

30820137-Consulting 08-1677

**Initial memorandum 400-450 MW_e
Hydrogen Power Plant C.GEN**

Europoort Rotterdam

Arnhem, September 2008

Authors: F. Ermers, J.H.W. Lindeman
KEMA Consulting

Acting on the instructions of C.GEN NV

Non-certified translation

CONTENTS

	pg
1	Introduction..... 5
2	Background and objectives 7
2.1.1	C.GEN..... 7
2.1.2	Liberalisation 7
2.1.3	CO ₂ policy..... 7
2.1.4	Supply and demand of electricity 8
2.1.5	Development of climate and environmental policy; choice of technologies..... 10
3	Location 12
4	Description of the planned activity 15
4.1	Technological concept..... 15
4.2	Fuels and storage 16
4.3	Syngas cleanup 17
4.4	Combined cycle component 17
4.5	Electricity transport..... 18
4.6	CO ₂ -capture 18
4.7	Hydrogen gas/syngas supply 18
4.8	Heat/steam supply..... 18
4.9	Water consumption..... 19
4.10	Cooling 19
4.11	Waste materials 19
5	Environmental consequences of the planned activity 21
5.1	Air pollution..... 21
5.2	Cooling water 22
5.3	Waste water discharge..... 22
5.4	Noise 23
5.5	Nature and landscape 23
5.6	Soil 23
5.7	Safety 24
5.8	Waste materials..... 24
5.9	Visual aspects 24

6	Alternatives	25
6.1	No-action alternative	25
6.3	Most environmentally-friendly alternative	26
7	Legislation and decision-making.....	27
8	Planning	28

1 INTRODUCTION

C.GEN intends to construct a new gasification plant and power plant with CO₂ capture capability. This power plant will generate a gross electric power output of approximately 400-450 MW_e (depending on the CO₂ capture). The fuel will be coal, petcoke, natural gas and clean biomass. C.GEN will make every effort to achieve synergy with other activities, of which the supply of hydrogen and heating to others could constitute a part.

The characteristics of this unique project are:

- clean gasification technology, including CO₂ capture, resulting in the production of syngas with a high hydrogen content (80 to 90%) (henceforth referred to as hydrogen gas)
- Combined Cycle power plant, suitable for the firing of hydrogen and natural gas
- contributes to the climate goals of the Dutch authorities through the CO₂ capture (ca. 85%) and through the use, potentially, of biomass
- flexible with respect to fuel used
- highly efficient and very flexible energy production
- profitable energy production at low costs
- contributes to the Dutch security of supply thanks to opting for a reliable and large-scale power plant with coal as fuel
- production and supply of hydrogen to others as an initial step towards a hydrogen economy.

Due to the fact that the thermal power of the unit to be built is greater than the threshold value of 300 MW_{th} in the Environmental Impact Assessment Decision¹ the activity is subject to an EIA. Consequently, an environmental impact assessment (EIA) report should be drafted prior to a decision being made on the granting of the required environmental permit. Through this initial memorandum, the initiator, C.GEN is launching the required procedure, of which the drafting of the EIA is a component.

The location chosen for the construction of the new power plant is Europoort, Rotterdam (see figure 3.1).

¹ see appendix C, category 22.1

Details of the **initiator**:

Applicant: C.GEN NV or C.GEN Nederland BV in formation
contact person: G. Janssen
14 Sneeuwbeslaan
2610 Antwerp.

Details of the **competent authority** for the Environmental Management Act:

The Provincial Executive of the province of Zuid-Holland
Post-box 90602
2509 LP The Hague.

Details of the **competent authority** for the Pollution of Surface Waters Act:

Rijkswaterstaat, Zuid-Holland board
Post-box 556
3000 AN Rotterdam.

2 BACKGROUND AND OBJECTIVES

2.1 Background

2.1.1 C.GEN

The initiator, C.GEN, is a new and independent electricity producer, operating internationally, with headquarters in Antwerp. Aside from sustainable electricity projects, C.GEN develops power plants equipped for CO₂ capture and storage, more specifically, integrated gasification combine cycle (IGCC) plants. The company is affiliated with Cobelfret, a major logistics company operating around the world, including the Netherlands.

2.1.2 Liberalisation

The planned activity is developed against the background of the comprehensive liberalisation of the electricity market. The Netherlands have implemented the related EC Directive 96/92/EC, into the Electricity Act 1998 (Bulletin of Acts and Decrees 1998-427). This legislation covers the changing role of the authorities across the energy policy field, from active participant/owner to regulator. Important characteristics of the legislation pertaining to liberalisation that are relevant to the project include:

- freedom of electricity production
- freedom of electricity producers to choose the fuel
- freedom of choice with respect to electricity suppliers
- electricity transport arranged through an independent grid operator with regulated, non-discriminatory access to the high-voltage grid.

