EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 356

DATE: JANUARY 1, 2017

PROJECT MP0336

The following classification changes will be effected by this Notice of Changes:

Action*	**Subclass**	**Group(s)**
Title wording change:	H01M	8/18
	H01M	8/20
Modified Definitions:	H01M	8/00

No other subclasses/groups are impacted by this Notice of Changes.

This Notice of Changes includes the following *[Check the ones included]:*

1. CLASSIFICATION SCHEME CHANGES
   - ☒ A. New, Modified or Deleted Group(s)
   - ☐ B. New, Modified or Deleted Warning Notice(s)
   - ☐ C. New, Modified or Deleted Note(s)
   - ☐ D. New, Modified or Deleted Guidance Heading(s)
2. DEFINITIONS (New or Modified)
   - ☒ A. DEFINITIONS (Full definition template)
   - ☒ B. DEFINITIONS (Definitions Quick Fix)
3. ☐ REVISION CONCORDANCE LIST (RCL)
4. ☒ CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)
5. ☐ CROSS-REFERENCE LIST (CRL)

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1. CLASSIFICATION SCHEME CHANGES

A. New, Modified or Deleted Group(s)

SUBCLASS H01M - PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL INTO ELECTRICAL ENERGY (electrochemical processes or apparatus in general C25; semiconductor or other solid state devices for converting light or heat into electrical energy H01L, e.g. H01L 31/00, H01L 35/00, H01L 37/00)

Type*	Symbol	Indent Level Number of dots (e.g. 0, 1, 2)	Title (new or modified) "CPC only" text should normally be enclosed in {curly brackets}**	Transferred to#
M	H01M8/18	1	Regenerative fuel cells, e.g. redox flow batteries or secondary fuel cells	
M	H01M8/20	1	Indirect fuel cells, e.g. fuel cells with redox couple being irreversible (H01M8/18 takes precedence)	

*N = new entries where reclassification into entries is involved; C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; E= existing entries with enlarged file scope, which receive documents from C or D entries, e.g. when a limiting reference is removed from the entry title; M = entries with no change to the file scope (no reclassification); D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed; U = entries that are unchanged.

NOTES:

- **No {curly brackets} are used for titles in CPC only subclasses, e.g. C12Y, A23Y; 2000 series symbol titles of groups found at the end of schemes (orthogonal codes); or the Y section titles. The {curly brackets} are used for 2000 series symbol titles found interspersed throughout the main trunk schemes (breakdown codes).
- For U groups, the minimum requirement is to include the U group located immediately prior to the N group or N group array, in order to show the N group hierarchy and improve the readability and understanding of the scheme. Always include the symbol, indent level and title of the U group in the table above.
- All entry types should be included in the scheme changes table above for better understanding of the overall scheme change picture. Symbol, indent level, and title are required for all types except "D" which requires only a symbol.
- #"Transferred to" column must be completed for all C, D, F, and Q type entries. F groups will be deleted once reclassification is completed.
- When multiple symbols are included in the "Transferred to" column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: "<administrative transfer to XX>" or "<administrative transfer to XX and YY simultaneously>" when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be "invention information", unless otherwise indicated, and to 2000 series groups is assumed to be "additional information".

2. A. DEFINITIONS (modified)

H01M8/00

DELETE: Existing Definition statement and REPLACE with the Definition statement below

Definition statement

This place covers:

Fuel cells or their stacks that can include:

- Collectors, separators, interconnectors, gas diffusion layer.
- Sealing or frame, its processes and materials.
- Membranes, matrices holding electrolytes solutions or melts.
- Means for temperature measurement or control, for reactant control or regulation.
- Methods for controlling fuel cells or fuel cell systems with detection and regulation of variables.
- Combination of fuel cells with means for production of reactants (e.g. with a reformer) or for treatment of residues.
- Types of fuel cell: with aqueous electrolytes (e.g. alkaline fuel cells), with solid electrolyte at low temperature (below 200-250°C) (e.g. polymer electrolyte fuel cells), with solid electrolyte at high temperature (e.g. solid oxide fuel cells), with molten electrolyte, biofuel cells/biochemical fuel cells comprising enzymes as catalysts.
- Manufacture thereof.

DELETE: Relationships with other classification places.

Relationships with other classification places

Hydrogen production is classified in C01B3/00

DELETE: Existing Special rules of classification and REPLACE with Special rules of classification below.

Special rules of classification

- Electrodes for fuel cells are classified in H01M4/86- H01M4/98.
- Membranes for immobilising electrolyte solutions or electrolyte melts are classified in H01M8/0289-H01M8/0295 and membranes used as support or mixed with polymer electrolytes are classified in H01M8/1058-H01M8/1062.
- Means for control of temperature, pressure, reactant, and electrolyte are classified in subgroups H01M8/04007-H01M8/04291 and methods for controlling fuel cells or fuel cell systems are classified in H01M8/04298-H01M8/04992.
- Reactant in a fuel cell is only what is delivered immediately to the fuel cell, e.g. liquid methanol is evaporated to gaseous methanol that is used then in a fuel cell; only H01M8/04089 will be used.
- Means for preventing methanol crossover (gaseous or liquid methanol) are classified in H01M8/04197.
- H01M8/04119 concerns the humidification in the fuel cell.
- H01M8/04291 is used for water management of the fuel cell system.

