

ترشيد استخدام الطاقة الكهربائية وتطبيق الـ MESO عند الصيانات



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The focus in the world today on clean energy, not just a bubble or passing phenomenon and that non-traditional clean energy is now poised to go beyond the borders of the former and the progress of the parties to the energy sector as its main and vital. ■

What makes today different from the era of the seventies but was aware of extreme and increasing understanding of the issue of global warming as a threat to political security and the environment alike, will push this to the government to seek and support the trend towards a wider use of alternative energy

Power quality

In fact, climate change and the development of the price of carbon will change the dynamics of the energy market and in view of the growing economies of some countries (such as China and India) very quickly, "You need to renewable energy as part of the solution necessary to meet this growth, surprising increasing of the request energy."

Little hint of the pattern of energy consumption in Syria

The electrical energy consumed in the Syrian electric system indicate that the household sector, government departments and other consume about 55% of the energy for consumption in the Syrian electric system, a non-consumption of the product, while we note the low level of consumption of industrial sectors, agriculture and trade, which is supposed to be generating more of the gross domestic product and thus the largest percentage of the consumption of electric power

The definition of the rationalization of energy consumption

Optimal use of available resources, electric power and necessary for users comfort without prejudice or prejudice to the efficiency or productivity of equipment and machinery. ■

The objectives of rationalization

- Reduce the burden on the national economy in securing the capital needed to build power plants . ■
- Recognize the importance of energy and away from excessive
 - Active participation with the transmission and distribution companies for the continued service of electrical efficiency by reducing the excess loads on the plants and electricity networks.
- The devaluation of the power bill to the consumer / / This is the crux of the matter to the consumer

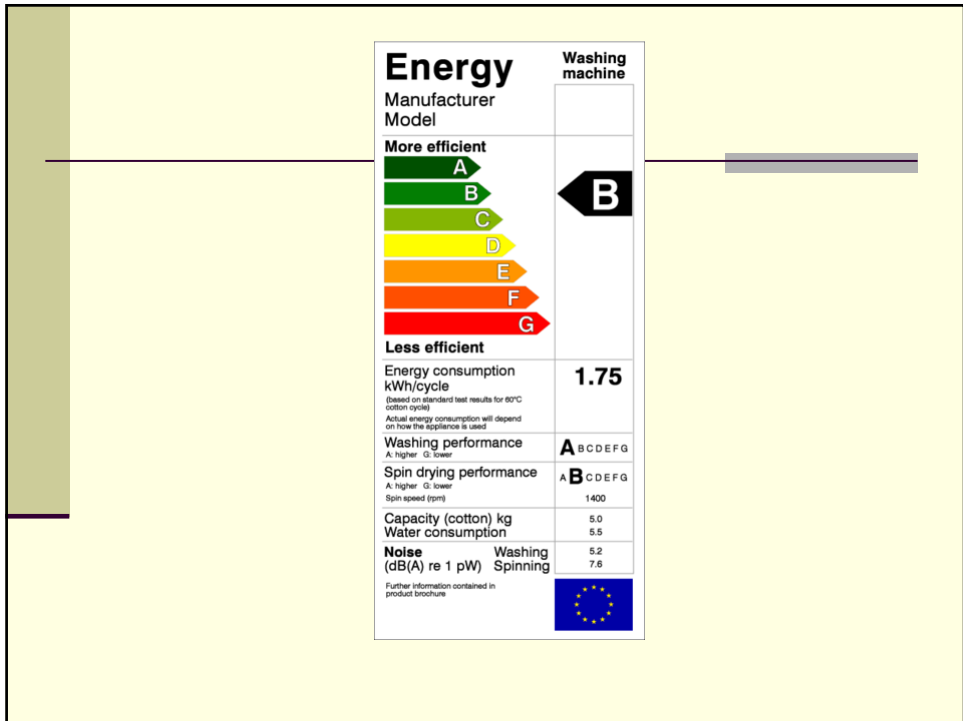
The rationalization of energy consumption has the attention of all countries of the world as it is linked to the following themes