2.1.3 CO₂ policy

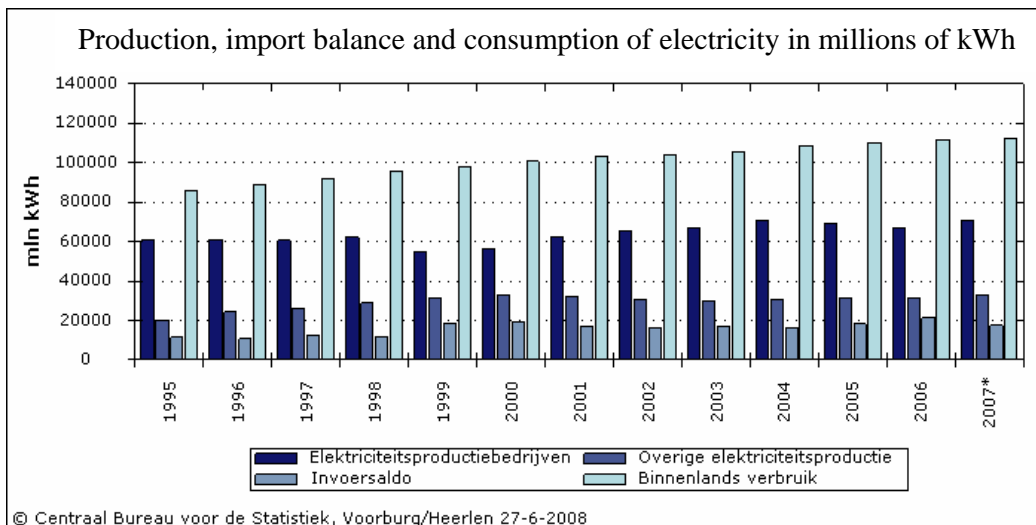
A major driver for the intentions of C.GEN are the CO₂-reduction goals to which the EU member states and the energy sector in particular are subjected. In January 2008 the EU released a wide-ranging package of proposals intended to take action against climate change and promote sustainable energy. The main objective is a CO₂-reduction of at least 20% (relative to 1990) by the year 2020. To this extent, the package contains, amongst other things, a proposal to amend the directive on the EU Emissions Trading Scheme (ETS), a proposal for a legal framework for CO₂ capture and storage (CCS), an announcement on the demonstration of CCS and new guidelines for state aid with respect to environmental concerns.

For the electricity sector, the proposals boil down to an extremely ambitious 21% reduction of CO₂ emissions relative to 2005, which can only be realised through a comprehensive transformation of the electricity supply.

2.1.4 **Demand and supply of electricity**

Domestic electricity consumption rose by over 30% between 1995 and 2007 (see figure 2.1). As an indication, the installed capacity in the same period rose by some 15%, while import practically doubled. The current maximum import capacity has been reached, which is why domestic demand must be satisfied with additional generating capacity in the Netherlands.

Figure 2.2 shows the age structure of the power plants in the Netherlands. As can be deduced from figure 2.2, a considerable proportion of the Dutch generating units are reaching the end of their viable lifespan. It is thus highly probable that in the not-so-distant future production capacity will be decommissioned. It is uncertain what measures can be engaged by the owners in order to increase the lifespan. Moreover, the problem of CO₂ is increasing the pressure to replace the older, inefficient units with modern, highly efficient plants.



Electricity production companies Other electricity production
 Import balance Domestic consumption

Figure 2.1 Electricity balance in the Netherlands 1995-2007 (gross production, import and domestic consumption; 2007 provisional figures) (source: CBS Statline)

