



Think the model and

**OPT $\Sigma$ X**

Mathematical  
Modeling System

will make the software for you

# OPT $\Sigma$ X-EXCEL-MMS

OPT $\Sigma$ X-EXCEL-MATHEMATICAL MODELING SYSTEM

Inicio

**Control**

User Code: JDSM

OPT $\Sigma$ X Key:

Input Data: C:\GENEX\userexcel\Input\_OPT $\Sigma$ X\_EXCEL ?

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**Scenario**

Code:

Scenario:

Description:

Model:

Obj Function:

Type Optimization:

Decision Tree:

Planning Horizon:

Horizon Start Date:

Initial Time/Hour:

**CONTROL**

**Optimization**

Output file: GAMS

Library: CPLEX 64 bits

Data: Archivo texto

Feasibility: NO Relacion

Objective F: Activa

Disjunctive programming  SOS

Run Solver  Parallel Solution  Tuning

**Phases**

Load, Check Model  Load Data

Check Data  Execute Model

Initial Solution  Prefixed Variables

Subrogation  No Error validación

**Excel Books**

Math Model

Data Model

**Export CSV**

Math Model

Data Model

Export Files

**Optimization Server**

Activate Server

Server:  IP: 0 . 0 . 0 . 0

User:  Clave:  Socket:  Send

**Results Recover**

Selective

Variables

Only Results

Constrains

Recover Results

Close

**VBA APPLICATION THAT CONNECTS EXCEL WITH OPT $\Sigma$ X**



# OPTEX-EXCEL-MMS

OPTEX - Mathematical Modeling System - Chief Scientist DecisionWare International Corp. (OPTEX MMS 374838-456059)

Control Input | Libraries | Optimization | Scenario | General | Model | Problems | Topology | Parameters | Matrix | Constraints | Variables | Results | Gaphics | Data Tables | Reports |

**MODEL**

Aplicacion: VRP - Ruteo Urbano DBF

Family: Ruteo Urbano con Ventanas de Tiempo (Pequeño)

Scenario: A - Escenario

**Characteristics**

Model:	VRPTW	Matrices	0	Dimensionality
Optimization	MIN	Constrains	0	
Objective Function	MICO	Variables Continuous	0	
Horizon		Binary	0	
Start Date	//	Integer	0	
Final Date	0	Elements > 0	0	
		Constrains SOS1	0	
		Elements SOS1	0	

**PROCESS**

Generate Structure:  Load Structure 0  Load Sets 0

Optimization:  Optimization 0

Recover Results:  Constrains 0  Variables 0

User: User OPTEX

Key: User Key OPTEX

**CONTROL**

**Optimization**

Modelo/DSS: Modelo

Output File: GAMS

Optimization Library: CPLEX 64 bits v12.2

LP Algorithm: Barrier CrossOver

MIP Options:  Run Solver  DATA SOLVER

Feasibility: Activa

Objective: Optimalidad + Factibilidad

Model source: OPTEX-EXCEL

**Compiler**

Programa OPTEX MMS a compilar

Compile/Execute Program

Load Model  Run Model

Load data base  Collect Model

Generates GUI  Verify Integrity

Initial Solution  Pre-Fix Variables

Subrogation  NO Error Validation

SOS Sets

Disjunct Programming

Deterministic Mode  Tuning

Parallel Optimization:  Parallel Problems

Cores Solver: Default

Time (seg): 0

MIP GAP (%): 10

Iterations: 0

Load structures  Interactive

Filter Results  EXCEL-GUI

Detail List  EXCEL Tables

Language: Español  EXCEL Book

DOS Window  OLAP Cubes

END Window  Tableau

MPS File  QlikView

**CPU/RAM**

Matrix	Variables	Constrains
250000	60000	30000
Registros x Archivo	RAM (MBytes)	
10000	128	

RAM Disk  Maximize Memory

**Optimization Server**

Server: DW Server 16 Cores - 48 G

Connection Times: 120

Process Times: 1800

Solver Remote

User: optexmms Passw: \*\*\*\*\* Client IP: 0.0.0.0 Socket:

**Recover Results**

Select  Only Results

Matrix  Variables  constrains

Entities Tables

Table

ITT tables

indicates with option must be taken in to account in the MIP problem

**CONTROL FROM OPTEX INTERACTIVE SOLVER**



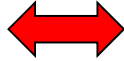
# OPT $\Sigma$ X-EXCEL-MMS

Analytics **OPTIMIZATION SERVER** Powered by **OPT $\Sigma$ X** Mathematical Modeling System

Output File	<input type="text" value="GAMS"/>	Feasibility	<input type="text" value="NO Relacion"/>	<input type="checkbox"/> Selective	<input checked="" type="checkbox"/> Only Results
Library	<input type="text" value="CPLEX"/>	Objective F	<input type="text" value="Activa"/>	<input checked="" type="checkbox"/> Variables	<input checked="" type="checkbox"/> Constrains
LP Algorithm	<input type="text" value="Default"/>	Emphasis	<input type="text" value="Optimalidad+Factil"/>	<input type="checkbox"/> Filter Results	<input type="checkbox"/> Detail Log
<input checked="" type="checkbox"/> Load, check model	<input checked="" type="checkbox"/> Load data	<input type="checkbox"/> Deterministic Mode	<input type="checkbox"/> Tuning	<input type="checkbox"/> Output Language:	<input type="text" value="English"/>
<input type="checkbox"/> Check data	<input checked="" type="checkbox"/> Execute Model	<input type="checkbox"/> Parallel Optimization	<input type="checkbox"/> Parallel Problems	<input type="checkbox"/> Entities Tables	<input type="checkbox"/> GIS Tables
Parametric Optimization	<input type="text" value="Regular optimizati"/>	Cores Solver	<input type="text" value="Default"/>	<input type="checkbox"/> GANTT Tables	<input type="checkbox"/> EXCEL-GUI
<input type="checkbox"/> Initial Solution	<input type="checkbox"/> PreFix Variables	Time (seg)	<input type="text"/>	<input type="checkbox"/> EXCEL-Tables	<input type="checkbox"/> EXCEL Book
<input type="checkbox"/> Subrogation	<input type="checkbox"/> No Error	MIP Gap (%)	<input type="text"/>	<input type="checkbox"/> OLAP Cubes	<input type="checkbox"/> Tableau
<input type="checkbox"/> SOS Sets	<input type="checkbox"/> Validation	Iterations	<input type="text"/>	<input type="checkbox"/> QLIK View	<input type="checkbox"/> XML File
	<input type="checkbox"/> Disjunctive Programming			<input type="checkbox"/> MPS File	
Inputs File:	<input type="text"/> Examinar...				
Model File:	<input type="text"/> Examinar...				
Server	<input type="text" value="DW Server 16 Con"/>	IP	<input type="text" value="4.31.168.188"/>	Connections	<input type="text" value="120"/>
Socket	<input type="text" value="5000"/>	Action	<input type="text" value="Solver Remote"/>	Process	<input type="text" value="1800"/>
User	<input type="text" value="optexmms"/>	Password	<input type="text" value="....."/>	<input type="button" value="Send"/>	<input type="button" value="Clear"/>

## CONTROL FROM A WEB PAGE

## REAL WORLD



DECISION MAKERS



MODELERS



## ALGEBRAIC MODEL

$$\text{Min } \Psi = \sum_{t=1}^T \sum_{i=1}^{N_t} \Psi_{(i,t)}$$

s.a.

