

INTERNATIONAL ENERGY AGENCY

**IMPLEMENTING AGREEMENT**  
**FOR A PROGRAMME OF RESEARCH,**  
**DEVELOPMENT AND DEMONSTRATION**  
**ON ADVANCED FUEL CELLS**

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# IMPLEMENTING AGREEMENT

## FOR A PROGRAMME OF RESEARCH, DEVELOPMENT AND DEMONSTRATION ON ADVANCED FUEL CELLS

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# IMPLEMENTING AGREEMENT

## FOR A PROGRAMME OF RESEARCH, DEVELOPMENT AND DEMONSTRATION ON ADVANCED FUEL CELLS

### The Contracting Parties

CONSIDERING that the Contracting Parties, being either governments of International Energy Agency ("Agency") countries, governments of other countries invited by the Governing Board of the Agency to be Contracting Parties, international organizations or parties designated by their respective governments, wish to take part in the establishment and operation of a Programme of Research and Development on Advanced Fuel Cells (the "Programme") as provided in this Agreement;

CONSIDERING that the Contracting Parties which are governments of Agency countries and the governments of Agency countries which have designated Contracting Parties (referred to collectively as the "Governments") have agreed in Article 41 of the Agreement on an International Energy Program (the "I.E.P. Agreement") to undertake national programmes in the areas set out in Article 42 of the I.E.P. Agreement, including energy research and development and agreed in Chapter IV of the Long-Term Co-operation Program, adopted by the Governing Board of the Agency on 30 January, 1976, to undertake co-operative activities including jointly financed programmes and projects in energy research and development;

CONSIDERING that in a meeting of the Governing Board of the Agency on 28 April, 1989 the Governments approved the Programme as a special activity under Article 65 of the I.E.P. Agreement;

CONSIDERING that the Agency has recognized the establishment of the Programme as an important component of international co-operation in the field of advanced fuel cell research and development;

HAVE AGREED as follows:

## Article 1

### OBJECTIVES

- (a) *Scope of Activity.* The Programme to be carried out by the Contracting Parties within the framework of this Agreement shall consist of co-operative research, development, demonstrations and exchanges of information regarding advanced fuel cells.
- (b) *Method of Implementation.* The Contracting Parties shall implement the Programme by undertaking the one or more tasks (the "Task" or "Tasks") each of which will be open to participation by two or more Contracting Parties as provided in Article 2 hereof. The Contracting Parties which participate in a particular Task are, for the purposes of that Task, referred to in this Agreement as "Participants".
- (c) *Task Co-ordination and Co-operation.* The Contracting Parties shall co-operate in co-ordinating the work of the Task and shall endeavour, on the basis of an appropriate sharing of burdens and benefits, to encourage co-operation among Participants engaged in the Tasks with the objective of advancing the state of understanding of all Contracting Parties in the field of advanced fuel cells.

## Article 2

### IDENTIFICATION AND INITIATION OF TASKS

- (a) *Initial Task.* The Contracting Parties identified in Annexes I and II at the time of their respective signatures are the initial Participants in the Tasks established in those Annexes. Other Contracting Parties which wish to participate in them shall communicate to the Executive Director of the Agency an appropriate Notice of Participation.
- (b) *Initiation of Additional Tasks.* Additional Tasks may be initiated by any Contracting Party according to the following procedure:
- (1) A Contracting Party wishing to initiate a new Task shall present to one or more Contracting Parties for approval a draft Annex, similar in form to the Annex or Annexes attached hereto, containing a description of the scope of work and conditions of the Task proposed to be performed;
  - (2) Whenever two or more Contracting Parties agree to undertake a new Task, they shall submit the draft Annex for adoption by the Executive Committee pursuant to Article 3(e)(2) hereof; the adopted Annex shall become part of this Agreement;
  - (3) A Contracting Party shall become a Participant in each Task for which the Participant is identified in the applicable Annex when the Annex is adopted. A Contracting Party identified as the Operating Agent in an Annex when adopted shall be deemed to have accepted the designation as Operating

Agent for that Annex. Notice of Participation in the Task by other Contracting Parties which wish to participate and Notice of Acceptance by other Operating Agents shall be communicated to the Executive Director;

- (4) In carrying out the various Tasks, Participants shall co-ordinate their activities in order to avoid duplication of activities.

(c) *Application of Task Annexes.* Each Annex shall be binding only upon the Participants therein and upon the Operating Agent for that Task, and shall not affect the rights or obligations of other Contracting Parties.

### Article 3

#### THE EXECUTIVE COMMITTEE

(a) *Supervisory Control.* Control of the Programme shall be vested in the Executive Committee constituted under this Article.

(b) *Membership.* The Executive Committee shall consist of one member designated by each Contracting Party; each Contracting Party shall also designate an alternate member to serve on the Executive Committee in the event that its designated member is unable to do so.

(c) *Responsibilities.* The Executive Committee shall:

- (1) Adopt for each year, acting by unanimity, the Programme of Work and Budget, if foreseen, for each Task, together with an indicative programme of work and budget for the following two years; the Executive Committee may, as required, make adjustments within the framework of the Programme of Work and Budget;
- (2) Make such rules and regulations as may be required for the sound management of the Tasks, including financial rules as provided in Article 6 hereof;
- (3) Carry out the other functions conferred upon it by this Agreement and the Annexes hereto; and
- (4) Consider any matters submitted to it by any of the Operating Agents or by any Contracting Party.