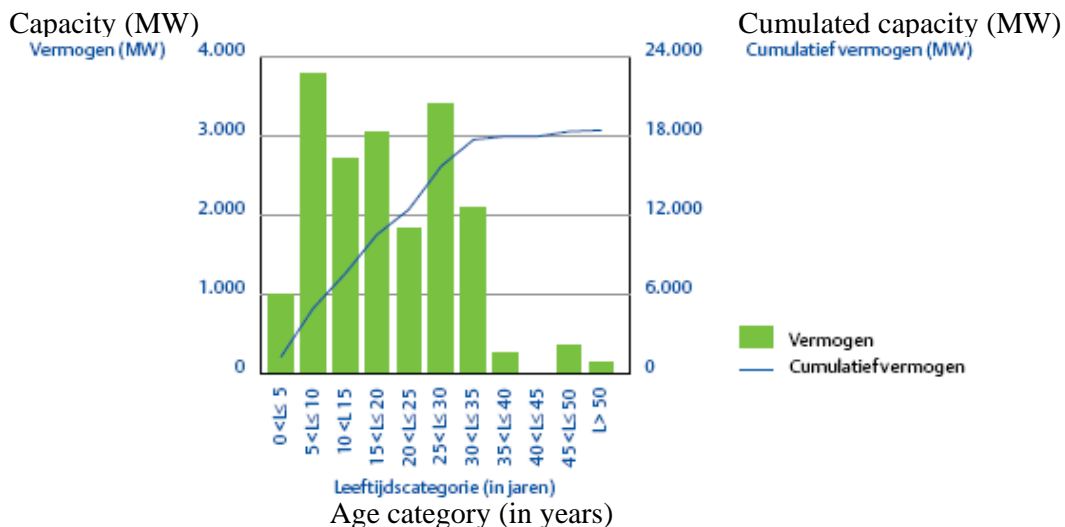


Figure 2.2 Age structure of the Dutch electricity producing units (Source: Quality and capacity plan 2008 – 2014; TenneT; February 2008)

2.1.5 **Development of a climate and environmental policy; choice of technologies**

Environmental policy is changing dramatically, both at a national and international level. This has led, inter alia, to more stringent requirements with respect to emissions generated by electricity power plants. This means that under the present legislation, new power plants must be equipped with the latest and cleanest technology. Given that power plants are built with an expected lifespan of 30 to 40 years, their design must take this factor into account as much as possible.

The present environmental debate is primarily centered on the release of CO₂ into the atmosphere. That is why C.GEN has opted for a concept that reduces the CO₂ emissions by approximately 85%, when using coal or petcoke. However, there will be no CO₂ emission reduction in case natural gas is burned. The captured CO₂ can be stored elsewhere, such as in empty gas fields in the North Sea. At the same time, a significant percentage of clean biomass (insofar as it is available) can also be co-gasified. This biomass can be considered to be CO₂-neutral.

C.GEN considers gasification technology as the technology for the future, with the least impact on the environment, because of its excellent prospects of capturing CO₂ on a large scale and the very low emissions of other substances, compared to other actual technologies.

Although the increase of sustainable electricity production is necessary, it is not yet realistic to believe that a large part of electricity generation can be based on non-fossil fuels in short term. A large part of the capacity increase will still be based on fossil fuels such as coal and gas, which emphasizes the need to employ technology that is as clean as possible.

C.GEN has opted for a combination of different fossil and biomass fuels – coal, petcoke (a maximum of around 25%), natural gas and clean biomass (a maximum of around 25%), with a view of attaining maximum flexibility when it comes to fuel. The use of natural gas is primarily intended as a start-up and backup fuel (should the gasification part be unavailable) and “arbitration fuel”².

² arbitration fuel generally indicates that the most economical choice is made between different fuels

Synergy

Besides the creation of reliable and environmental friendly electricity production, C.GEN has included the possibility of synergy with neighbouring industries. C.GEN will investigate therefore, whether the delivery of hydrogen and/or syngas and/or other products such as heat/steam to, for example, a nearby LNG terminal, is feasible in terms of energy and economics.

2.2 **Objective**

C.GEN's objective is to construct a hydrogen power plant. The combination of a gasification plant and a power plant will result in a gross electricity production of 400-450 MW_e and provides for CO₂ capture. The design of the power plant employs the Best Available Techniques and is geared towards a combination of:

- the flexible utilisation of fuels, namely coal, petcoke, natural gas and, when available, clean sustainable biomass.
- the flexible supply of electricity and, possibly, hydrogen and steam/heat
- high energy efficiency
- very low fossil CO₂ emissions, thanks to CO₂ capture (not when 100% natural gas is used)
- very low emissions of other products
- synergy with nearby industries, including utilisation of the waste products and, possibly, the supply of hydrogen and steam/heat. This will help to attain both sustainability and climate neutral targets
- financially and commercially sound.

3 LOCATION

C.GEN has undertaken a search for a suitable location in the Netherlands for the power plant. A number of criteria were considered, such as (in no particular order):

1. land of sufficient size intended for heavy industrial use
2. sufficient access and logistical potential, especially for seagoing vessels
3. proximity of the national grid
4. proximity of the gas transportation network
5. cooling capacity using surface waters
6. synergy with nearby industries such as utilisation of the (by-)products and waste heat
7. environmental potential (fine particles, noise, environmental prerequisite constraints, etc.)