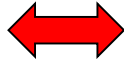
$$\Psi_{(i,t)} = \frac{c_{(i,t)}}{2} \cdot P_{(i,t)}^2 + e_{(i,t)} \cdot P_{(i,t)}$$

$$V_{(j,t+1)} = V_{(j,t)} + \tau \cdot (A_{(j,t)} - Q_{(j,t)} - S_{(j,t)})$$

$$P_{(j,t)} = p_{(j)} \cdot Q_{(j,t)}$$

# DEVELOPING MATHEMATICAL MODELS

REAL WORLD



DECISION MAKERS

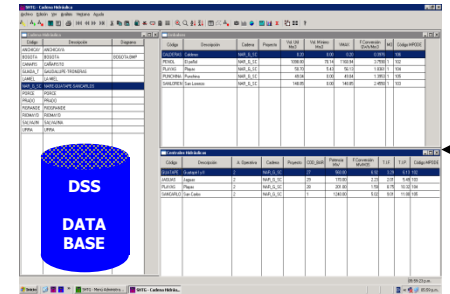


MODELERS

DEVELOPING MATHEMATICAL MODELS

TRADITIONAL WAY

DATA MODEL



ALGEBRAIC MODEL

$$\text{Min } \Psi = \sum_{t=1}^T \sum_{i=1}^{N_r} \Psi_{(i,t)}$$

s. a.

$$\Psi_{(i,t)} = \frac{c_{(i,t)}}{2} \cdot P_{(i,t)}^2 + e_{(i,t)} \cdot P_{(i,t)}$$

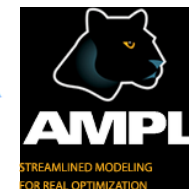
$$V_{(j,t+1)} = V_{(j,t)} + \tau \cdot (A_{(j,t)} - Q_{(j,t)} - S_{(j,t)})$$

$$P_{(j,t)} = \rho_{(j)} \cdot Q_{(j,t)}$$

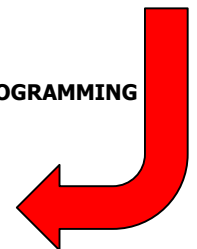


PROGRAMMERS

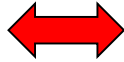
OPTIMIZATION TECHNOLOGY



PROGRAMMING



## REAL WORLD

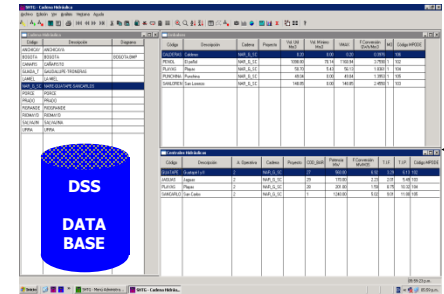


**DECISION MAKERS**



**MODELERS**

## DATA MODEL



## ALGEBRAIC MODEL

$$\text{Min } \Psi = \sum_{t=1}^T \sum_{i=1}^{N_r} \Psi_{(i,t)}$$

s.a.

$$\Psi_{(i,t)} = \frac{c_{(i,t)}}{2} \cdot P_{(i,t)}^2 + e_{(i,t)} \cdot P_{(i,t)}$$

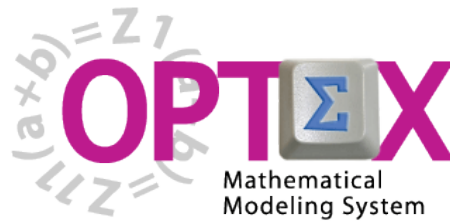
$$V_{(j,t+1)} = V_{(j,t)} + \tau \cdot (A_{(j,t)} - Q_{(j,t)} - S_{(j,t)})$$

$$P_{(j,t)} = \rho_{(j)} \cdot Q_{(j,t)}$$

**FILLING THE  
BLANKS**

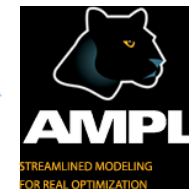
## DEVELOPING MATHEMATICAL MODELS

## OPTEX WAY



**CODE  
GENERATION**

## OPTIMIZATION TECHNOLOGY





# DATA MODEL

DSS  
DATA  
BASE

## ALGEBRAIC MODEL

$$\text{Min } \Psi = \sum_{t=1}^T \sum_{i=1}^{N_r} \Psi_{(i,t)}$$

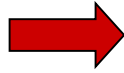
s.a.

$$\Psi_{(i,t)} = \frac{c_{(i,t)}}{2} \cdot P_{(i,t)}^2 + e_{(i,t)} \cdot P_{(i,t)}$$