(d) *Procedure.* The Executive Committee shall carry out its responsibilities in accordance with the following procedure:

- (1) The Executive Committee shall each year elect a Chairman and one or more Vice-Chairmen;

- (2) The Executive Committee may establish such subsidiary bodies and rules of procedure as are required for its proper functioning;
- (3) A representative of the Agency and a representative of each Operating Agent (in its capacity as such) may attend meetings of the Executive Committee and its subsidiary bodies in an advisory capacity;
- (4) The Executive Committee shall meet in regular session not more than twice each year; a special meeting shall be convened upon the request of any Contracting Party which can demonstrate the need therefor;
- (5) Meetings of the Executive Committee shall be held at such time and in such office or offices as may be designated by the Committee;
- (6) At least twenty-eight days before each meeting of the Executive Committee, notice of the time, place and purpose of the meeting shall be given to each Contracting Party and to other persons or entities entitled to attend the meeting; notice need not be given to any person or entity otherwise entitled thereto if notice is waived before or after the meeting;
- (7) The quorum for the transaction of business in meetings of the Executive Committee shall be one-half of the members plus one (less any resulting fraction) provided that any action relating to a particular Task shall require a quorum as aforesaid of members or alternate members designated by the Participants in that Task;
- (8) The Executive Committee shall ensure that minutes of each meeting are distributed promptly after the meeting to each person or entity entitled to attend the meeting.

(e) *Voting*

- (1) When the Executive Committee adopts a decision or recommendation for or concerning a particular Task, the Executive Committee shall act:
  - (i) When unanimity is required under this Agreement: by agreement of those members or alternate members which were designated by the Participants in that Task and which are present and voting;
  - (ii) When no express voting provision is made in this Agreement: by majority vote of those members or alternate members which were designated by the Participants in that Task and which are present and voting.
- (2) In all other cases in which this Agreement expressly requires the Executive Committee to act by unanimity, this shall require the agreement of each member or alternate member present and voting, and in respect of all other decisions and recommendations for which no express voting provision is made in this Agreement, the Executive Committee shall act by a majority vote of the members or alternate members present and voting.

- (3) If a government has designated more than one Contracting Party to this Agreement, those Contracting Parties together may cast only one vote under this paragraph.
  - (4) The decisions and recommendations referred to in sub-paragraphs (1) and (2) above may, with the agreement of each member or alternate member entitled to act thereon, be made by mail, telefax, telex, cable or other means of electronic transmission without the necessity for calling a meeting. Such action shall be taken by unanimity or majority of such members as in a meeting. The Chairman of the Executive Committee shall ensure that all members are informed of each decision or recommendation made pursuant to this sub-paragraph.
- (f) *Reports.* The Executive Committee shall, by 31st January each year, provide the Agency with 30 copies of reports containing technically substantive, non-proprietary information on the progress of the Programme and its results.

#### *Article 4*

#### THE OPERATING AGENTS

- (a) *Designation.* Participants shall designate in the relevant Annex an Operating Agent for each Task. References in this Agreement to the Operating Agent shall apply to each Operating Agent in respect of the Task for which it is responsible.
- (b) *Scope of Authority to Act on Behalf of Participants.* Subject to the provisions of the applicable Annex:
- (1) All legal acts required to carry out each Task shall be performed on behalf of the Participants by the Operating Agent for the Task;
  - (2) The Operating Agent shall hold, for the benefit of the Participants, the legal title to all property rights which may accrue to or be acquired for the Task.

The Operating Agent shall operate the Task under its supervision and responsibility, subject to this Agreement, in accordance with the law of the country of the Operating Agent.

- (c) *Reimbursement of Costs.* The Executive Committee may provide that expenses and costs incurred by an Operating Agent in acting as such pursuant to this Agreement shall be reimbursed to the Operating Agent from funds made available by the Participants pursuant to Article 6 hereof.
- (d) *Replacement.* Should the Executive Committee wish to replace an Operating Agent with another government or entity, the Executive Committee may, acting by unanimity and with the consent of such government or entity, replace the initial Operating Agent.



References in this Agreement to the "Operating Agent" shall include any government or entity appointed to replace the original Operating Agent under this paragraph.

(e) *Resignation.* An Operating Agent shall have the right to resign at any time by giving six months written notice to that effect to the Executive Committee, provided that:

- (1) A Participant, or entity designated by a Participant, is at such time willing to assume the duties and obligations of the Operating Agent and so notifies the Executive Committee and the other Participants to that effect, in writing, not less than three months in advance of the effective date of such resignation; and
- (2) Such Participant or entity is approved in its function of Operating Agent by the Executive Committee, acting by unanimity.

(f) *Accounting.* An Operating Agent which is replaced or which resigns as Operating Agent shall provide the Executive Committee with an accounting of any monies and other assets which it may have collected or acquired for the Task in the course of carrying out its responsibilities as Operating Agent.

(g) *Transfer of Rights.* In the event that another Operating Agent is appointed under paragraph (d) or (e) above, the Operating Agent shall transfer to such replacement Operating Agent any property rights which it may hold on behalf of the Task.