The search resulted in two possible locations in the Europoort region (see figure 3.1), namely:

- location (1) on the "Kop van de Beer"
- location (2) on the so-called "Stenen terrein" (see figure 3.2).

The advantages of the locations are:

- the immediate proximity of terminals for solid fuels such as coal and bio-fuel, whereby large facilities for storage and unloading/loading are available,
- the ability to make use of coolant flow using surface water,
- the ability to expand into a hub of activities pertaining to CO₂ and hydrogen in the Rotterdam harbour region.

The location(s) and the activities fit within the current environmental land specifications.

The choice of a final location will be further substantiated in the EIA.

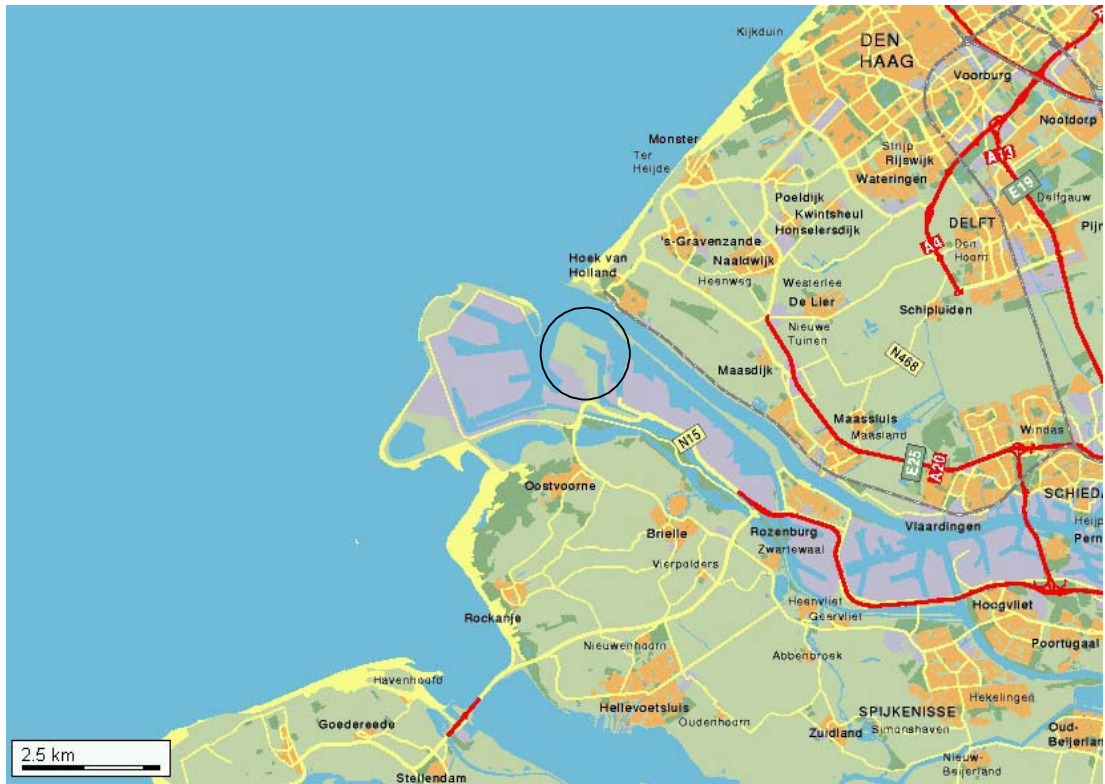


Figure 3.1 Europoort, Rotterdam



Figure 3.2 Possible locations for the planned C.GEN power plant (indicative)

4 DESCRIPTION OF THE PLANNED ACTIVITY

4.1 The technical concept

The principle of gasification is combustion with insufficient oxygen. As a result the combustion process is sustained and a flammable gas is produced (syngas) that, once treated, can be used for firing. The syngas consists primarily of carbon monoxide (CO) and hydrogen (H₂). A shift reactor provides for the conversion of the CO with water to H₂ and CO₂, after which the CO₂ is captured.

Prior to the gasification, the solid fuels are pulverised and dried. In the gasifier this raw material reacts with steam and oxygen at a high temperature (ca. 1,500 °C) and under high pressure. Oxygen production will most likely be provided for through an air separation plant that operates according to the cryogenic process of air separation by fractional distillation. Before the syngas produced by the gasifier can be burned in the gasturbines a number of pollutants as well as the CO₂ must be extracted. The heat released during the required cooling of the syngas will be used to generate steam at various levels of pressure.