- Rules for H01M8/04298-H01M8/04992.
- When the claims refer to control and/or process/management of the fuel cell, then group symbols in H01M8/04298-H01M8/04992 should be given and it's the description and claims (if they are clear) that are classified. Every variable really disclosed/claimed and not just listed as part of a whole list should be classified.
- If only general details are given in the detected and/or regulated variables, then the upper groups H01M8/04313 and/or H01M8/04694 should be given.
- When control/management is detailed only in the description, then classification symbols from H01M8/04298-H01M4/04992 should be given as additional symbols.
- When the control of a fuel cell concerns the detection/measurement of environmental variables (e.g. temperature, pressure, humidity of the environment), classification in the group H01M8/0432 should be given if it concerns the detection of ambient temperature or in the group H01M8/0438 if it concerns ambient pressure.
- In a system with means for production of reactants or treatment of reactants or residues, if the fuel cell aspect is not the invention (only

mentioned in the description or the last (sub)claim), the document should only be classified with an additional symbol H01M8/06.

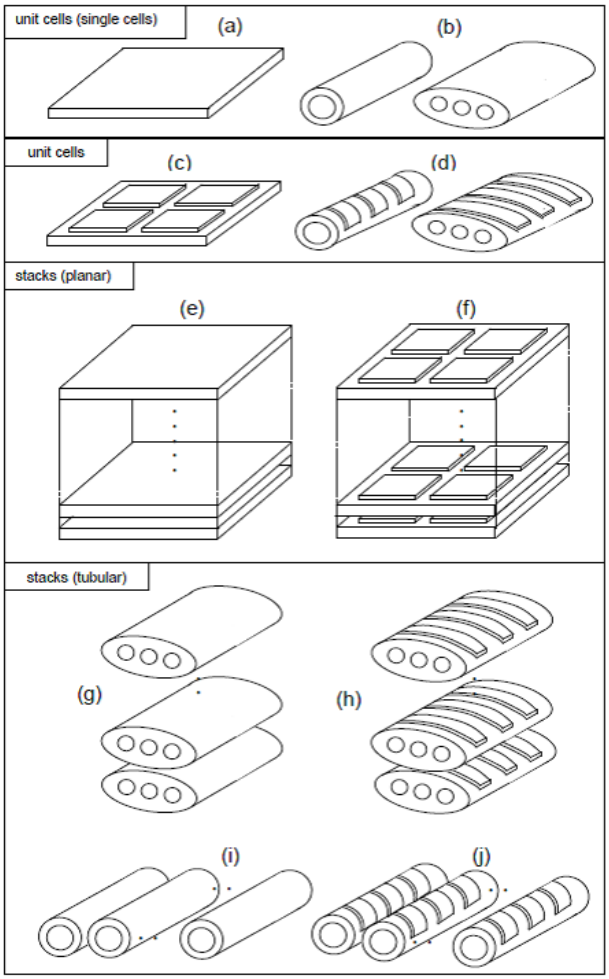
- If the fuel cell in combination with the other means is the invention, then it is classified as invention in the subgroups under H01M8/06.
- H01M8/188 is only allocated for redox flow battery or secondary fuel cells, the redox couple being reversible or regenerated.
- H01M8/20 is only used for fuel cells with redox couple being irreversible.
- H01M8/24 subgroups are used when the invention concerns the stack of fuel cells as such.
- The symbols H01M8/083, H01M8/086, H01M2008/1095, H01M2008/128, H01M2008/1293, and H01M2008/147 should be used for further classification to indicate the type of fuel cell.
- Figures (c), (d) correspond to the group H01M 8/2428, figures (e), (f) correspond to the group H01M 8/2432, and figures (g), (h), (i), (j) correspond to the group H01M 8/243.
- Moreover, figure (f) also corresponds to the group H01M 8/2428 and figures (h), (j) also correspond to the group H01M 8/2428 if the emphasis of the invention is on the arrangement of the unit cells on a support.

DELETE: The existing Glossary of terms and REPLACE with the Glossary of terms below

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Porous separator	gas diffusion layer
Separator	bipolar plate, interconnector
Fuel cell	Electrochemical generator wherein the reactants are supplied from outside
Single cell	Fuel cell entity, containing one single anode, one single electrolyte and one single cathode [see figure: (a), (b)]
Unit cell	Structural component, containing one or more single cells [see figure: (a), (b), (c), (d)]
Stack	Group of components, where the components (unit cells) are arranged in vertical direction [see figure: (e), (f), (g), (h)] and/or horizontal direction [see figure: (i), (j)]
Battery	Device comprising one or more electrochemical cells