$$V_{(j,t+1)} = V_{(j,t)} + \tau \cdot (A_{(j,t)} - Q_{(j,t)} - S_{(j,t)})$$

$$P_{(j,t)} = \rho_{(j)} \cdot Q_{(j,t)}$$

FILLING THE  
BLANKS



## MODEL IN EXCEL

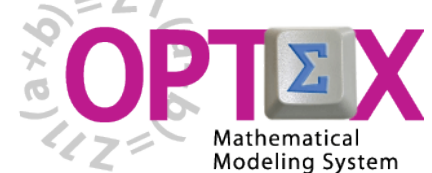
## OPTIMIZATION TECHNOLOGY



CODE  
GENERATION



.CSV  
FILES





B23 : Ingresos AGC Central Generacion

A	B	C	D	E	F	G	H	I	J	K	L	M
1	<b>COD_RES</b>	<b>DES_RES</b>	<b>COD_TRE</b>	<b>B_DER</b>	<b>COD_UNI</b>	<b>COD_SEC</b>						
2	DUNI	Demanda Electricidad - Nodo Único - Ideal	=	DTS	GWh	IDEAL	DUNI <sub>t,b</sub>	$EUNI_{t,b} + \sum_{q \in \text{TRA}} DUNI_{t,b,q} = DTS_{t,b}$				
3	NUNI	Balance de Energía - Nodo Único - Ideal	=	0	GWh	IDEAL	NUNI <sub>t,b</sub>	$\sum_{q \in \text{TER}} GTEI_{t,b,q} + \sum_{p \in \text{HID}} GHII_{t,b,p} = EUNI_{t,b}$				
4	GTEI	Generación Central Térmica Multi-Combustible - Ideal	=	0	GWh	IDEAL	GTEI <sub>t,b,g</sub>	$GTEI_{t,b,g} = \sum_{k \in \text{CTT}(g)} IHR_{g,k} \times CCOI_{t,b,k}$				
5	GIC	Generacion Ideal Central Generacion	=	0	GWh	IDEAL	GIC <sub>t,b,cg</sub>	$GIC_{t,b,cg} = \sum_{cg \in \text{TCG}(cg)} \sum_{b \in \text{BLO}} GTEI_{t,b,g} + \sum_{p \in \text{HCG}(cg)} \sum_{b \in \text{BLO}} GHII_{t,b,p}$				
6	GRC	Generacion Real Central Generacion	=	0	GWh	IDEAL	GRC <sub>t,b,cg</sub>	$GRC_{t,b,cg} = \sum_{cg \in \text{TCG}(cg)} \sum_{b \in \text{BLO}} GTEI_{t,b,g} + \sum_{p \in \text{HCG}(cg)} \sum_{b \in \text{BLO}} GHII_{t,b,p}$				
7	ISPC	Ingresos Mercado Spot Central de Generacion	=	0	USD	INGEGR		$ISPC_{t,cg} = \sum_{b \in \text{BLO}} SPPB_{t,b} \times GIC_{t,b,cg}$				
8	ISP	Ingresos Mercado Spot Agente	=	0	USD	INGEGR		$ISP_{t,ag} = \sum_{cg \in \text{TCG}(ag)} ISPC_{t,cg}$				
9	IRPC	Ingresos Reconciliacion Positiva Central de Generacion	=	0	USD	INGEGR		$IRPC_{t,cg} = \sum_{cg \in \text{TCG}(cg)} \sum_{b \in \text{BLO}} CAOM_{t,b,cg} \times DREP_{t,b,cg}$				
10	ERNC	Egresos Reconciliacion Negativa Central de Generacion	=	0	USD	INGEGR		$ERNC_{t,cg} = \sum_{cg \in \text{TCG}(cg)} \sum_{b \in \text{BLO}} SPPB_{t,b} \times DREN_{t,b,cg}$				
11	IRC	Ingresos Reconciliacion Positiva Central de Generacion	=	0	USD	INGEGR		$IRC_{t,ag} = \sum_{cg \in \text{CGA}(ag)} IRPC_{t,cg}$				
12	ERC	Egresos Reconciliacion Positiva Central de Generacion	=	0	USD	INGEGR		$ERC_{t,ag} = \sum_{cg \in \text{CGA}(ag)} ERNC_{t,cg}$				
13	ICCC	Ingresos Mercado de Cargo x Confiabilidad Central de Generacion	=	0	USD	INGEGR		$ICCC_{t,cg} = POEF_{t,cg} \times OEF_{t,cg} - \sum_{b \in \text{BLO}} PECZ_{t,b} \times DCCP_{t,b,cg}$				
14	ICC	Ingresos Mercado de Cargo x Confiabilidad Agente	=	0	USD	INGEGR		$ICC_{t,ag} = \sum_{cg \in \text{CGA}(ag)} ICCC_{t,cg}$				
15	OCOC	Egresos Costos de Combustible Central de Generacion	=	0	USD	INGEGR		$OCOC_{t,cg} = CAPI_{t,ag} + \sum_{cg \in \text{TCG}(cg)} \sum_{k \in \text{CBT}(g)} \sum_{b \in \text{BLO}} HR_{g,k} \times CCB_{t,k} \times CCO_{t,b,k}$				
16	OCO	Egresos Costos de Combustible Agente	=	0	USD	INGEGR		$OCO_{t,ag} = \sum_{cg \in \text{CGA}(ag)} OCO_{t,cg}$				
17	OAMC	Egresos Costos AOM Central de Generacion	=	CFIC	USD	INGEGR		$OAMC_{t,cg} = CFIC_{t,cg} + \sum_{cg \in \text{TCG}(cg)} COM_{t,ag} \times GTE_{t,b,g}$				
18	OAM	Egresos Costos AOM Agente	=	CFIA	USD	INGEGR		$OAM_{t,ag} = CFIA_{t,ag} + \sum_{cg \in \text{CGA}(ag)} OAMC_{t,cg}$				
19	EOSC	Egresos Pagos Otros Organismos Central de Generacion	=	0	USD	INGEGR		$EOSC_{t,cg} = COSC \times \sum_{b \in \text{BLO}} GRC_{t,b,cg}$				
20	EOS	Egresos Pagos Otros Organismos Agente	=	0	USD	INGEGR		$EOS_{t,ag} = \sum_{cg \in \text{CGA}(ag)} EOSC_{t,cg}$				
21	RECO	Reconciliacion - Generacion Real - Generacion Ideal	=	0	GWh	INGEGR	RECOT <sub>t,b,cg</sub>	$GRC_{t,b,cg} - GIC_{t,b,cg} = REP_{t,b,cg} - REN_{t,b,cg}$				
22	DCCO	Conciliacion - Cargo por Confiabilidad	=	OEF	GWh	INGEGR	DCCOT <sub>t,b,cg</sub>	$DCCP_{t,b,cg} - DCCN_{t,b,cg} = OEF_{t,cg} - GIC_{t,b,cg}$				
23	IAGC	Ingresos AGC Central Generacion	=	0	USD	INGEGR	IAGC <sub>t,cg</sub>	$IAGC_{t,cg} = 0$				
24	EAGC	Egresos AGC Central Generacion	=	0	USD	INGEGR	EAGC <sub>t,cg</sub>	$EAGC_{t,cg} = CAGC \times \sum_{b \in \text{BLO}} GRC_{t,b,cg}$				
25	IAG	Ingresos AGC Agente	=	0	USD	INGEGR	IAG <sub>t,ag</sub>	$IAG_{t,ag} = \sum_{cg \in \text{CGA}(ag)} IAGC_{t,cg}$				
26	EAG	Egresos AGC Agente	=	0	USD	INGEGR	EAG <sub>t,ag</sub>	$EAG_{t,ag} = \sum_{cg \in \text{CGA}(ag)} EAGC_{t,cg}$				
27	IVCC	Ingresos Venta Combustibles - Central de Generacion	=	0	USD	INGEGR	IVCC <sub>t,cg</sub>	$IVCC_{t,cg} = \sum_{k \in \text{CBT}(g)} PCCB_{t,k} \times ICCP_{t,cg}$				
28	IVC	Ingresos Venta Combustibles - Agente	=	0	USD	INGEGR	IVC <sub>t,ag</sub>	$IVC_{t,ag} = \sum_{cg \in \text{CGA}(ag)} IVCC_{t,cg}$				
29	DCCP	Diferencia Ingresos Venta Combustibles	=	CCBC	USD	INGEGR	DCCPT <sub>t,cg</sub>	$ICCP_{t,cg,k} - ICCN_{t,cg,k} = CCBC_{t,g,k} - \sum_{b \in \text{BLO}} CCO_{t,b,k}$				
30	ICLP	Ingresos Consolidado Mercados Spot + Largo Plazo	=	0	USD	MLPLAZ		ICLP <sub>t,ag</sub>	$ICLP_{t,ag,h} = ILP_{t,ag} + \sum_{t=1}^{LNT} ISP_{t,ag,h}$			
31	ILP	Ingresos Mercado Largo Plazo	=	IVLP	USD	MLPLAZ		ILP <sub>t,ag</sub>	$ILP_{t,ag,h} = IVLP_{t,b,ag} + \sum_{b \in \text{BLO}} PVLPL_{t,b,ag} \times QLP_{t,b}$			
32	ISP	Ingresos Mercado Spot	=	VNSP	USD	MLPLAZ		ISP <sub>t,ag</sub>	$ISP_{t,ag,h} = VNSP_{t,b,ag,h} - \sum_{b \in \text{BLO}} SPPB_{t,b,h} \times QLP_{t,b}$			

C25 : VV\_SPO

COD_PAR	DES_PAR	COD_DB	CAMPO_P	COD_UNI	COD_TDB	VALIDAR	DEFAULT				
BETA	Probabilidad del Value-at-Risk	ESC_AGE	BETA	USD	R						
BETA0	1 - BETA				C						
BETA1	1/(1-BETA)				C					$(1-\beta)^{-1}$	
BETE	BETA1 * TETA				C		BETE,ag			$(1-\beta_{ag})^{-1} \times \theta_h$	
CAGC	Cargo x AGC	SISTEM	CAGC	USD/GWh	R						
CASP	Valor Compras Spot por Ventas Comprometidas en Largo Plazo			USD	C		CASPt,ag				$CASP_{t,ag,h} = \sum_{b=BLO} SPPB_{t,b,h} \times VFLP_{t,b,ag}$
CCBC	Compras Combustible Central de Generacion	CGE_CCB	CCBC	MPC	R						
CFIA	Costos Fijos Administrativos - Agente	MAE_AGE	CFIA	USD/ano	R						
CFIC	Costos Fijos Administrativos - Central de Generacion	CEG_CVA	CFIC	USD/ano	R						
CGHI	Variable Dual Ecuación Continuidad Embalse Asociado	RR_COE	VDUAL	USD/GWh	R						$CGHI_{t,p}$
COSC	Cargos Reclamados + Impuestos Directos	SISTEM	COSC	USD/GWh	R						
CVAR		ESC_AGE	CVAR	USD	R						
FSPB				USD/GWh	R						
GIC		VV_GIC	VALOR	GWh	R						
IFLP		AGE_VLP	IFLP	USD	R						
IVLP				USD	C		IVLPT,ag				$IVLPT_{t,ag} = \sum_{cn=CNA(ag)} IFLP_{t,ag,cn}$
MWLP		AGE_VLP	MWLP	KW	R		MWLPT,ag				
NOEF				USD	C						$POEF_{t,cg} \times OEF_{t,cg}$
OEF		CGE_CVA	NOEF	USD/GWh	R						
PCCB		PRE_CBT	PCCB	USD/MWh	R						
POEF		CGE_CVA	POEF	USD/GWh	R						
POFE				USD	C						
PVLP		PRE_ELP	PVLP	USD/GWh	R						
SPP		VV_SPO	VALOR	USD/GWh	R						$SPPB_{t,b} = FSPB_{t,b} \times SPP_{t,b}$
SPPB				USD/GWh	C						
TETA		ESC_AGE	TETA	USD	R						
USMW		AGE_VLP	USMW	USD/MWh	R						$USMW_{t,b,ag}$
VASP				USD	C		VASPT,ag				$VASP_{t,b,ag,h} = \sum_{b=BLO} \sum_{cge=TCG(ag)} SPPB_{t,b,h} \times G_{t,b,ag}$
VFLP				GWh	C		VFLPT,b,ag				$VFLPT_{t,b} = HBZ_{t,b} \times MWLPT_{t,b}$
VFLP				GWh	C		VFLPT,b,ag				$VFLPT_{t,b,ag} = \sum_{cn=CNA(ag)} HBZ_{t,b} \times MWLPT_{t,ag,cn}$
VNSP				USD	C		VNSPT,ag				$VNSPT_{t,ag,h} = VASP_{t,ag,h} - CASPT_{t,ag,h}$