The purified syngas is converted, by means of combined gas and steam turbines (CCGT), into electricity and heat (see figure 4.1 for a schematic overview). The power output of the plant depends on the final configuration.. C.GEN has not yet taken a decision on the exact design of the gasification component of the power plant.

Gasification technology provides C.GEN with a great deal of flexibility with respect to the choice of fuels. Consequently C.GEN has the ability to compile an ideal mix of coal, petcoke, natural gas and biomass, depending on the environmental requirements, fuel prices and other factors. Another advantage of gasification technology is the lower emissions compared with conventional pulverised coal-burning power plants and the much higher energy efficiency in case of CO₂ capturing.

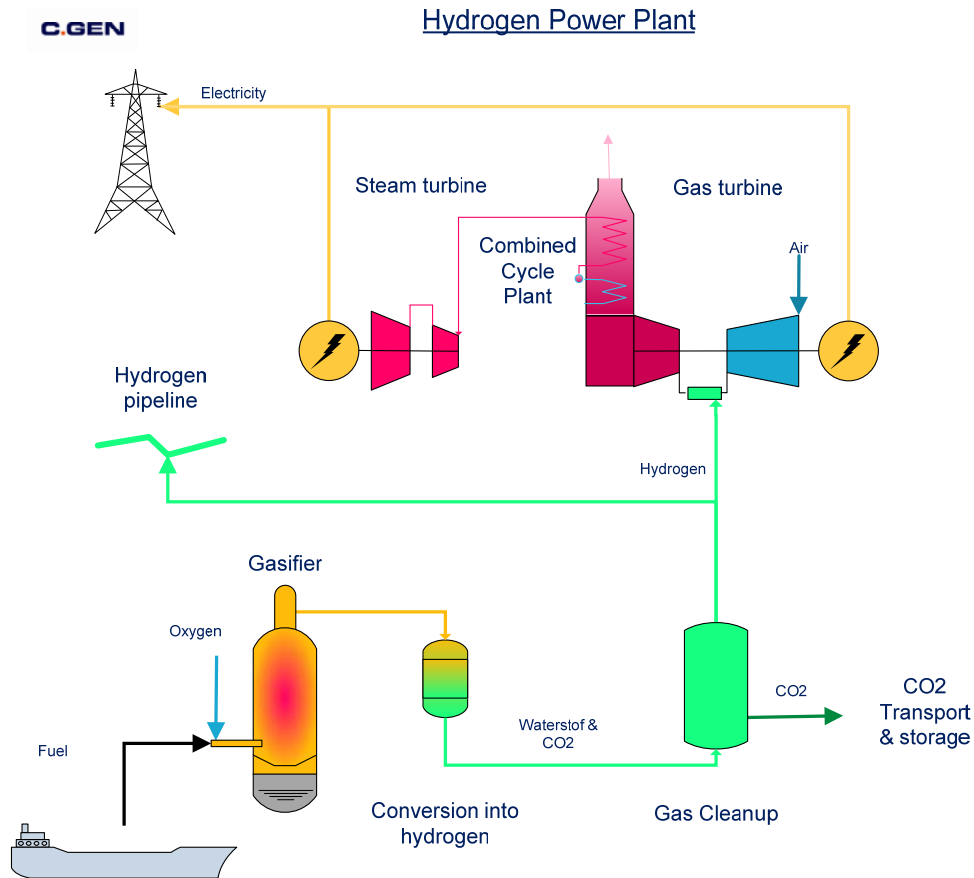


Figure 4.1 Schematic overview of the hydrogen power plant (indicative)

4.2 Fuels and storage

Primarily, it will be the solid fuels that will be used for the continuous operation of the plant, while natural gas will be rather used for start-up, backup and as arbitration fuel. Production will be adjusted according to the highest yield from an economical point of view for each supplied unit of energy.

Natural gas will be delivered by means of a pipeline. A gas pressure reduction plant built on location will lower the pressure to the required level.

Solid fuels will be delivered from a nearby coal terminal. The storage facilities on the C.GEN lands will be limited. Biomass storage depends on the type of biomass, and might be stored in silos, tankers or containers.

4.3 Syngas cleanup

In order to minimise environmental emissions and prevent damage to the gas turbine blades, the syngas will be thoroughly cleaned. Specifically, measures are engaged to remove particles and sulphur from the syngas. Particles are removed in stages with the aid of cyclonic separation, wet washing and ceramic or similar filters. The sulphur is removed after the synthesis gas has been cooled. Cyanides and halogens are also removed by wet washing. The cleanup processes are very efficient. By capturing the CO₂, hydrogen gas with a concentration of 80% to 90% is produced.