- Growth rates high of electrical loads, which requires to provide high investments for the construction of power stations
- Environmental pollution: The steam power plants and gas power plants one of the sources of environmental pollution

The role of standard specifications

Is one of the most important methods used in the process of rationalization of consumption, the development of standards and specifications of the standard tools and home appliances that use electric power and there is a program of the labels place on the tools and determine the level of consumption and follow it through the effective control of both the domestic manufacture or imported materials and the program is successful

because gives citizens confidence in the acquisition of these devices and compares the price with quality



Some of the measures taken in the Ministry of Electricity

The electricity sector in Syria is facing a challenge is the need to meet the development needs through the provision of more energy, which led to work on improving performance in the area of generation, transmission and distribution and improve the efficiency of energy use and improve and develop the necessary legislation and there are a number of draft laws in the process of preparing a final law Energy efficiency standards for electric appliances in the domestic and service sectors, trade and the Syrian Code of thermal insulation in buildings, energy conservation and the creation of a national fund to support solar Geyser projects and renewable energies..

We also in this area that the new tariff is aimed at ■
rationalizing the consumption of electric power and
rational consumption and improving the performance
of the system in each part through the improvement
of pregnancy curve and the daily pattern of
consumption and time to confirm the role of the
government in support of citizens with limited income
and direct support to target groups where the system
has played an important role valuable segments of
the reduction of domestic consumption, particularly

The Ministry of Electricity to improve the efficiency of energy use ■
in the sectors of electric power consumed and increasing the
participation of renewable energy in the balance of energy and
electricity. Which leads to a reduction Intensity of energy
consumption and reduce reliance on electricity and oil
derivatives, and improve the power factor and working of the
electrical system and to reduce the sharp growth of electricity
demand and to achieve economies of material directly to the
benefit of participants and consumers, the ministry had
proposed earlier this year with a plan for the rationalization of
energy consumption and included the following points:
-The first: the rationalization of energy consumption in all its ■
forms, especially in factories and companies that are part of the
energy production process in addition to providing various
services.
-Second axis: the rationalization of energy consumption in public ■
buildings of the government

Obstacles to the implementation of programs to improve efficiency in the application

- Tariff reduction in the sale of electric power ■
- Lack of awareness and knowledge in this field
- The lack of demand for the purchase of equipment for high-efficiency energy
- The absence of legislation to achieve the requirements of efficiency.

The most important benefits to be derived from the rationalization of energy

- Reduce the investment required to build new power plants. ■
- Reduce emissions harmful to the environment.
- Reduce the consumption bill.
- Improve economic conditions by reducing the demand for energy, which leads to the provision of available natural resources (oil natural gas) and offered to increase export opportunities and increase the resources of hard currency.

Illustrative example of a reduction in greenhouse gas emissions, the use of the Combined Cycle Power Plant installed in power stations

Combined Cycle has been installed in power stations to take advantage of the gases released in the generation of electricity and the reduction of greenhouse gases emitted into the atmosphere by adding a steam unit to a gas turbine power station with a combined cycle to take advantage of the thermal power lost with the gases emerging from the gas turbine, which reached 550 degrees Celsius the heating steam in the steam generator recycling and use of the turbine, and thus get a higher efficiency for the gas station and the two types of consumption less than what is provided in the consumption of fuel

Jendr 200 Mega Watt Zizon 150 Mega Watt Nasiriyah 150 Mega Watt der Ali, 250 Mega Watt EXTENSION OF DEIR ALI Combined Cycle 250 mega watt total is 1000 Mega Watt

We know that burning one ton of fuel in conventional power plants, generating approximately 4255 k wh. And resulting from the application of the Combined Cycle and the amount of 1000 Mega Watt Required approximately 5640 tons of fuel / day, the burning of this amount leads to the emission of large amounts of Co₂, and these gases can be avoided through the Combined Cycle

rationalization procedures

The rationalization procedures associated with some of the costs are difficult to bear on the citizen, and it is difficult for public sector in the implementation of the electricity sector. However, the applying inevitably reflected on the general economy, for example:
The use of energy-saving light bulbs