(h) *Information and Reports.* Each Operating Agent shall furnish to the Executive Committee such information concerning the Task as the Committee may request and shall each year submit, not later than two months after the end of the financial year, a report on the status of the Task.

#### Article 5

#### ADMINISTRATION AND STAFF

(a) *Administration of Tasks.* Each Operating Agent shall be responsible to the Executive Committee for implementing its designated Task in accordance with this Agreement, the applicable Task Annex, and the decisions of the Executive Committee.

(b) *Staff.* It shall be the responsibility of the Operating Agent to retain such staff as may be required to carry out its designated Task in accordance with rules determined by the Executive Committee. The Operating Agent may also, as required, utilize the services of personnel employed by other Participants (or organizations or other entities designated by Contracting Parties) and made available to the Operating Agent by secondment or otherwise. Such personnel shall be remunerated by their respective employers and shall, except as provided in this Article, be subject to their employers' conditions of service. The Contracting Parties shall be entitled to claim the appropriate cost of such remuneration or to receive an appropriate credit for such cost as part of the Budget of the Task, in accordance with Article 6(f)(6) hereof.

## Article 6

### FINANCE

(a) *Individual Financial Obligations.* Each Contracting Party shall bear the costs it incurs in carrying out this Agreement, including the costs of formulating or transmitting reports and of reimbursing its employees for travel and other per diem expenses incurred in connection with work carried out on the respective Tasks, unless provision is made for such costs to be reimbursed from common funds as provided in paragraph (g) below.

(b) *Common Financial Obligations.* Participants wishing to share the costs of a particular Task shall agree in the appropriate Task Annex to do so. The apportionment of contributions to such costs (whether in the form of cash, services rendered, intellectual property or the supply of materials) and the use of such contributions shall be governed by the regulations and decisions made pursuant to this Article by the Executive Committee.

(c) *Financial Rules, Expenditure.* The Executive Committee, acting by unanimity, may make such regulations as are required for the sound financial management of each Task including, where necessary:

- (1) Establishment of budgetary and procurement procedures to be used by the Operating Agent in making payments from any common funds which may be maintained by Participants for the account of the Task or in making contracts on behalf of the Participants;
- (2) Establishment of minimum levels of expenditure for which Executive Committee approval shall be required, including expenditure involving payment of monies to the Operating Agent for other than routine salary and administrative expenses previously approved by the Executive Committee in the budget process.

In the expenditure of common funds, the Operating Agent shall take into account the necessity of ensuring a fair distribution of such expenditure in the Participants' countries, where this is fully compatible with the most efficient technical and financial management of the Task.

(d) *Crediting of Income to Budget.* Any income which accrues from a Task shall be credited to the Budget of that Task.

(e) *Accounting.* The system of accounts employed by the Operating Agent shall conform to accounting principles generally accepted in the country of the Operating Agent and shall be consistently applied.

(f) *Programme of Work and Budget, Keeping of Accounts.* Should Participants agree to maintain common funds for the payment of obligations under a programme of work and budget of the Task, the following provisions shall be applicable unless the Executive Committee, acting by unanimity, decides otherwise:

- (1) The financial year of the Task shall correspond to the financial year of the Operating Agent;
- (2) The Operating Agent shall each year prepare and submit to the Executive Committee for approval a draft programme of work and budget, together with an indicative programme of work and budget for the following two years, not later than three months before the beginning of each financial year;
- (3) The Operating Agent shall maintain complete and separate financial records which shall clearly account for all funds and property coming into the custody or possession of the Operating Agent in connection with the Task;
- (4) Not later than three months after the close of each financial year the Operating Agent shall submit to auditors selected by the Executive Committee for audit the annual accounts maintained for the Task; upon completion of the annual audit, the Operating Agent shall present the accounts together with the auditors' report to the Executive Committee for approval;
- (5) All books of account and records maintained by the Operating Agent for the Task shall be preserved for at least three years from the date of termination of the Task;
- (6) Where provided in the relevant Annex, a Participant supplying services, materials or intellectual property to the Task shall be entitled to a credit, determined by the Executive Committee, acting by unanimity, against its contribution (or to compensation, if the value of such services, materials or intellectual property exceeds the amount of the Participant's contribution); such credits for services of staff shall be calculated on an agreed scale approved by the Executive Committee and include all payroll-related costs.

(g) *Contribution to Common Funds.* Should Participants agree to establish common funds under the annual Programme of Work and Budget for a Task, any financial contributions due from Participants in a Task shall be paid to the Operating Agent in the currency of the country of the Operating Agent at such times and upon such other conditions as the Executive Committee, acting by unanimity, shall determine, provided, however, that:

- (1) Contributions received by the Operating Agent shall be used solely in accordance with the Programme of Work and Budget for the Task;
- (2) The Operating Agent shall be under no obligation to carry out any work on the Task until contributions amounting to at least fifty per cent (in cash terms) of the total due at any one time have been received.

(h) *Ancillary Services.* Ancillary services may, as agreed between the Executive Committee and the Operating Agent, be provided by that Operating Agent for the

operation of a Task and the cost of such services, including overheads connected therewith, may be met from budgeted funds of that Task.