4.4 Combine Cycle Gas Turbine component

The power island will be a CCGT (Combined Cycle Gas Turbine) plant. This means that the plant will include a gas turbine connected to a heat recovery steam generator and a steam turbine. A SCR will be installed in order to remove NO_x from the flue gas.

The gas turbine consists of a compressor, one or more firing sections and finally the turbine itself, which drives the generator. The flue gasses flow into the heat recovery steam generator, where the steam is generated. The steam drives a steam turbine. The generator converts the mechanical energy from the turbines into electricity. The expanded steam is condensed in a condenser using surface water as a coolant.

The heat recovery steam generator might be equipped with supplementary burners so that the supply of steam is more flexible, or additional peak electric capacity can be produced.

To limit the production of nitrogen oxides, the hydrogen gas is “diluted” with nitrogen or steam. Having as effect that very high flame temperatures and the resulting increase of nitrogen oxide emissions are avoided. Furthermore, special burners will be mounted in the gas turbines which will reduce the formation of nitrogen oxides, while the heat recovery steam generator will be equipped with an SCR.

Gasses that, under incidental circumstances, cannot be fired in the gas turbine, are burnt off in flare stacks. This primarily occurs during the start-up and rundown of the gasifier as well as during an emergency standstil.

4.5 **Electricity transport**

An overhead high-voltage grid is present in the area of the planned location. The final connection will be further investigated.

4.6 **CO₂-capture**

The separation of CO₂ is provided for in the plant design. The possible processes will be further dealt with in the EIA. After the CO₂ is captured and after the removal of water, it is liquidified by compression. The CO₂ can also be liquidified by cooling it down to -54°C at a pressure of 6-7 bar. In this state the CO₂ production of several days can be stored in tanks on the grounds of the power plant.

It is anticipated that in due course a pipeline infrastructure will be available, through which the CO₂ can be transported, most likely to empty gas fields off the Dutch coast. A (small) proportion of the CO₂ can possibly be supplied to industry or market gardeners.

Transportation can also be undertaken using special ships for final storage elsewhere.

4.7 **Hydrogen gas/syngas supply**

The delivery of hydrogen to third parties is also considered. The supply of hydrogen will further optimise the economics of the plant, as C.GEN expects that it can be sold as valuable feedstock to industries in the Rotterdam harbour region. This means too that the power plant can become a substantial step in the direction of a hydrogen economy. These opportunities will be further specified and explained in the EIA.

4.8 Heat-/steam supply

During the generation of electricity, waste heat will be produced that can be usefully used for industrial processes. This is possible if the physical distance between the consumer and the power plant is no greater than three kilometres, taking into account heat loss. There are different industries that could use the waste heat, and this will be further investigated.

4.9 Water consumption and discharge

For the production of demineralised water for the steam systems, a demineralisation plant is built. The plant will be fed by mains water or surface water. The salts produced during the demineralisation process (regeneration) will be discharged into the surface water, as will other purified waste water.

4.10 Cooling

The exhaust steam from the steam turbine is condensed in a condenser using cooling water. The cooling can be done in a number of ways. Preference is given to flow-through cooling, whereby surface water is used and, once the condensation has occurred, discharged. In that case, the required surface water for all systems will be collected from the Dintel Harbour (to the south-east of the location) and discharged into the Caland Canal (to the north of the location).

Compared to cooling in cooling towers, this system offers considerable advantages in respect of electric efficiency and in terms of noise emissions. The increased efficiency provides both economical and environmental benefits. Extensive measures will be engaged to minimise damage to the fish stock. After investigating the cooling options, another study will be launched to investigate the best way in satisfying the new CIW cooling water guidelines. The environmental consequences of the heat discharge for marine and aquatic organisms will be mapped out.

The cooling alternatives are (wet) cooling towers, hybrid cooling towers (dry/wet) or air cooled condensers. An advantage of these alternatives is that they have hardly any effect at all on the surface water. However, they are disadvantaged when it comes to noise, energy-consumption and aesthetic aspects, for example. The EIA will include an integral comparison (including costs) of the alternatives.

4.11 **Waste materials**

Gasification plants produce waste materials:

- the ashes are transported in the form of inert slag and fly ash
- the sulphur is extracted in elementary form
- liquid sludge (resulting from the waste water treatment). This sludge also contains heavy metals and must be treated.

In general the fly ash and slag are employed in the construction industry while the sulphur by-product is used as a raw material in the chemical industry.

5 ENVIRONMENTAL CONSEQUENCES OF THE PLANNED ACTIVITY

C.GEN will employ the currently Best Available Techniques, while taking the essential economic preconditions into account. The power plant will in any case comply with all European and national legislation.