Activar

Activar:

- CAMRE
- CDBAS
- DDBAS
- DMENU
- INDICES
- CONJUNTO
- PARAMETR**
- PAR\_IND
- PAR\_FOR
- VARIABLE
- VAR\_IND
- RESTRIC
- RES\_IND
- SPP
- SPPB
- TETA
- USMW
- VASP
- VFLP
- VFLP
- VNSP

Aceptar Cancelar

EXCEL

MAY BE THE BEST AND THE EASIEST WAY TO IMPLEMENT DECISION SUPPORT SYSTEMS BY FOLLOWING A FILLING COLUMNS PROCESS

OPT<sub>X</sub>-ASTABM - Menu Programador OPT<sub>X</sub> - [OPT<sub>X</sub>\_GUI - Menu Explorer]

Archivo Ver Herramientas Ventana Ayuda

- Mathematical Definitions
- Advanced Concepts
- Financial Modeling
- Family of Scenarios
- Data Model
- Optimization Libraries/Program
- Auxiliar Entities
- Report Configuration
- Menú OPT<sub>X</sub> User
- Carga Modelo via CSV
- Chequeo Estructura SSD
- Documentos OPT<sub>X</sub>
- Documentos Aplicacion

Mathematical Definitions    Advanced Concepts    Financial Modeling    Family of Scenarios    Data Model    Optimization Libraries/Program    Auxiliar Entities

Report Configuration    Menú OPT<sub>X</sub> User    Carga Modelo via CSV    Chequeo Estructura SSD    Documentos OPT<sub>X</sub>    Documentos Aplicacion

GENEX MenuWindow 08:50:11 a. m.

OPT<sub>X</sub> - Libro Carga de Estructuras OPT<sub>X</sub>.xlsx - Excel

COD_PAR	DISE_PAR	COO_M0	CAMPO	COO_M1	VALIDO	ENTAIN	DESCRIPCION
1	AREA	TERL_TSE	AREA	NO	R		Área de la terminal te dedicado al servicio ts
2	MOVb		Mov	C	R		Número esperado de movimientos para atender el barco tipo b.
3	MOVb		Mov	C	R		Número esperado de cajas que se deben atender en el barco tipo b.
4	FCOM	PAR_CONS	FCOM	Mov/Caj	R		Factor Conversión Cajas a Movimientos (Mov/Caj)
5	FCOM	PAR_CONS	FCOM	Mov/Caj	R		Diferencial definido en la escala Real para asegurar que dos eventos no ocurran en el instante de tiempo
6	EPSt	PAR_CONS	EPSt		R		
7	PPMV	PAR_CONS	PPMV	Veh/hr	R		Productividad promedio de movimientos de vehículos (Veh/hr)
8	TOPA	PAR_CONS	TOPA	hr	R		Tiempo de atraque (hr)
9	TPRE	PAR_CONS	TPRE	hr	R		Tiempo de preparación (hr)
10	TRES	PAR_CONS	TRES	hr	R		Tiempo de reserva (hr)
11	TCE	PAR_CONS	TCE	hr	R		Tiempo de cierre (hr)
12	TOFZ	PAR_CONS	TOFZ	hr	R		Tiempo de Zanja (hr)
13	DMEB	PAR_CONS	DMEB	m	R		Distancia mínima entre barcos (m)
14	DMSF	PAR_CONS	DMSF	m	R		Distancia mínima entre el barco y el final del muelle (m)
15	DMEG	PAR_CONS	DMEG	m	R		Distancia mínima entre grúas (m)
16	PTYP	PAR_CONS	PTYP		R		Porcentaje de tapas y presillas (%)
17	CBAR	PAR_CONS	CBAR	TEUS	R		Capacidad de la barquilla interterminal (TEUS)
18	CPLA	PAR_CONS	CPLA	TEUS	R		Duración del ciclo de planeación
19	BNH	PAR_CONS	BNH		R		Big M
20	CUSt	PAR_CONS	CUSt		R		Costo de utilización de la grúa propia (USD/Mov). Es un costo artificial para evitar el uso mismos.
21	FCCT	MAN_TSE	FCCT	USD/Mov	R		Factor de conversión de unidades carga a unidades flujo (TEUS/Caj. o L/Veh)
22	TRAT	MAN_TSE	TRAT		R		Tasa de transbordo "transshipment rate". Identifica el porcentaje del total de Teus mueven en el muelle, y que van al patio del servicio ts
23	ESEL	MAN_TSE	ESEL	dias	R		Estado promedio del inventario en patios (dias) del tipo de servicio ts
24	FPAL	MAN_TSE	FPAL		R		Factor pico de almacenamiento de contenedores (%) para el tipo de servicio ts
25	FAPI	MAN_TSE	FAPI		R		Factor de anclamiento de contenedores (%) para el tipo de servicio ts

**DSS DATA BASE**  
**DATA MODEL**

**DATA IN EXCEL**

### OPTEX-EXCEL-MMS

OPTEX-EXCEL-MATHEMATICAL MODELING SYSTEM

Control: User Code: JMS, OPTEX Key: [empty], Input Data: C:\GENEX\userexcel\input\_OPTEX\_EXCEL

Scenario: Code: VSPTR, Description: Ruido Urbano con Ventanas de Tiempo, Model: VSPFTW, Obj Function: HECO, Optimization direction: HECO, Decision Tree: [empty], Planning Horizon: 12,000.00 a. m., Horizon Start Date: [empty], Initial Time/hour: [empty]

Optimization: Output file: GAMS, Library: OPTEX 64 bits v12.2, Data: Archive texto, Run Optex: Run Solver, Phases: Load, Check Model, Check Data, Check Data, Subrogation, Initial Solution, Prefixed variables, Optimization Server: Activate Server, Server: [empty], IP: 0.0.0.0, User: [empty], Clave: [empty], Socket: [empty]

Results Recovery: Selective, Variables, Only Results, Constraints, Recover Results

Export CSV: Mathematical Model, Data Model, CSV Data Directory, Export Files

Excel New Books: Mathematical Model, Data Model

**ALGEBRAIC MODEL**

$$\text{Min } \Psi = \sum_{i=1}^T \sum_{j=1}^{N_T} \Psi_{(i,j)}$$

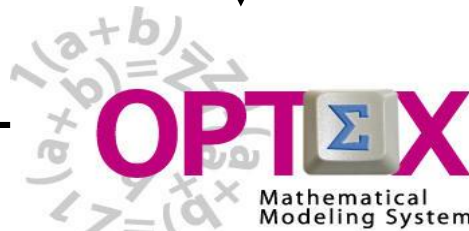
s. a.

$$\Psi_{(i,j)} = \frac{c_{(i,j)}}{2} \cdot P_{(i,j)}^2 + e_{(i,j)} \cdot P_{(i,j)}$$

$$V_{(j,j+1)} = V_{(j,j)} + \tau \cdot (A_{(j,j)} - Q_{(j,j)} - S_{(j,j)})$$

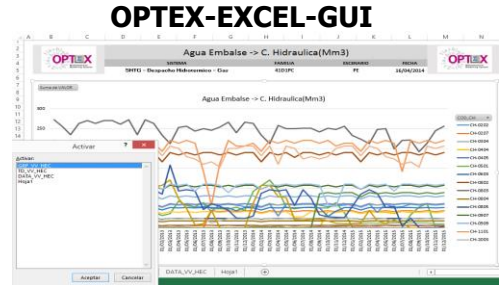
$$P_{(j,j)} = \rho_{(j)} \cdot Q_{(j,j)}$$