(i) *Taxes.* The Operating Agent shall pay all taxes and similar impositions (other than taxes on income) imposed by national or local governments and incurred by it in connection with a Task, as expenditure incurred in the operation of that Task under the Budget; the Operating Agent shall, however, endeavour to obtain all possible exemptions from such taxes.

(j) *Audit.* Each Participant shall have the right, at its sole cost, to audit the accounts of any work in a Task for which common funds are maintained, on the following terms:

- (1) The Operating Agent shall provide the other Participants with an opportunity to participate in such audits on a cost-shared basis;
- (2) Accounts and records relating to activities of the Operating Agent other than those conducted for the Task shall be excluded from such audit, but if the Participant concerned requires verification of charges to the Budget representing services rendered to the Task by the Operating Agent, it may, at its own cost, request and obtain an audit certificate in this respect from the auditors of the Operating Agent;
- (3) Not more than one such audit shall be required in any financial year;
- (4) Any such audit shall be carried out by not more than three representatives of the Participants.

#### *Article 7*

### INFORMATION AND INTELLECTUAL PROPERTY

It is expected that, for each Task agreed pursuant to this Agreement, the applicable Annex will contain information and intellectual property provisions. The General Guidelines Concerning Information and Intellectual Property, approved by the Governing Board of the Agency on 21st November, 1975, shall be taken into account in developing information and intellectual property provisions pursuant to this Article.

#### *Article 8*

### LEGAL RESPONSIBILITY AND INSURANCE

(a) *Liability of Operating Agent.* The Operating Agent shall use all reasonable skill and care in carrying out its duties under this Agreement in accordance with all applicable

laws and regulations. Except as otherwise provided in this Article, the cost of all damage to property, and all expenses associated with claims, actions, and other costs arising from work undertaken with common funds for a Task shall be charged to the Budget of that Task; such costs and expenses arising from other work undertaken for a Task shall be charged to the Budget of that Task if the Task Annex so provides or the Executive Committee, acting by unanimity, so decides.

(b) *Insurance.* The Operating Agent shall propose to the Executive Committee all necessary liability, fire and other insurance, and shall carry such insurance as the Executive Committee may direct. The cost of obtaining and maintaining insurance shall be charged to the Budget of the Task.

(c) *Responsibility of Operating Agent.* The Operating Agent shall, in accordance with the laws of the country of the Operating Agent, be responsible in its capacity as such, for any damage to property and all legal liabilities, actions, claims, costs and expenses connected therewith to the extent that they:

- (1) Result from the failure of the Operating Agent to maintain such insurance as it may be required to maintain under paragraph (b) above; or
- (2) Result from the gross negligence or wilful misconduct of any officers or employees of the Operating Agent in carrying out their duties under this Agreement.

#### Article 9

#### LEGISLATIVE PROVISIONS

(a) *Accomplishment of Formalities.* Each Participant shall request the appropriate authorities of its country (or its Member States in the case of an international organization) to use their best endeavours, within the framework of applicable legislation, to facilitate the accomplishment of formalities involved in the movement of persons, the importation of materials and equipment and the transfer of currency which shall be required to conduct the Task in which it is engaged.

(b) *Appropriation of Funds and Applicable Laws.* In carrying out this Agreement and its Annexes the Contracting Parties shall be subject to the appropriation of funds by the appropriate governmental authority, where necessary, and to the constitutions, laws and regulations applicable to the respective Contracting Parties, including, but not limited to, laws establishing prohibitions upon the payment of commissions, percentages, brokerage or contingent fees to persons retained to solicit governmental contracts and upon any share of such contracts accruing to governmental officials.

(c) *Decisions of Agency Governing Board.* Participants in the various Tasks shall take account, as appropriate, of the Guiding Principles for Co-operation in the Field of Energy Research and Development, and any modification thereof, as well as other decisions of the

Governing Board of the Agency in that field. The termination of the Guiding Principles shall not affect this Agreement, which shall remain in force in accordance with the terms hereof.

(d) *Settlement of Disputes.* Any dispute among the Contracting Parties concerning the interpretation or the application of this Agreement which is not settled by negotiation or other agreed mode of settlement shall be referred to a tribunal of three arbitrators to be chosen by the Contracting Parties concerned who shall also choose the Chairman of the tribunal. Should the Contracting Parties concerned fail to agree upon the composition of the tribunal or the selection of its Chairman, the President of the International Court of Justice shall, at the request of any of the Contracting Parties concerned, exercise those responsibilities. The tribunal shall decide any such dispute by reference to the terms of this Agreement and any applicable laws and regulations, and its decision on a question of fact shall be final and binding on the Contracting Parties concerned. Operating Agents which are not Contracting Parties shall be regarded as Contracting Parties for the purpose of this paragraph.

#### Article 10

##### ADMISSION AND WITHDRAWAL OF CONTRACTING PARTIES

(a) *Admission of New Contracting Parties: Agency Countries.* Upon the invitation of the Executive Committee, acting by unanimity, admission to this Agreement shall be open to the government of any Agency Participating Country (or a national agency, public organization, private corporation, company or other entity designated by such government), which signs or accedes to this Agreement, accepts the rights and obligations of a Contracting Party, and is accepted for participation in at least one Task by the Participants in that Task, acting by unanimity. Such admission of a Contracting Party shall become effective upon the signature of this Agreement by the new Contracting Party or its accession thereto and its giving Notice of Participation in one or more Annexes and the adoption of any consequential amendments thereto.

