

**EXTRACTO CONTRATO FILTRO MANGAS BOCAMINA I
AÑO 2006**

CONTRATO ENDdes137.05

**SUMINISTRO, MONTAJE Y PUESTA EN SERVICIO DE UN FILTRO DE
MANGAS PARA LA CENTRAL BOCAMINA**

ENTRE

EMPRESA NACIONAL DE ELECTRICIDAD S.A.

Y

**ALSTOM BRASIL LTDA., ALSTOM CHILE S.A. Y ECHEVERRÍA IZQUIERDO
MONTAJES INDUSTRIALES S.A. (CONSORCIO ALSTOM – EIM)**

En Santiago de Chile, a 31 de mayo de 2006, entre EMPRESA NACIONAL DE ELECTRICIDAD S.A., en adelante ENDESA, RUT 91.081.000-6, representada por el señor Rafael Mateo Alcalá, RUT [REDACTED] domiciliado en Santiago, calle Santa Rosa N° 76, por una parte, y por la otra parte, la empresa ALSTOM Brasil Ltda., inscrita en el CNPJ/MF bajo el N° 44.682.318/0001-75, representada por la señorita María Angélica Cristina Ginsenet, DNI [REDACTED] ALSTOM CHILE S.A., RUT 80.889.200-6, representada por el señor Julio Friedmann Encina, RUT [REDACTED] y la empresa ECHEVERRÍA IZQUIERDO MONTAJES INDUSTRIALES S.A., RUT 96.870.780-9, representada por los señores Pablo Irrázaval Barros, RUT [REDACTED] y Ricardo de la Fuente Villagrán RUT [REDACTED] las tres anteriores conjuntamente denominadas como el "CONSORCIO ALSTOM – EIM" o "el Contratista", se ha convenido lo siguiente:

PRIMERO : ENDESA encomienda al Contratista, quien acepta, la ejecución de las Obras del Contrato ENDdes137.05 denominado SUMINISTRO, MONTAJE Y PUESTA EN SERVICIO DE UN FILTRO DE MANGAS PARA LA CENTRAL BOCAMINA.



Power Environment
Environmental Control Systems

ENDESA

Dedusting System for Central Bocamina

LKPB Bag Filters for Power Boiler

♦ ***Technical Proposal*** ♦
05.022A1 – Rev. 2

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1.0 GENERAL

1.1 Objective

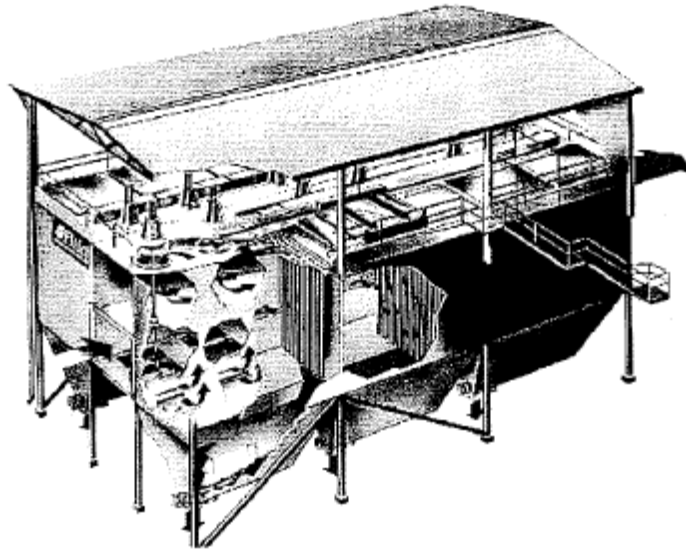
The objective of this Proposal is to establish the basic technical requirements and limits of supply for the engineering, project management, equipment and services for a Fabric Filter model LKPB to be applied in Coal Fired Power Boiler to Endesa for the project *Dedusting System for Central Bocamina*.

1.2 System Description

Gas ducts will lead the gases coming from the Power Boiler to the fabric filter. The dust is collected in the filter bags is discharged at bottom hopper openings. Redler conveyors transport the dust until the existing cyclone.

1.5 Fabric Filter Design

The fume filtration is carried out through one high-ratio pulsejet bag filter, of OPTIPOW design (ALSTOM patented design). The OPTIPOW filter has been widely accepted in industrial applications and today represents **the most used fabric filter in the world**.



Typical LKPB Fabric Filter

The main characteristics of OPTIPOW design are the following:

- Heavy industrial design for reliability and duration;
- Easy maintenance from the clean side;
- Powerful cleaning system for on-line cleaning or off-line cleaning.

The filter has proven its efficiency achieving low dust emissions in a multitude of applications.