**MODEL IN EXCEL**



**CODE GENERATION**

**OPTIMIZATION TECHNOLOGY**



**FILLING THE BLANKS**

**\*.CSV FILES**

**PRIMAL - DUAL VARIABLES**



EXCEL OPTEX\_MODELO\_VRPDF - Excel

ARCHIVO INICIO INSERTAR DISEÑO DE PÁGINA FÓRMULAS DATOS REVISAR VISTA DESARROLLADOR COMPLEMENTOS

Portapapeles Fuente Alineación Número Estilos Celdas Modificar

Q36

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	DES_RES	DIN_RES	COD_TRE	B_DER	B_IZQ	COD_VAR	COD_SEC	COD_ADE	COD_UOPSS	COD_CVA	COD_DB	CAMPO_D	CAMPO_H	COD_UNI	DLES_RES	DLIN_RES
2	Spanish Descri	English Descript	Restriction Type	Righ Hand Side	Left Hand Side	(Disjunctive Logic	Sector Code	Code Decision	AUOPS Entity	Restriction Func	Table Results	Dual Variable Fix	Variable Field Cl	Restraint Unit	GAMS Code	Long Description
3	Entrada y Salida	=	0			AVL		0		D					Establece que t	
4	Capacidad de lo	<	CAPP			AVL		0		D				kg	Establece que le	
5	Capacidad volu	<	CAPV			AVL		0		D				m3	Establece que le	
6	Ciclos no Permit	<	1			AVL		0		D					Establece que t	
7	Penalizacion por	<	HCIE			VCI		0		D				hr	Establece la dife	
8	Penalizacion por	>	HAPE			VCI		0		D				hr	Establece la dife	
9	Salida del Nodo	=	0			AVL		0		D					Establece que t	
10	Secuencia de lo	>	RPTW			VCL		0		D				hr	Establece que e	
11	Tiempo Limite de	<	TDJO			AVL		0		D				hr	Establece que e	
12	Utilizacion de Ve	<	0					0		D					Establece si el v	
13	Visita de Destini	>	1					0		D					Establece que p	
14	Visita Destinos i	=	0					0		D					Establece si el v	
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
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28																
29																
30																
31																
32																
33																
34																

RES\_REL | Constraints - Relaxat    **RESTRICC | Constraints**    SECTOR | Sectors - Spaces    VAR\_CIN | Ve ...

LISTO 100%

**ALL YOUR MODELING USING EXCEL  
SPREADSHEETS, HERE YOU CAN TAKE A LOOK  
TO THE CONSTRAINS OF THE MODEL.**

OPTEX\_DATA\_VRP - Excel

ARCHIVO INICIO INSERTAR DISEÑO DE PÁGINA FÓRMULAS DATOS REVISAR VISTA DESARROLLADOR COMPLEMENTOS

Arial 8 A A Ajustar texto General

Portapapeles Fuente Alineación Número Estilos Celdas

A189 V10-123

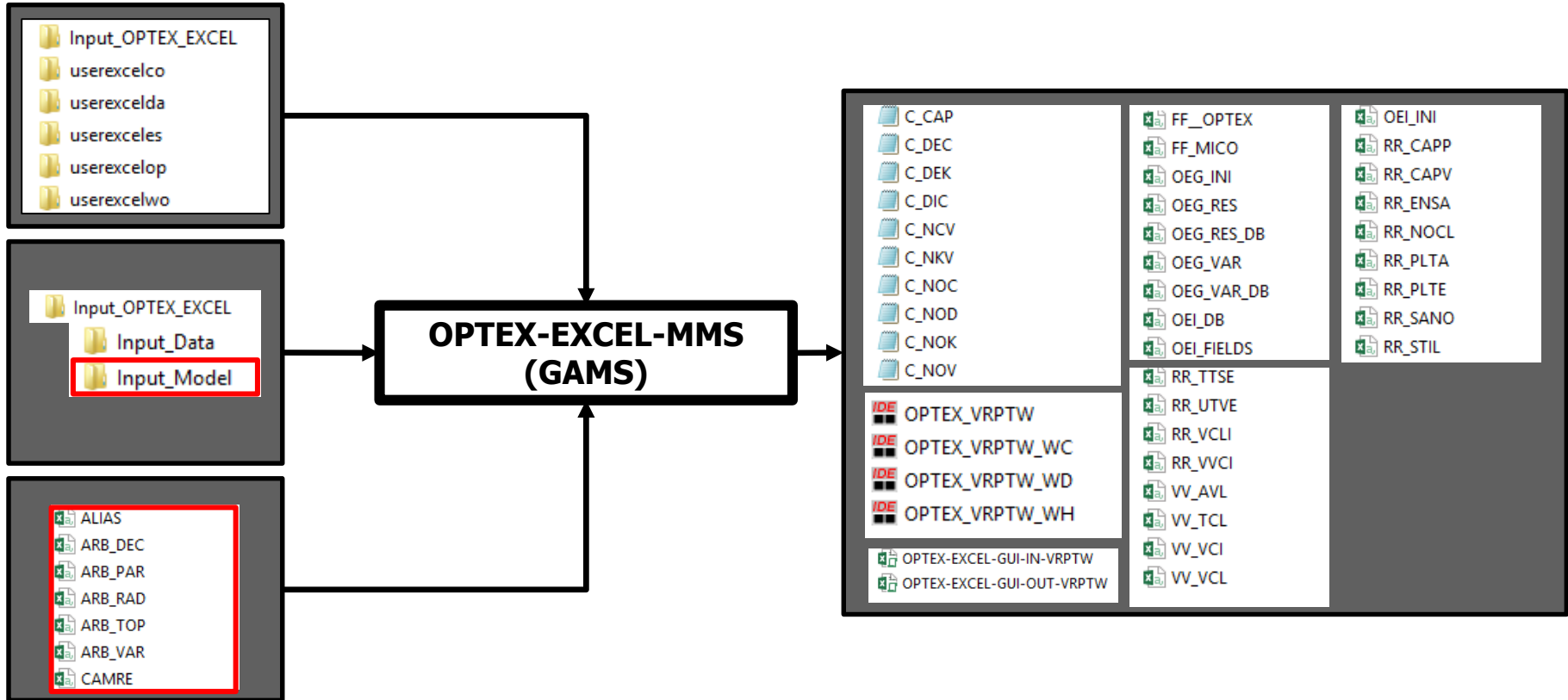
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	COD_CAJ	DES_CAJ	PECA	VOCA												
2	Codigo Caja	Descripcion de l	Peso de la Caja	Volumen de Caja (m3)												
3	100-110		9	0.01												
4	100036-13		9	0.05												
5	100037-13		9	0.05												
6	100038-13		9	0.05												
7	100042-13		9	0.04												
8	100058-13		3.4	0.02												
9	100243-13		2.7	0.02												
10	100270-13		8.1	0.04												
11	100341-13		9	0.05												
12	100354-13		2.7	0.02												
13	100356-13		9	0.05												
14	100357-13		9	0.05												
15	100358-13		6.4	0.04												
16	100437-13		5.7	0.03												
17	100449-13		5.7	0.02												
18	100454-13		4.6	0.05												
19	100465-13		9	0.05												
20	100466-13		5	0.05												
21	100475-13		3.2	0.03												
22	100490-13		5.5	0.03												
23	100497-13		4.7	0.04												
24	100501-13		7.3	0.06												
25	100505-13		7.3	0.06												
26	100509-13		7.3	0.06												
27	100543-13		7.1	0.03												
28	100546-13		6.1	0.02												
29	100550-13		5	0.02												
30	100551-13		6.5	0.03												
31	100553-13		5.2	0.02												
32	100554-13		5.2	0.02												
33	100557-13		5.2	0.02												
34	100558-13		5.2	0.02												

CAJAS | Maestra de Cajas DIAS | Maestra Dias ESC\_CAJ | Escenarios Cajas ESC\_DIA | Escenarios ...