(b) *Admission of New Contracting Parties: Other Countries.* The government of any country which does not participate in the Agency may, on the proposal of the Executive Committee, acting by unanimity, be invited by the Governing Board of the Agency to become a Contracting Party to this Agreement (or to designate a national agency, public organization, private corporation, company or other entity to do so), under the conditions stated in paragraph (a) above.

(c) *Admission of New Participants in Tasks.* Any Contracting Party may, with the agreement of the Participants in a Task, acting by unanimity, become a Participant in that Task. Such participation shall become effective upon the Contracting Party's giving the Executive Director of the Agency a Notice of Participation in the appropriate Task Annex and the adoption of consequential amendments thereto.

(d) *Contributions.* The Executive Committee may require, as a condition to admission to participation, that the new Contracting Party or new Participant shall contribute (in the

form of cash, services, materials or intellectual property) an appropriate proportion of the prior budget expenditure of any Task in which it participates.

(e) *Replacement of Contracting Parties.* With the agreement of the Executive Committee, acting by unanimity, and upon the request of a Government, a Contracting Party designated by that government may be replaced by another party. In the event of such replacement, the replacement party shall assume the rights and obligations of a Contracting Party as provided in paragraph (a) above and in accordance with the procedure provided therein.

(f) *Withdrawal.* Any Contracting Party may withdraw from this Agreement or from any Task either with the agreement of the Executive Committee, acting by unanimity, or by giving twelve months written Notice of Withdrawal to the Executive Director of the Agency, such notice to be given not less than one year after the date hereof. The withdrawal of a Contracting Party under this paragraph shall not affect the rights and obligations of the other Contracting Parties; except that, where the other Contracting Parties have contributed to common funds for a Task, their proportionate shares in the Task Budget shall be adjusted to take account of such withdrawal.

(g) *Changes of Status of Contracting Party.* A Contracting Party other than a government or an international organization shall forthwith notify the Executive Committee of any significant change in its status or ownership, or of its becoming bankrupt or entering into liquidation. The Executive Committee shall determine whether any such change in status of a Contracting Party significantly affects the interests of the other Contracting Parties; if the Executive Committee so determines, then, unless the Executive Committee, acting upon the unanimous decision of the other Contracting Parties, otherwise agrees:

- (1) That Contracting Party shall be deemed to have withdrawn from the Agreement under paragraph (f) above on a date to be fixed by the Executive Committee; and
- (2) The Executive Committee shall invite the Government which designated that Contracting Party to designate, within a period of three months of the withdrawal of that Contracting Party, a different entity to become a Contracting Party; if approved by the Executive Committee, acting by unanimity, such entity shall become a Contracting Party with effect from the date on which it signs or accedes to this Agreement and gives the Executive Director of the Agency a Notice of Participation in one or more Annexes.

(h) *Failure to Fulfil Contractual Obligations.* Any Contracting Party which fails to fulfil its obligations under this Agreement within sixty days after its receipt of notice, specifying the nature of such failure and invoking this paragraph, may be deemed by the Executive Committee, acting by unanimity, to have withdrawn from this Agreement.

## Article 11

### FINAL PROVISIONS

(a) *Term of Agreement.* This Agreement shall enter into force upon signature by all of the Contracting Parties and shall remain in force for an initial period of five years. The term of the Agreement may be extended for such additional periods as may be determined by the Executive Committee, acting by unanimity, with the prior agreement of the Governing Board of the Agency. The Executive Committee may, acting by unanimity, terminate this Agreement at any time.

(b) *Legal Relationship of Contracting Parties and Participants.* Nothing in this Agreement shall be regarded as constituting a partnership between any of the Contracting Parties or Participants.

(c) *Termination.* Upon termination of this Agreement, or any Annex to this Agreement, the Executive Committee, acting by unanimity, shall arrange for the liquidation of the assets of the Task or Tasks. In the event of such liquidation, the Executive Committee shall, so far as practicable, distribute the assets of the Task, or the proceeds therefrom, in proportion to the contributions which the Participants have made from the beginning of the operation of the Task, and for that purpose shall take into account the contributions and any outstanding obligations of former Contracting Parties. Disputes with a former Contracting Party about the proportion allocated to it under this paragraph shall be settled under Article 9(d) hereof, for which purpose a former Contracting Party shall be regarded as a Contracting Party.

(d) *Amendment.* This Agreement may be amended at any time by the Executive Committee, acting by unanimity, and any Annex to this Agreement may be amended at any time by the Executive Committee, acting by unanimity of the Participants in the Task to which the Annex refers. Such amendments shall come into force in a manner determined by the Executive Committee, acting under the voting rule applicable to the decision to adopt the amendment.

(e) *Deposit.* The original of this Agreement shall be deposited with the Executive Director of the Agency and a certified copy thereof shall be furnished to each Contracting Party and to the Operating Agents. A copy of this Agreement shall be furnished to each Agency Participating Country and to each Member country of the Organisation for Economic Co-operation and Development.

Done in Paris, this 2nd day of April, 1990.