Energy-saving lamps

comparing energy-saving bulbs and normal bulbs: ■
A- Consume a 20% energy compared to normal bulbs
B- life ten times the normal life of the lamp
C -It is a bulb-friendly environment where they save energy, thus saving fuel and contribute to the drop in greenhouse gas emissions into the environment. For example, when changing a bulb normal 100 watts of energy-saving 20 watts working for 8 hours a day is: the annual savings in energy as 233.6 and the annual fuel savings of 60 kg and a reduction in CO₂ emissions of 185 kg

The number of participants in the electricity in Syria ■
about 4 million, 670 thousand subscribers at the end
of 2007. If each participant was used to light one
energy-saving (20 watt) bulb instead of a normal 100-
watt bulb (have the same lighting together) for a
period of eight hours a day, electrical energy savings
would amount to 640 watts or 233.6 kwh for a year.
and reflects the total number of participants be
achieved annual savings of 2728 million sp according
to the world price, and 10,912 million Syrian pounds
and the production of this amount of energy saved at
the replacement of one bulb required 257 tons of fuel
(193 million dollars)

Economic valuation of environmental MESO

MESO program aims to raise awareness and knowledge in the ■
countries of Morocco and the Levant through the environmental
and economic analysis tools for decision-making process as
well as the economic assessment of environmental degradation
on the level of economic sector and on the basis of the
estimated financial results of activities through the cost of the
destruction of the environment (the cost of damage and
inefficiency \ CDI \ and the cost of processing \ CR \ (and thus
enable the sector or the methodology of the city to realize the
extent of its contribution to the national cost of environmental
degradation and assessing the environmental damage from an
economic point of view is the loss of prosperity may be the
result of the deteriorating health and loss of per capita income or
a lack of environmental services

Economic indicators of environmental

The cost of the damage and inefficiency (DIC) are the results of unregulated consumption of natural resources for example, energy ■

Treatment costs (RC) are to protect the environment or to prevent environmental degradation or to reform and economic indicators will be studied

environmental medium to assess the environmental impact of the electricity sector and

As a result of the study of economic indicators for the environmental sector, the cement showed that the cement sector participation in the output of the gross national income of less than 1%, while its contribution to environmental degradation more than 1%

Studies for the rehabilitation of some power plants

Rehabilitation of the two power plants were the first and second in the power station ■

Mharda duration of six months for each group and the benefits are :

Group I

Current capacity: 110 MW. And after rehabilitation ■
150 MW.

Heat consumption: 2733.2 KK/ kWh. and after
rehabilitation 2337 KK/ kWh

The current average efficiency: the first group of
31,465 will be 37%.

Saving fuel =

$(150 \times 396.2 \times 0.75 \times 7500) / 9500 = 35188.5$ tons of ■
fuel / year

The value of fuel saving = $35188.5 \times 250 = 8.797$
million\$ / year.

Heat content of fuel: 9500. K K / kg

The second group

Current capacity: 115 MW. And after rehabilitation ■
150 MW

Heat consumption: 2686.66 KK/ kWh. and after
rehabilitation 2337 KK/ kWh .

The current average efficiency : 32.01% will be 37%
after rehabilitation.

Saving fuel = $(150 \times 349.66 \times 0.75 \times 7500) / 9500 =$
31055 tons of fuel.

The value of fuel saving = $31055 \times 250 = 7.764$
million\$ / year.

.Heat content of the fuel: 9500 kk / kg

The total amount could be saving 16.56 million U.S. dollars / per year price for the amount of fuel saving 66 tons / year, with the possible increase of 75 MW. ■

Two groups of Alswedia and Tim

These two power stations contain gas plants , each one of them has capacity 34 megawatts, five plants at the alswedia power station and three groups of Tim, the total capacity 272 megawatts. ■

Power stations work on low efficiency 29-30%, ■

High price of fuel in the world, make us to compare useful of these plants with other plants which has a good efficiency. ■

■ We have that's results :

If we compare with gas plant – which has efficiency 37 % (as DIER ALI) ■

The annual saving of fuel will be 97,6 million m³ (19,5 million \$) if cost of gas 20 cent \ m³ . ■