Redox flow battery	Reversible fuel cell in which all electroactive components are dissolved in the electrolyte with a flow circulation system of the electrolyte
Redox fuel cell, indirect fuel cell	Fuel cell where the oxidant or fuel is not reacted directly at the electrode but with the reduced/oxidised form of a redox couple and the oxidised/reduced species are fed to cathode/anode Figure: 

INSERT: New Synonyms and Keywords section

Synonyms and Keywords

In patent documents the following abbreviations are often used:

PEFC	Polymer Electrolyte Fuel Cell
PEMFC	Proton Exchange Membrane Fuel Cell or Polymer Electrolyte Membrane Fuel Cell
SOFC	Solid Oxide Fuel Cell
AFC	Alkaline Fuel Cell
MCFC	Molten Carbonate Fuel Cell
DMFC	Direct Methanol Fuel Cell
PAFC	Phosphoric Acid Fuel Cell
MEA	Membrane Electrode Assembly

In patent documents, the following words/expressions are often used as synonyms:

"redox flow battery" and "regenerative fuel cell" and "secondary fuel cell"

2. B. DEFINITIONS QUICK FIX

Symbol	**Location of change** (e.g., section title)	**Existing reference symbol or text**	**Action; New symbol; New text**
H01M8/00	Informative references	Semi-permable membranes	Semi-permeable membranes
H01M8/00	Informative references		Catalysts B01J23/00, B01J25/00, B01J27/00, B01J31/00
H01M8/00	Informative references	Vehicles using power supplied from primary cells, secondary cells pr fuel cells B60L11/18	Electric propulsion using power supplied from fuel cells B60L11/18
H01M8/00	Informative references		Conjoint control of vehicle sub-units of different type including control of fuel cells B60W10/28
H01M8/00	Informative references		Hydrogen; Gaseous mixtures containing hydrogen; Separation of hydrogen from mixtures containing it; Purification of hydrogen C01B3/00
H01M8/00	Informative references		Shaped ceramic products (e.g. for use in solid oxide fuel cells) C04B35/00
H01M8/00	Informative references	Manufacture of ion exchange membrane C08J5/22	Delete
H01M8/00	Informative references		Manufacture of shaped structures of ion-exchange resins C08J5/20
H01M8/00	Informative references		Measuring or testing processes involving enzymes C12Q1/00
H01M8/00	Informative references	Enzyme electrodes in measuring or testing process C12Q1/001	Delete
H01M8/00	Informative references		Diaphragms or spacing elements for electrolytic or electrophoretic process for the production of compounds or non-metals C25B13/00
H01M8/00	Informative references		Diaphragms or spacing elements for electrolytic production, recovery or refining of metals C25C7/04
H01M8/00	Informative references		Electrochemical sensors G01N27/26
H01M8/00	Informative references		Apparatus for testing electric properties G01R31/00
H01M8/00	Informative references		Control of temperature G05D23/00
H01M8/00	Informative references		Electrolytes for electrolytic capacitors H01G9/022
H01M8/00	Informative references		Hybrid capacitors H01G11/00
H01M8/00	Informative references		Semi-conductor or other solid state devices for converting light or heat into electrical energy H01L31/00, H01L35/00, H01L37/00, H01L51/42
H01M8/00	Informative references		Constructional details, or processes of manufacture, of the non-active parts of cells other than fuel cells H01M2/00
H01M8/00	Informative references		Electrically conductive connections H01R

NOTES:

- The table above is used for corrections or modifications to existing definitions, e.g. delete an entire definition or part thereof; propose new wording or modify wording of a section, change the symbol the definition is associated with, change or delete a reference symbol, etc.
- Do not delete (F) symbol definitions.

4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

CPC	**IPC**	**Action***
H01M8/04873	H01M8/04858	UPDATED
H01M8/0488	H01M8/04858	UPDATED
H01M8/04888	H01M8/04858	UPDATED
H01M8/04895	H01M8/04858	UPDATED
H01M8/04902	H01M8/04858	UPDATED
H01M8/0491	H01M8/04858	UPDATED
H01M8/04917	H01M8/04858	UPDATED
H01M8/04925	H01M8/04858	UPDATED
H01M8/04932	H01M8/04858	UPDATED

*Action column:

- For an (N) or (Q) entry, provide an IPC symbol and complete the Action column with "NEW."
- For an existing CPC main trunk entry or indexing entry where the existing IPC symbol needs to be changed, provide an updated IPC symbol and complete the Action column with "UPDATED."
- For a (D) CPC entry or indexing entry complete the Action column with "DELETE." IPC symbol does not need to be included in the IPC column.
- For an (N) 2000 series CPC entry which is positioned within the main trunk scheme (breakdown code) provide an IPC symbol and complete the action column with "NEW".
- For an (N) 2000 series CPC entry positioned at the end of the CPC scheme (orthogonal code), with no IPC equivalent, complete the IPC column with "CPCONLY" and complete the action column with "NEW".

NOTES:

- F symbols are <u>not</u> included in the CICL table above.
- E and M symbols are not included in the CICL table above unless a change to the existing IPC is desired.