For the COMITATO NAZIONALE PER LA RICERCA E PER LO  
SVILUPPO DELL'ENERGIA NUCLEARE E DELLE ENERGIE  
ALTERNATIVE (ENEA)  
(designated by the Government of Italy):

Raffaele Vellone

For the NEW ENERGY AND INDUSTRIAL TECHNOLOGY  
DEVELOPMENT ORGANIZATION (NEDO)  
(designated by the Government of Japan):

Takeshi Sugimoto

For the NETHERLANDS AGENCY FOR ENERGY  
AND THE ENVIRONMENT (NOVEM)  
(designated by the Government of the Netherlands):

P. H. v Dijkum

For the NORWEGIAN COUNCIL FOR SCIENTIFIC  
AND INDUSTRIAL RESEARCH  
(designated by the Government of Norway):

Bjørn Barth

For HIDROELÉCTRICA ESPAÑOLA, S.A.  
(designated by the Government of Spain):

A. Pantoja

For the NATIONAL ENERGY ADMINISTRATION  
(designated by the Government of Sweden):

H. Håkansson

For the OFFICE FÉDÉRAL DE L'ÉNERGIE  
for and on behalf of the  
Government of Switzerland:

J. M. Boillat

For the SECRETARY OF STATE FOR ENERGY  
for and on behalf of the  
Government of the United Kingdom of  
Great Britain and Northern Ireland:

C. M. J. Segar

## *Annex I*

### MOLTEN CARBONATE FUEL CELL BALANCE-OF-PLANT ANALYSIS

#### 1. *Introduction*

- (a) In view of the present international interest in the design of power plants based on the molten carbonate fuel cell (MCFC), and the importance of sub-system integration and optimization, described below, in assuring efficient, cost-effective MCFC designs, there is urgent need for analysis of MCFC power plant systems and the establishment of appropriate technology for the MCFC power plant.
- (b) The MCFC is a high-temperature electrochemical cell converting mixtures of hydrogen and carbon oxides, along with atmospheric oxygen, to direct current electricity at high efficiency. It produces high quality waste heat that may be used in bottoming cycles, for co-generation or for other purposes. Its low environmental impact allows it to be a dispersed generator. The gas mixture feedstock may be from steam reformed methanol or hydrocarbons, including natural gas, or from synthesis gas from coal gasification. The direct current power section can be made in small to medium-scale on-site co-generation, or in more advanced concepts large-scale units can be integrated with bottoming cycles and coal gasifiers. In all cases, the power plant part additional to the direct current power section, that is, the balance of plant (BOP), is of great technical importance to ensure success of the plant as a whole. The BOP includes fuel handling and conversion equipment (reformers, gasifiers, steam supply, oxygen supply where applicable), gas circulation equipment (high and low temperature blowers, turbocompressors where applicable), secondary power generation equipment in plants incorporating bottoming cycles, heat exchangers, direct current to alternating current electronic inverters, and other sub-systems.

#### 2. *Objective*

The objective of this Task is to systematize and optimize BOP technical factors, design conditions and background data, and to identify subjects requiring further research and development, for the purpose of developing the most cost-effective MCFC systems.

#### 3. *Means*

- (a) Participants will achieve the foregoing objective by undertaking cooperative activities on specific studies relating to MCFC BOP designs and components. The activities shall consist of exchanges of existing and arising information, investigations of alternative systems and assessments to assist national programmes for MCFC BOP development.
- (b) The target specifications for specific plants will be evaluated in terms of market needs, applications, economics and environmental impact.

- (c) In the first phase of this Task, for which Japan will be the Lead Country, information concerning the BOP for the 1 MW MCFC plant in Japan, and available information on similar projects of the other Participants, shall be exchanged and analyzed. Subsequent phases of this Task will be decided by the Participants on the basis of the progress achieved in the first phase.

#### 4. *Responsibility of the Participants*

- (a) The Participants will share the co-operative work necessary to carry out this Task. They will undertake analytical work and exchanges in the context of their national activities in MCFC development. The resource commitment of each Participant to the first phase of this Task will be in proportion to its national activities in MCFC plant development, and will be determined by the Executive Committee, acting by unanimity, as will be the resource commitments of the Participants in later phases.
- (b) Each Participant will individually bear the costs associated with its contribution to the work undertaken pursuant to this Task.
- (c) Lead Countries for parts of the Task will be appointed as necessary and their respective functions will be determined by the Executive Committee with the agreement of the Country concerned.

#### 5. *Operating Agent*

The New Energy and Industrial Technology Development Organization (NEDO) (Japan).

#### 6. *Specific Responsibilities of the Operating Agent*

The Operating Agent will be responsible for the overall management of the work under this Annex and for implementing the decisions of the Executive Committee. In addition, the Operating Agent will:

- (a) Finalize the detailed work plans for the Task in collaboration with its Participants and submit an annual programme of work to the Executive Committee not later than two months before the end of each year;
- (b) Co-ordinate the exchange of information through reports and meetings;
- (c) Report the progress of work under the Task to the Executive Committee at least semi-annually; and
- (d) Submit a final report to the Executive Committee within three months after the completion of all the work under this Task and submit such other reports as the Executive Committee may request.