As for the the environmental consequences; the EIA will devote much attention to air, water and noise emissions as well as the aspects affecting nature and aesthetics. The EIA will also outline the other relevant environmental consequences of odours and traffic.

5.1 Air pollution

The primary emissions from the power plant are CO₂, SO₂, NO_x and particles. In addition, there are trace emissions of other materials, such as heavy metals.

CO₂ is one of the major contributors to global warming. There are no emission limit values concerning CO₂, but the reduction of emissions play an important role in national and international politics with respect to global warming. The high energy efficiency of this electricity power plant and the capture of CO₂ mean that the CO₂ emissions are very low (at least 85% is captured). The use of biomass can reduce CO₂ even more. If hydrogen and heat/steam can be delivered to third parties, then CO₂ emissions elsewhere will be avoided.

The SO₂ emissions are limited in such a way that they contribute only negligibly to national power plant SO₂ emissions. Hence, the pressure on the environment with respect to SO₂ will be extremely limited.

When firing hydrogen in the burners of the gas turbines, nitrogen oxides (NO_x) are formed. The majority of the NO_x is removed from the flue gasses using the SCR installation, while the remainder will lead to a very limited local increase in the concentration of NO₂ and of (acidic) deposits, comparable to a gas-fired (combined cycle) unit.

The EIA will also take emissions from the flare stacks into account. It will also deal with the way in which the emission of other products, such as dioxins, PAH's, mercury and other heavy metals will be minimised.

The dust emission from the power plant is restricted due to the use of a variety of filters. The EIA will highlight the emissions of particles from transporting and storing fuels, the impact of waste materials and the steps to be taken for the prevention. The impact of dust in the neighborhood will be at an extremely low level.

5.2 Cooling water

Around 400 MW of heat will be discharged from the power plant through the cooling water. The cooling water system will satisfy the Best Available Techniques in accordance with the BREF³ document for industrial cooling systems. This document indicates flow-through cooling for coastal locations. The new Dutch Cooling Water Policy (2005) has set specific criteria with respect to intake, heating and the mixing zone, all of which are designed to minimise its influence. Moreover, the temperature at the river floor may not increase significantly. The possibilities to reduce the influence of the cooling water intake and of the thermal discharge on the aquatic organisms by using alternative technologies will be investigated.

5.3 Waste water discharge

The following streams of waste water will occur:

- blow-down water from the heat recovery steam generator
- cleaning, leakage and rinsing water from the power plant
- rain water from buildings and surface areas
- regenerant from the demineralisation plant
- sanitary waste water
- process water.

Should cooling towers be employed, the blow-down from these will also be taken into account, including the possible addition of chemical conditioners.

These waste water streams will be discharged into the surface water. These effluents primarily contain salts and water-conditioners. It is expected that the effect upon the quality of the surface water will be minor, as will be further elaborated in the EIA. Consequently the

³ Best Available Techniques EU Reference Document

environmental properties of the water-treatment substances that could end up in the surface water will be assessed in accordance with the General Assessment Methodology for substances and preparations.

5.4 Noise

A range of noise-reducing measures will be employed in the power plant with respect to both logistics and equipment, in order to keep the noise emissions within the range permitted by legislation and, where applicable, satisfy agreements (covenants). The EIA will deal with this comprehensively.

5.5 Nature and landscape

Several Natura 2000 regions are in the neighbourhood of the intended location(s), such as Voordelta, Voornes Dune and the Solleveld and Kapittel Dunes. The EIA will investigate whether the project could result in negative consequences for these protected areas. It is expected that there will be no significant effects.

The power plant is to be built in a large-scale industrial estate. The equipment, buildings and stacks will be designed to fit in as much as possible in an architectural sense. Night-time lighting will be equivalent to the other process units, which means the plant's influence upon the landscape will be limited. With respect to the cooling technology, other than flow-through cooling, under certain meteorological conditions emission plumes may occur.

5.6 Soil

As soon as the final location is chosen, an investigation will be launched and, if necessary, soils sanitation operations will commence. The necessary measures with respect to remediate soil pollution will also be engaged. This will entail the small stock of coal and other fuels being stored in bunkers. Tanks and equipment will be configured with spill reservoirs.

5.7 **Safety**

Substances that might pose external risks can be found within the plant itself. Poisonous syngas and oxygen⁴ are of primary concern here. The quantities involved are not yet known to an exact degree, but it is expected that the power plant will fall under the Major Accidents (Risks) Decree (*Besluit Risico's Zware Ongevallen - BRZO*), and that a safety report will have to be drafted. The EIA will elaborate on this.