LISTO 100%

**FILL YOUR MODEL DATA IN EXCEL SPREADSHEETS,  
YOU'LL HAVE ALL YOUR MODEL INFORMATION IN  
AN ORGANIZED WAY.**

**FROM TWO SIMPLE WORKBOOKS TO A COMPLETE INFORMATION SYSTEM. YOU WON'T EVEN NOTICE WHEN IT HAPPENED.**



**YOU CAN CHECK ALL THE VALUES FOR YOUR DECISION VARIABLES AND CONSTRAIN IN INDEPENDENT FILES.**

USER LOGIN, AND EXCEL APP SELECTION

SELECT AMONG DIFFERENT OPTIMIZATION SOFTWARE AND SOLVERS.

SELECT WHAT ELEMENTS YOU WISH TO RECOVER.

OPTEX-EXCEL-MATHEMATICAL MODELING SYSTEM

Inicio

**Control**

User Code: JDSM

OPTEX Key: [ ]

Input Data: C:\GENEX\userexcel\Input\_OPTEX\_EXCEL [?]

**Scenario**

Code: [ ]

Scenario: [ ]

Description: [ ]

Model: [ ]

Obj Function: [ ]

Type Optimization: [ ]

Decision Tree: [ ]

Planning Horizon: [ ]

Horizon Start Date: [ ]

Initial Time/Hour: [ ]

**CONTROL**

**Optimization**

Output file: GAMS Feasibility: NO Relajacion

Library: CPLEX 64 bits Objective F: Activa

Data: Archivo texto

Disjunctive programming  SOS

Parallel Solution  Tuning

Run Optex  Run Solver

**Phases**

Load, Check Model  Load Data

Check Data  Execute Model

Initial Solution  Prefixed Variables

Subrogation  No Error validación

**Excel Books**

Math Model

Data Model

**Export CSV**

Math Model

Data Model

Export Files

**Optimization Server**

Activate Server Server: [ ] IP: 0 . 0 . 0 . 0

User: [ ] Clave: [ ] Socket: [ ] Send

**Results Recover**

Selective

Variables

Only Results

Constrains

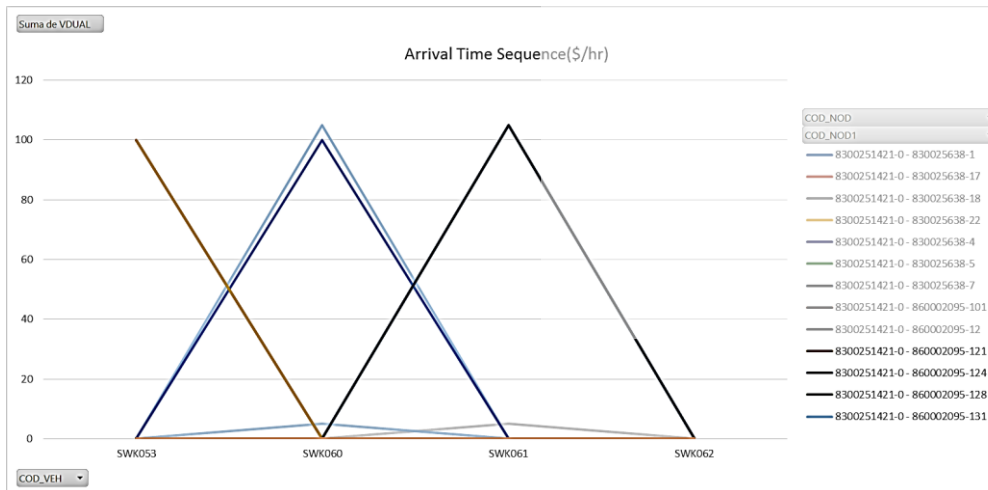
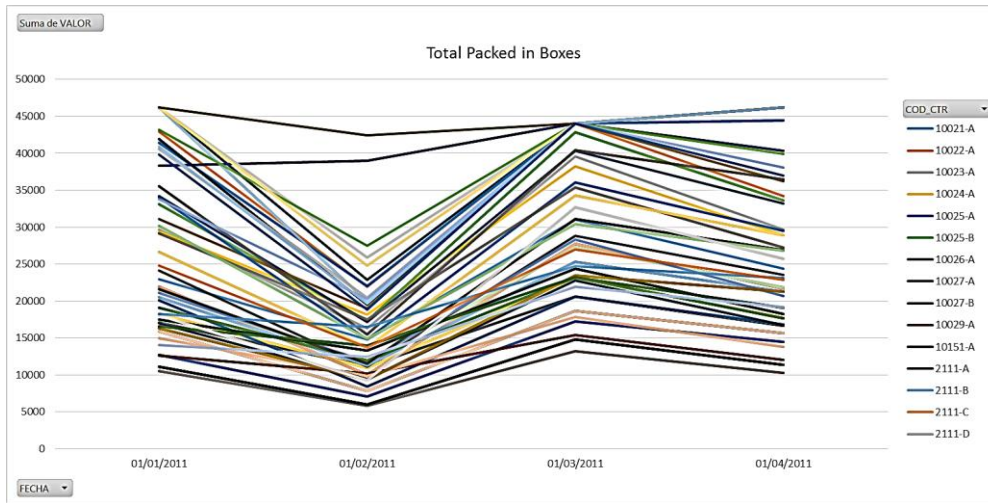
Recover Results

