowledge of the experts, to prevent irrelevant requirements and conflicts with other applications.

The systems work needed for Energy storage system is already covered by TC 120 and SyC on Smart energy.

The integration of TC 21 into the work of TC 120 is necessary.

TC 8 in charge of the connection of the storage system to the grid must keep informed TC 21 about their work when the storage is ensured by secondary batteries.

G. CONFORMITY ASSESSMENT

Most of our standards include test specifications, reproducible test requirements, and test methods.

For example, IEC 62133 is using for regulations in some countries (Japan, Korea, India, Vietnam, Thailand, New Zealand, Taiwan and China (in case of China some parts has been used for their regulation)" and IEC 62619 (FDIS stage) will be used for regulations in some countries in the future."
IEC61951-1, IEC61951-2 and IEC61960 are also using for regulations in some countries.

See IECEE: http://www.iecee.org/dyn/www/f?p=106:48:0

H. HORIZONTAL ISSUES

Safety of the cells or the batteries as product is addressed by product standards depending of the technology (LA, NiCd, NiMh, Lithium, flow and high temperature).

Regarding installation, IEC 62485 series provides requirements on safety aspects associated with the erection, use, inspection, maintenance and disposal. If the battery is integrated in a product or a system, the standards or the “product or system” may have complementary safety requirements.

Marking is another important horizontal issue. The colour-coded labels are destined to facilitate the product sorting independently of country of origin and country of recycling. Hence the marking reduce the risk of severe fire and explosion hazards during the battery recycling when different battery chemistries are present in the process stream.

I. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
Finalise new projects and update existing battery standards for automotive applications	Circulate quickly the FDIS prepared by WG2 as soon as available	2019
Battery standards covering new technologies	Finalise present standardisation on “Flow batteries”	2019
Battery standards covering new technologies	Finalise present standardisation on “High temperature batteries”	2019
Work out safety standards (product and operation) for lithium batteries in all used applications	Increase the number of meetings for covering the important number of comments	2019