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3.0 TECHNICAL DATA

3.1 General

Equipment	LKPB Fabric Filter
Number of units	01

3.2 Design Process Data (by customer)

Item	Unit	Value
Gas flow at filter inlet (@ 25°C and 760 torr)	m³/h	534.600
Gas temperature at filter inlet	°C	150
Max gas temperature at filter inlet (peak)	°C	175
Gas humidity		8.3 % - 12.1 %
Particulate type		Dust from 100% coal fired boiler
Inlet dust concentration, max. (wet, actual O ₂)	g/Sm³	10.5 (@ 25°C and 760 torr)
Inlet dust concentration, max. (wet, actual O ₂)	g/Nm³	11.5
Outlet dust concentration (dry, 5% O ₂)	mg/Sm³	50 (@ 25°C and 760 torr)
Coal		Anexo N° 5 "Características del Carbón"

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6.0 PERFORMANCE GUARANTEE

Provided that suppliers drawings, construction, and adjustment instructions are followed, that the foregoing initial data are verified, the supplier guarantees for normal operation at conditions shown in section 3.2 'Design Process Data (by customer)' is:

An outlet dust concentration of:

Maximum 50 mg/m³, dry gases, 5% O₂ (@ 25°C and 760 torr)

ALSTOM shall be given free access to the equipment for investigating and maintaining the equipment before the guarantee test.

If the outlet dust concentration at the guarantee test is higher than the above, the supplier is entitled to sufficient time and access to the equipment for investigating the reason for this and for making the necessary improvements to fulfill the guarantee.

The guarantee test is to be carried out by an impartial expert in cooperation with the purchaser and the supplier. The performance test is in the supplier's scope as optional item.

The guarantee test is to be performed not later than 1 month after start-up or 2 months after end of erection, whichever occurs first. If the guarantee test has not been made within the above period for reasons not due to the supplier, the plant is considered accepted and the Provisional Acceptance Certificate is issued.

When calculating the collecting efficiency at the guarantee test, consideration is to be given to a measuring tolerance determined on the basis of the test method and the accuracy of the test instruments. The EPA 5 method shall be used for measurements.

Bag failures due to attack from bromine, Br₂, in the flue gas are excluded from the warranty for this supply. Attack to the bags from bromine, Br₂, in the flue gas exclude ALSTOM from fulfilling the emission guarantee for this supply.

We hope this proposal will meet your requirements and we are open for further discussions.

Yours faithfully,

Flavio Naccache Bid Manager	Jorgen Grubbstrom Business Application Manager
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ADDENDUM N°2

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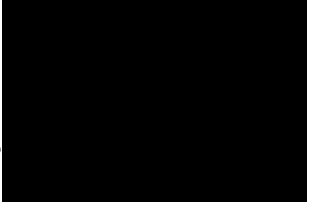
CONTRATO ENDdes 137.05

En Santiago de Chile, a 20 de agosto de 2007, entre EMPRESA NACIONAL DE ELECTRICIDAD S.A., en adelante "ENDESA", representada por el señor Rafael Mateo Alcalá, domiciliado en Santa Rosa N° 76, Piso 17, Santiago, por una parte, y por la otra parte, ALSTOM BRASIL ENERGIA E TRANSPORTE LTDA., representada por el Sr. Jose Carlos Dias de Almeida, ALSTOM CHILE S.A., representada por el Sr. Julio Friedmann Encina y ECHEVERRÍA IZQUIERDO MONTAJES INDUSTRIALES S.A., representada por los señores Pablo Irrázabal Barros y Dario Arturo Barros Ramírez, todos domiciliados para estos efectos en Sánchez Fontecilla 310, Oficina 101, Las Condes, Santiago, se ha convenido el siguiente Addendum N°2 al Contrato ENDdes137.05:

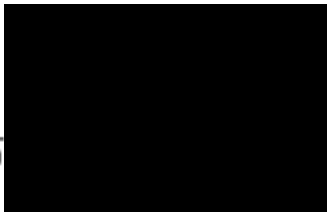
TERCERO: VALOR ESTIMADO ACTUALIZADO DEL CONTRATO

Los Ajustes de Precio objeto de este Addendum modifican el valor estimado del Contrato, en la siguiente forma:

Valores en \$ (pesos chilenos)

Valor estimado original del Contrato	
Valor adicional por Ajustes de Precio N°1 al N°7 (punto a)	
Valor por postergación entrega terreno (punto b)	
Valor por disminución plazo de detención puesta en marcha (punto c)	
Valor Ajustes de Precios N°s 9 al 13	
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Valor actual estimado del Contrato en \$ (pesos chilenos)	

Valores en US\$ (dólares americanos)

Valor Componente Off Shore	
Valor Componente On Shore	
Valor adicional por Ajuste de Precio N° 8 (punto a)	
Valor Ajuste de Precio N°14	
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Valor actual estimado del Contrato en US\$ (dólares americanos)	

Los valores antes indicados no incluyen el impuesto IVA.