Close

SELECT AND VISUALIZE WHAT YOU ARE ABOUT TO RUN

RUN YOUR OPTIMIZATION PROBLEM WITH CLOUD COMPUTING





OPTEX-EXCEL-GUI-Output

Familia: VRPTG

Escenario: A

Tipo de informe:  Un archivo  Varios archivos

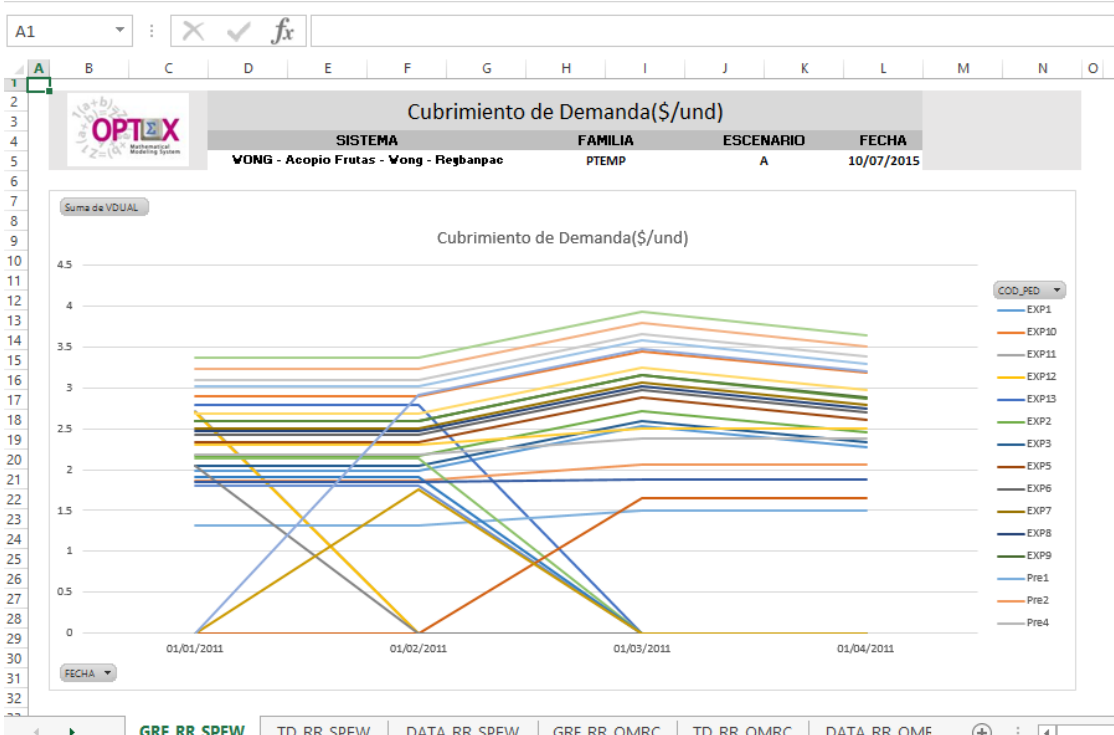
Generar informe

Seleccione las tablas que desea incluir en el Informe

NUM	COD_VAR	DES_VAR
<input checked="" type="checkbox"/>	VV_VCL	Determina si un Vehículo va de un Destino a Otro
<input checked="" type="checkbox"/>	VV_TCL	Tiempo en que llegada el vehículo v al al destino c
<input checked="" type="checkbox"/>	VV_VSA	Tiempo de Llegada Tardía
<input checked="" type="checkbox"/>	VV_VLE	Tiempo de Llegada Temprana
<input checked="" type="checkbox"/>	VV_AVL	Determina el Uso de un Vehículo
<input checked="" type="checkbox"/>	VV_VCI	Asignación del Vehículo v al Destino c
<input checked="" type="checkbox"/>	RR_CAPP	Capacidad de los Vehículos en Peso
<input checked="" type="checkbox"/>	RR_CAPV	Capacidad volumétrica de los Vehículos
<input checked="" type="checkbox"/>	RR_ENSA	Entrada y Salida del Nodo
<input checked="" type="checkbox"/>	RR_NOCL	Cidos no Permitidos
<input checked="" type="checkbox"/>	RR_PLTA	Penalización por Llegada Tardía
<input checked="" type="checkbox"/>	RR_PLTE	Penalización por Llegada Temprana
<input checked="" type="checkbox"/>	RR_SANO	Salida del Nodo Origen
<input checked="" type="checkbox"/>	RR_STIL	Secuencia de los Tiempos de Llegada
<input checked="" type="checkbox"/>	RR_TTSE	Tiempo Límite de Servicio
<input checked="" type="checkbox"/>	RR_UTVE	Utilización de Vehículos

Seleccionar todo    Borrar selección    Cambiar parametros    Cerrar aplicación

**YOUR RESULTS ARE PRESENTED IN EXCEL USING PIVOT TABLES. ALL YOUR MODELLING PROCESS USING ONLY EXCEL. AS EASY AS FILL THE INFORMATION AND MAKE SOME CLICKS.**



	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		Suma de VDUAL	Etiquetas de columna									
3		Etiquetas de fila	EXP1	EXP10	EXP11	EXP12	EXP13	EXP2	EXP3	EXP5	EXP6	EXP7
4		01/01/2011	1.99	2.9	2.72	2.7	2.79	2.17	2.05	2.33	2.42	2.51
5		01/02/2011	1.99	2.9	0	0	2.79	2.17	2.05	2.33	2.42	2.51
6		01/03/2011	2.54	3.45	0	0	0	2.72	2.6	2.88	2.97	3.06
7		01/04/2011	2.27	3.18	0	0	0	2.45	2.33	2.61	2.7	2.79
8		<b>Total general</b>	<b>8.79</b>	<b>12.43</b>	<b>2.72</b>	<b>2.7</b>	<b>5.58</b>	<b>9.51</b>	<b>9.03</b>	<b>10.15</b>	<b>10.51</b>	<b>10.87</b>

Excel interface showing a data table with columns: FECHA, COD\_PED, COD\_PRF, HOLGURA, VDUAL. The table lists various scenarios and their corresponding values over time.

	A	B	C	D	E	F
1	FECHA	COD_PED	COD_PRF	HOLGURA	VDUAL	
2	01/01/2011	EXP1	EXPRE	302044	1.99	
3	01/01/2011	EXP10	EXPRE	33480	2.9	
4	01/01/2011	EXP11	EXPRE	64800	2.72	
5	01/01/2011	EXP12	EXPRE	716816	2.7	
6	01/01/2011	EXP13	EXPRE	194292	2.79	
7	01/01/2011	EXP2	EXPRE	70200	2.17	
8	01/01/2011	EXP3	EXPRE	59400	2.05	
9	01/01/2011	EXP5	EXPRE	2052	2.33	
10	01/01/2011	EXP6	EXPRE	59824	2.42	
11	01/01/2011	EXP7	EXPRE	4320	2.51	
12	01/01/2011	EXP8	EXPRE	14040	2.47	
13	01/01/2011	EXP9	EXPRE	2200	2.6	
14	01/01/2011	Pre1	PREM	4800	1.31	
15	01/01/2011	Pre2	PREM	43200	1.87	
16	01/01/2011	Pre4	PREM	64800	2.19	
17	01/01/2011	Pre5	PREM	9720	2.31	
18	01/01/2011	Pre6	PREM	178003	1.81	
19	01/01/2011	Pre7	PREM	10359	2.13	
20	01/01/2011	Pre8	PREM	416858	1.91	
21	01/01/2011	Pre9	PREM	0	0	
22	01/01/2011	Res1	RESCA	19267	2.047	
23	01/01/2011	Res2	RESCA	0	0	
24	01/01/2011	Res3	RESCA	10279	1.847	
25	01/01/2011	SP1	SPRE	75600	2.59	