#### 7. *Result*

The principal result of the Task will be a final report containing:

- (a) A summary of the analyses of the structure and arrangement of sub-systems, including major component specifications and basic design criteria and other Task results;
- (b) Identification of further problems and of target specifications.

#### 8. *Time Schedule*

This Annex shall enter into force with the Agreement and remain in force for a period of three years. It may be extended one or more times as required by the Executive Committee, acting by unanimity, and taking into account any recommendations of the Agency's Committee on Energy Research and Development concerning the term of the Annex.

#### 9. *Information and Intellectual Property*

- (a) *Executive Committee's Powers.* The publication, distribution, handling, protection and ownership of information and intellectual property arising from this Annex shall be determined by the Executive Committee, acting by unanimity, in conformity with the Agreement.
- (b) *Right to Publish.* Subject only to copyright restrictions, Participants in this Annex (referred to in this Annex as the "Participants") shall have the right to publish all information provided to the Annex, except proprietary information.
- (c) *Proprietary Information.* The Participants and the Operating Agent shall take all necessary measures in accordance with this paragraph, the laws of their respective countries and international law to protect proprietary information provided to and arising from this Annex. For the purposes of this Annex, proprietary information shall mean information of a confidential nature such as trade secrets and know-how (for example, computer programmes, design procedures and techniques, chemical composition of materials, or manufacturing methods, processes, or treatments) which is appropriately marked, provided such information:
  - (1) Is not generally known or publicly available from other sources;
  - (2) Has not previously been made available by the owner to others without obligation concerning its confidentiality; and
  - (3) Is not already in the possession of the recipient Participant without obligation concerning its confidentiality. It shall be the responsibility of each Participant supplying proprietary information to a Lead Country or to the Operating Agent to identify the information as such and to ensure that it is appropriately marked.
- (d) *Production of Relevant Information by Governments.* The Operating Agent should encourage the governments of all Agency Participating Countries to make available or to identify to the Operating Agent all published or

otherwise freely available information known to them that is relevant to the Task.

- (e) *Production of Available Information by Participants.* Each Participant agrees to provide to a Lead Country or to the Operating Agent all previously existing information, and information developed independently of the Task, which is needed by a Lead Country or by the Operating Agent to carry out its functions in this Task and which is freely at the disposal of the Participant and the transmission of which is not subject to any contractual and/or legal limitations:
  - (1) If no substantial cost is incurred by the Participant in making such information available, at no charge to the Task therefor;
  - (2) If substantial costs must be incurred by the Participant to make such information available, at such charges to the Task as shall be agreed between the Operating Agent and the Participant with the approval of the Executive Committee.
- (f) *Use of Confidential Information.* If a Participant has access to confidential information which would be useful to a Lead Country or to the Operating Agent in conducting studies, assessments, analyses, or evaluations, such information may be communicated to a Lead Country or to the Operating Agent but shall not become part of reports, handbooks, or other documentation, or be communicated to the other Participants except as may be agreed between the Operating Agent and the Participant which supplies such information.
- (g) *Reports on Work Performed under the Task.* The Operating Agent shall, in accordance with paragraph 6 above, provide reports of all work performed under the Task and the results thereof, including studies, assessments, analyses, evaluations and other documentation, but excluding proprietary information.
- (h) *Copyright.* The Operating Agent or a Lead Country may take appropriate measures necessary to protect copyrightable material generated under this Task. Copyrights obtained shall be the property of the Operating Agent, for the benefit of the Participants, provided, however, that the Participants may reproduce and distribute such material, but shall not publish it with a view to profit, except as otherwise directed by the Executive Committee.
- (i) *Authors.* Each Participant will, without prejudice to any rights of authors under its national laws, take necessary steps to provide the co-operation from its authors required to carry out the provisions of this paragraph. Each Participant will assume the responsibility to pay awards or compensation required to be paid to its employees according to the laws of its country.

#### 10. *Participants*

The Contracting Parties which are Participants in this Task are the following:

The Comitato Nazionale per la Ricerca e per lo Sviluppo dell'Energia Nucleare e delle Energie Alternative (ENEA) (Italy),

The New Energy and Industrial Technology Development Organization (NEDO) (Japan),

The Netherlands Agency for Energy and the Environment (NOVEM),

Hidroeléctrica Española, S.A. (Spain),

The National Energy Administration (Sweden).

## *Annex II*

### MODELLING AND EVALUATION OF ADVANCED SOLID OXIDE FUEL CELL

#### 1. *Background*

The Solid Oxide Fuel Cell (SOFC) is a fuel-efficient, very low  $\text{NO}_x$  device whose known characteristics promise an economical conversion of natural gas to electricity, with lowest  $\text{CO}_2$  and noise emissions. SOFC are foreseen to phase out the classical combined heat and power (CHP) for stationary applications, as well as to open up new market segments.

Invented in 1937, the development of SOFC was tardy until the recent achievements in ceramic technology which now offer workable solutions for manufacturing.

It is believed that international collaboration can significantly advance the understanding, development and public acceptance of this technology. Remaining outside proprietary and commercial activities, modelling techniques and recommended practices for testing and evaluation of SOFC products are certainly generic enough to benefit greatly from international collaboration.