5.8 **Waste materials**

The primary waste materials that are released are fly ash, slag and sulphur. These waste products will all be used for other purposes. Fly ash and slag can be used in the cement industry and (road) construction. Sulphur is used in the chemical industry.

5.9 **Visual aspects**

The buildings of the power plant will be made to fit in as much as possible with respect to the landscape. Using visualisations, the EIA will sketch out a representative image from various relevant points of view.

Attention will also be devoted to minimum night-time light-pollution, both for people and for birds. The flare stack will receive additional focus with respect to this.

⁴ appendix I BRZO, part 2, under 1/2 and part 1, under 27 respectively.

6 ALTERNATIVES

Aside from the planned activity, the following alternatives will be considered:

- no-action alternative
- execution alternatives
- most environmentally-friendly alternative.

6.1 No-action alternative

The no-action alternative represents a situation where the construction of this power plant does not take place. In that event, there are two points to note. The first point concerns the emissions that are the result of existing electricity generation. Since the planned activity will produce electricity at low costs, it will replace the production of less efficient and, in most cases, more polluting power plants in the Netherlands and even abroad. Should the power plant not be constructed, these power plants will continue to operate in present mode. The average emissions attributable to this way of electricity generation will be compared to the emissions of the planned activity. The CO₂ emissions of the existing electricity generation will also be considered within this context.

The second point concerns the heat and hydrogen required by local companies, which can be supplied by the power plant. This supply will also entrain avoided emissions.

6.2 Execution alternatives

Execution alternatives are possible at various levels. The following alternatives are presently provided for:

- a) conceptual alternatives. This concerns alternatives to a hydrogen power plant. The most obvious alternative is a conventional pulverised coal-fired power plant, with biomass co-firing.
- b) technological alternatives for CO₂-capture
- c) alternatives to flue gas cleanup. This concerns alternatives for:
 - desulphurisation
 - particle removal
 - mercury reduction

- d) alternative cooling (see paragraph 4.10)
 - alternative techniques
 - alternative cooling water conditioners
- e) provisions to further limit the noise emissions from the logistical and power generating units.

6.3 **Most environmentally-friendly alternative**

The most environmentally-friendly alternative is a combination of the elements in the execution alternatives that provide the best potential for protecting the environment. This alternative is described in the EIA.

7 LEGISLATION AND DECISION-MAKING

The power plant can only be constructed once the following permits are obtained:

- Environmental Management Act permit (chapter 8 of the Environmental Management Act) and the emissions permit (chapter 16 of the Environmental Management Act)
- Pollution of Surface Waters Act
- Water Management Act
- Housing Act (= building permit)

And, if necessary:

- Groundwater Act (with respect to soil drilling and drainage during construction)
- Public Works (Management of Engineering Structures) Act (with respect to the cooling water works).

One or more permits of a relatively limited scope may also be required, such as installation permits for cables or pipelines. The procedure with respect to the permits in accordance with the Environmental Management Act is shown in figure 8.1. It is connected to the one for the Pollution of Surface Waters Act. The procedure provides for public participation.

These permits will be tested against policy and legislation in this area. Certain important policy memoranda or plans are the National Environmental Plan Policy, the National "Schoon en Zuiver" (Clean and Pure) programme, the international climate goals⁵, the Fourth National Policy Document on Water Management and the provincial environmental and regional plans and zoning plans. Laws and regulations include, amongst others, the provisions of the European IPPC⁶ directive, the relevant BREF's and the Supplementary Memorandum for major combustion plants, the Emission Limits (Combustion Plants) Decree, the Dutch Emission Guidelines, the cooling water guidelines set by the Committee on Integral Water Management, the Nature Conservation Act and the Flora and Fauna Act, determined within this framework. Further, location-specific policy may also be of concern.

Covenants existing between electricity producers and the authorities may also impose limits upon the project. The EIA will further investigate the relevant legislation and agreements.

⁵ Within this framework, the proposed EU emissions trading scheme and CO2 capture and storage of 23 January 2008 will be engaged

⁶ Integrated Pollution Prevention and Control

8 **PLANNING**

The outlines of the planning of the project are as follows:

submission of initial memorandum	Sept. 2008
submission of (Environmental Management Act and Pollution of Surface Waters Act) permit applications	May 2009
final authorisation	2010
construction starts	2011
commercial supply from	2014.

Figure 8.1 EIA procedure schema and issuing of Environmental Management Act permit

EIA

Permitting , Environmental Management Act

Periods IN BG Other

IN BG Other Periods