In case compare with gas plant of Jandar . ■

The annual saving of fuel will be 193.5 million m³ (38.7 million \$)

The comparison with a modern plant(dier ali project combined cycle) which has efficiency 57 % the difference in consumption of fuel 244.4 million m³ (48.8 million \$) this value with load 75 % and efficiency for plants alswedia and Tim 30 % and 7500 hours operating / year . ■

This price increase in case alswedia efficiency 29 % and reach to 52,4 million \$ / year and if we change the plants the price of the project can be restored in full during four years of the value of the difference in fuel consumption. ■

Through the study of MESO on a cement factory

saving caused by the use of energy-saving bulbs 1352160 kwh/ year

Savings resulting from the separation of the converted electric nutrition reserve in order to reduce wastage (No load losses) % 1 X

$1\% \times 20000 \times 8760 = 1752000 \text{ kwh / year}$

price = $1.752.000 \times 0.06 = 105120 \text{ dollar/year}$

تكلفة الضرر وعدم الفعالية Calculation of Damages & Inefficiencies costs (DIC)							
ENERGY AND MATERIALS	Method	Number	Unit	Price	Unit	USD/y	VA%
Inefficiencies in resources use							
Coal	Potential savings	%3	Consumption share	0	SYP/y	0	%0.00
Heavy fuel	Potential savings	%7	Consumption share	2,601,925,060	SYP/y	3,502,591	%5.52
Petcoke	Potential savings	%3	Consumption share	0	SYP/y	0	%0.00
Gasoil	Potential savings	%10	Consumption share	40,569,750	SYP/y	78,019	%0.12
Natural Gas	Potential savings	%7	Consumption share	1,170,000,000	SYP/y	1,575,000	%2.48
Electricity	Potential savings	%9	Consumption share	1,412,865,222	SYP/y	2,445,344	%3.86
Total energy							%11.98
Lost materials (without energy) recuperation deducted = potential savings extra (hours) waste and materials already reintroduced in the process. Global estimation	materials –	193,104	t/an	91.20	SYP/t cost of materials	338,674	%0.53
	clinker –	41,537	t/an	1,505.60	SYP/t cost of depreciated clinker	1,202,661	%1.90
	value lost in – cement packing	22,629	t/an	680.10	SYP/t cost of depreciated cement	295,957	%0.47
Impropted stoppages due to E-filter dysfunctionment	Shortfall	1	j/an	181,221	USD/j effective	181,221	%0.29
Total material							%3.18
Inefficiencies							%15.17

تكاليف المعالجة Calculation of Remediation Costs (RC)

ENERGY, MATERIALS	Method	Numbers	Units	Prices	Units	USD/y	VA%
Inefficiencies in resources use							
Coal	Cost level: 1/2 of potential saving	%1.5	Consumption share	-	SYP/y	-	%0.00
Heavy fuel		%3.5		2,732,021,313	SYP/y	1,838,860	%2.90
Petcoke		%1.5		-	SYP/y	-	%0.00
Gasoil		%5.0		42,598,237	SYP/y	40,960	%0.06
Natural gas		%3.5		1,170,000,000	SYP/y	787,500	%1.24
Electricity		%4.5		1,483,508,483	SYP/y	1,283,805	%2.02
Total energy							%6.23
Raw materials - Transaction costs	materials -	193,104	t/y	50.2	SYP/t	186,271	%0.29
	clinker -	41,537	t/y	828.1	SYP/t	661,464	%1.04
	packing recuperation -	1	annuity	121,153.8	USD/y	121,154	%0.19
Imprinted stoppages due to E-filter dysfunctionment	Extra expenditures for E-filter						%0.00
Total materials							%1.53
Image, competitiveness	Environmental communication cost						
	share of marketing ?budget						
Inefficiencies							%7.76
Total ENERGY, MATERIALS						Total	%7.76

DIC/RC calculation

$$CID = 63427199 * 15.17 / 100 = 9621906$$

$$CR = 63427199 * 7.76 / 100 = 4921950$$

$$CID / CR = 9621906 / 4921950 = 1.95$$

$$DIC / RC > 1$$

remediation is benefit



كلمة شكر



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