The IEA Workshop on Mathematical Modelling of Natural Gas-fuelled SOFC & Systems, held in July, 1989, in Charnay (Switzerland) will be referred to hereafter as the "Annex Initiating Workshop".

#### 2. *Objectives*

The main objective of this Task will be to advance natural gas-fuelled solid oxide fuel cells (NG-f SOFCs) technologies through:

- (a) The numerical modelling of innovative concepts which have the potential for low-cost mass production and for higher conversion efficiency, the establishment of the necessary experimental data base and the model validation;
- (b) The elaboration of recommended practices for SOFC products evaluation and their application to available SOFCs in order to assist the development taking place in industry, strengthen confidence and prevent confusion in the market.

#### 3. *Means*

The Participants will share the co-ordinated work necessary to carry out this Task. The work in this Task is divided into the following Subtasks:

*Subtask A: Numerical Modelling, Experimental Data Base and Validation*

- (a) Procedures for the comprehensive numerical modelling of SOFC processes, of SOFC component manufacturing processes, and of SOFC economical and environmental impacts, will be developed;
- (b) Essential experimental data which cannot be generated by simulation will be identified, and measured if not available;
- (c) The numerical models will be validated.

*Subtask B: Recommended Practices for SOFC Products Evaluation*

- (a) SOFC products to be tested will be identified;
- (b) Internationally-agreed test procedures for SOFC products will be elaborated and testing conditions will be defined in areas such as:
  - (i) Performance;
  - (ii) Power conversion;
  - (iii) Exhaust emissions;
  - (iv) Noise;
  - (v) Thermal cycling;
  - (vi) Degradation;
  - (vii) Safety;
  - (viii) Controls;
- (c) Procedures for preventive maintenance, failure analysis diagnostics and economic analysis will be elaborated;
- (d) Those recommended practices will be exercised and documented.

Participants in the Subtask will seek to gain acceptance in their respective countries for the evaluation procedures developed by this Subtask. The recommendations will be regularly reviewed and areas in need of further investigation will be identified.



4. *Responsibilities of the Participants*

- (a) Each Participant shall participate in the Task in accordance with the Programme of Work to be agreed by the Participants;
- (b) Each Participant shall provide the Operating Agent with detailed reports as to the results of the work carried out for each Subtask, following the specifications prepared by the Operating Agent;
- (c) Each Participant shall collect and report to the Operating Agent other relevant and available work in the country, in the field specified by the Operating Agent;
- (d) Each Participant shall participate in the editing and reviewing of draft reports of the Task and Subtasks.

5. *Operating Agent*

L'Office Fédéral de L'Energie (Switzerland).

6. *Responsibilities of the Operating Agent*

The Operating Agent will be responsible for the overall management of the work under this Task. He will, therefore, in consultation with the other Participants and in conformity with this Annex:

- (a) Prepare and submit to the Executive Committee, for approval, a detailed programme of work, including a time schedule;
- (b) Provide a semi-annual Task report to the Participants, to the Executive Committee and to the IEA Secretariat;
- (c) Produce other information on the Task that the Executive Committee may request;
- (d) Implement actions required by the Executive Committee;
- (e) Prepare, lead and evaluate experts meetings dealing with the scope of the Annex;
- (f) Co-ordinate the efforts of all Participants and ensure the flow of information in this Task;
- (g) Provide the Participants with the necessary guidelines for the work they carry out with minimum duplication and for the reporting of this work (report specifications);

- (h) Develop and distribute to the Participants and the Executive Committee the final reports, based on contributions and reviews by the Participants, as described in paragraph 7 below.

#### 7. *Results*

The principal result of the Task will be final reports containing:

- (a) *Subtask A:* A comprehensive description of the numerical models available with an access-directory and an updating of the document entitled "Facts & Figures" issued at the Annex Initiating Workshop;
- (b) *Subtask B:* A set of monographs describing the state-of-the-art of the evaluation techniques for SOFC products and a compilation of formatted exercise report.

#### 8. *Funding*

Each Participant and the Operating Agent shall individually bear the costs associated with the work and activities in this Annex. Participation in the Annex is subject to a minimum overall commitment of 4 staff-years over the 2 year duration of the Annex. In addition to the technical input to the Task, the Operating Agent will commit a further 4 staff-months per year to the Task.

#### 9. *Meetings*

The Operating Agent is to convene meetings twice a year. Attendance at such meetings is a requirement for participation in this Task.

#### 10. *Time Schedule*

This Annex shall enter into force on 30 April, 1990 and remain in force for a period of two years. It may be extended one or more times, as required, by decision of the Executive Committee, taking into account any recommendation of the Agency's Committee on Energy Research and Development concerning the term of this Annex.

#### 11. *Information and Intellectual Property*

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13. *Participants*

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The New Energy and Industrial Technology Development Organization (NEDO) (Japan),

The Netherlands Agency for Energy and the Environment (NOVEM),

The Norwegian Council for Scientific and Industrial Research,

The Office Fédéral de L'Energie (Switzerland),

The Secretary of State for Energy (United Kingdom).

The Legal Counsel of the International Energy Agency hereby certifies that the present copy conforms to the original text deposited with the Executive Director of the International Energy Agency (as amended to the date hereof, by agreement of the Contracting Parties).

Paris,

THE LEGAL COUNSEL:

RICHARD F. SCOTT