**ALL YOUR RESULTS IN ONE EXCEL BOOK.**

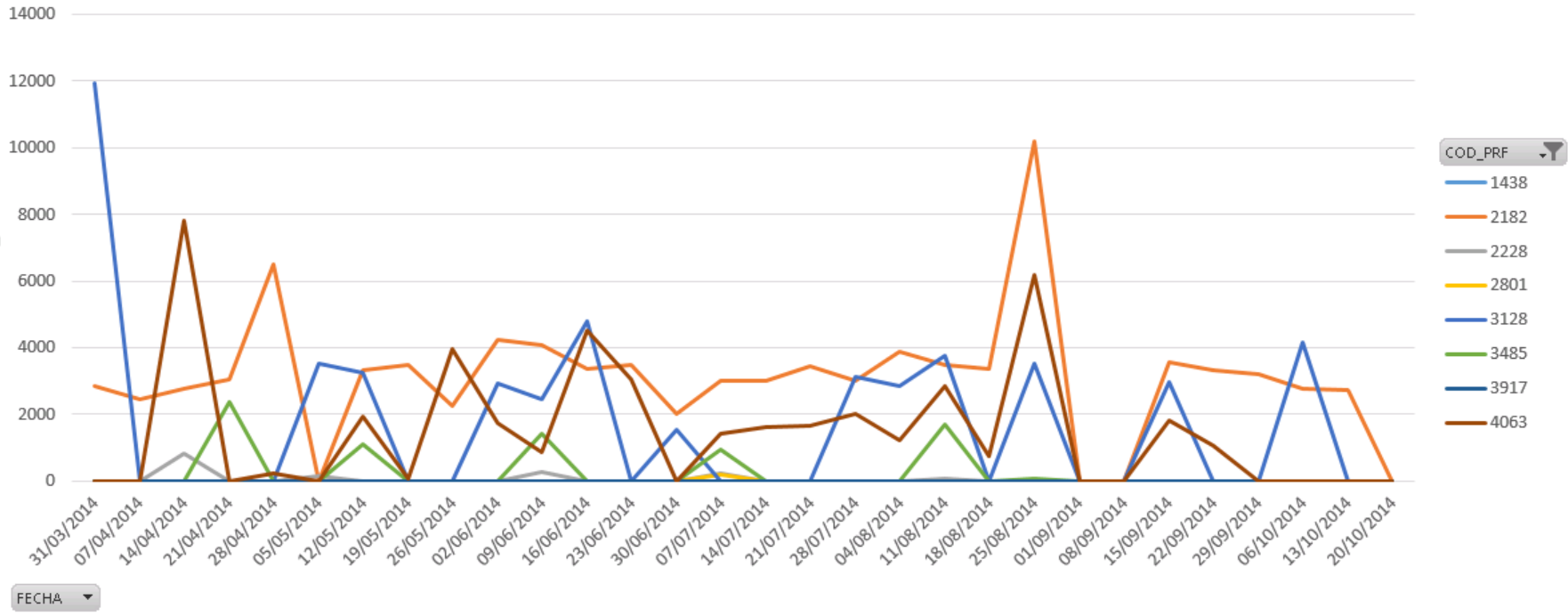


## Volumen de Envasado de Cerveza en Lineas Envasadoras(hl/t)

SISTEMA	FAMILIA	ESCENARIO	FECHA
SIMM / BAVARIA	P2014C	1	07/07/2014

COD\_LIN  
Suma de VALOR

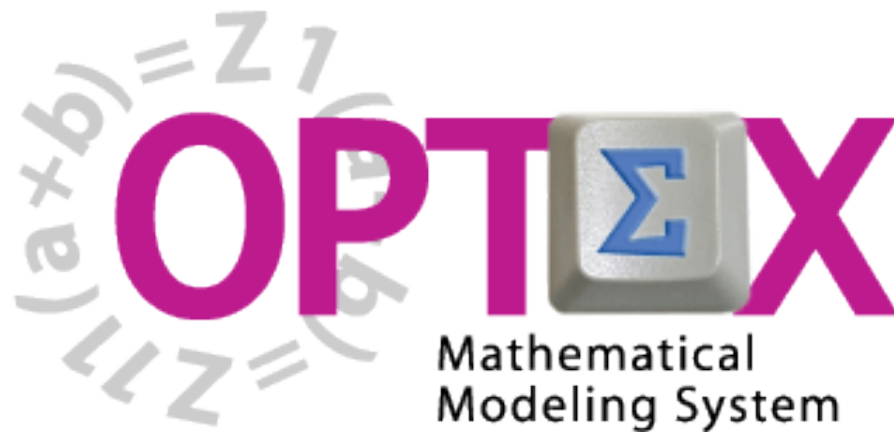
Volumen de Envasado de Cerveza en Lineas Envasadoras(hl/t)



- COD\_PRF
- 1438
  - 2182
  - 2228
  - 2801
  - 3128
  - 3485
  - 3917
  - 4063

FECHA

# SOLVING IN REMOTE SERVERS





OPTEX\_VPTW - Microsoft Excel

**EXCEL INPUT DATA**

A1	COD_CAJ	MS_CAJ	RECA	VOLA	E	F	G	H	I	J	K	L	M	N	O	P
2	100110	9	0.01													
3	100306-13	9	0.05													
4	100307-13	9	0.05													
5	100308-13	9	0.05													
6	100309-13	9	0.05													
7	10042-13	9	0.04													
8	100508-13	3.4	0.02													
9	100243-13	2.7	0.02													
10	100279-13	8.1	0.04													
11	100341-13	9	0.05													
12	100364-13	2.7	0.02													
13	100366-13	9	0.05													
14	100387-13	9	0.05													
15	100388-13	0.4	0.04													
16	100437-13	5.7	0.03													
17	100449-13	5.7	0.02													
18	100454-13	4.6	0.05													
19	100485-13	9	0.05													
20	100486-13	5	0.05													
21	100478-13	3.2	0.03													
22	100480-13	5.5	0.03													
23	100487-13	4.7	0.04													
24	100091-13	7.3	0.06													
25	100095-13	7.3	0.06													
26	100099-13	7.3	0.06													
27	100543-13	7.1	0.03													
28	100546-13	6.1	0.02													
29	100550-13	5	0.02													
30	100581-13	6.5	0.03													
31	100583-13	5.2	0.02													
32	100584-13	5.2	0.02													
33	100587-13	5.2	0.02													
34	100588-13	5.2	0.02													
35	100605-13	4.3	0.03													



OPTEX\_RESULTS - Microsoft Excel

**EXCEL OUTPUT DATA**

A1	COD_VEH	COD_MOD	VALOR	COTA_SUP	COSTO_OB1	COSTO_RED	VALOR_DF	OK_HIS	E	F	G	H	I	J	K	L	M	N	O	P
1	SWK060	830025638-0	0	100000000	0	0	0	0												
2	SWK060	830025638-1	19.5	100000000	0	0	0	0												
3	SWK060	830025638-17	0.5	100000000	0	0	0	0												
4	SWK060	830025638-18	7	100000000	0	0	0	0												
5	SWK060	830025638-19	7	100000000	0	0	0	0												
6	SWK060	830025638-22	0.5	100000000	0	0	0	0												
7	SWK060	830025638-4	6	100000000	0	0	0	0												
8	SWK060	830025638-5	10.5	100000000	0	0	0	0												
9	SWK060	830025638-6	10.5	100000000	0	0	0	0												
10	SWK060	830025638-7	3	100000000	0	0	0	0												
11	SWK061	830025638-1	12.371812	100000000	0	0	0	0												
12	SWK061	830025638-17	14.338397	100000000	0	0	0	0												
13	SWK061	830025638-18	10.074087	100000000	0	0	0	0												
14	SWK061	830025638-22	5.116208	100000000	0	0	0	0												
15	SWK061	830025638-4	1.703519	100000000	0	0	0	0												
16	SWK061	830025638-5	6.236843	100000000	0	0	0	0												
17	SWK061	830025638-6	3.408167	100000000	0	0	0	0												
18	SWK061	830025638-7	3.408167	100000000	0	0	0	0												
19	SWK061	860002095-136	6.882439	100000000	0	0	0	0												
20	SWK062	830025638-1	0	100000000	0	0	0	0												
21	SWK062	830025638-1	19.5	100000000	0	0	0	0												
22	SWK062	830025638-17	0.5	100000000	0	0	0	0												
23	SWK062	830025638-18	7	100000000	0	0	0	0												
24	SWK062	830025638-22	0.5	100000000	0	0	0	0												
25	SWK062	830025638-4	5	100000000	0	0	0	0												
26	SWK062	830025638-5	10.5	100000000	0	0	0	0												
27	SWK062	830025638-6	10.5	100000000	0	0	0	0												
28	SWK062	860002095-136	3	100000000	0	0	0	0												

Microsoft Excel interface showing the ribbon with tabs: Archivo, Inicio, Insertar, Diseño de página, Fórmulas, Datos, Revisar, Vista, Load Test, Equipo. The ribbon includes options for font (Arial, size 9), alignment, and number formatting.

	A	B	C	D	E	F	G	H	I	J	K	L
1	COD_CAJ	DES_CAJ	PECA	VOCA								
2	Codigo Caja	Descripcion	Peso (kg)	Volumen (m3)								
3	100-110		9	0.01								
4	100036-13		9	0.05								
5	100037-13		9	0.05								
6	100038-13		9	0.05								
7	100042-13		9	0.04								
8	100058-13		3.4	0.02								
9	100243-13		2.7	0.02								
10	100270-13		8.1	0.04								
11	100341-13		9	0.05								
12	100354-13		2.7	0.02								
13	100356-13		9	0.05								
14	100357-13		9	0.05								
15	100358-13		6.4	0.04								
16	100437-13		5.7	0.03								
17	100449-13		5.7	0.02								
18	100454-13		4.6	0.05								
19	100465-13		9	0.05								
20	100466-13		5	0.05								
21	100475-13		3.2	0.03								
22	100490-13		5.5	0.03								
23	100497-13		4.7	0.04								
24	100501-13		7.3	0.06								
25	100505-13		7.3	0.06								
26	100509-13		7.3	0.06								
27	100543-13		7.1	0.03								
28	100546-13		6.1	0.02								
29	100550-13		5	0.02								
30	100551-13		6.5	0.03								
31	100553-13		5.2	0.02								
32	100554-13		5.2	0.02								
33	100557-13		5.2	0.02								

**EXCEL BOOK**  
**INPUT DATA**



Archivo Inicio Insertar Diseño de página Fórmulas Datos Revisar Vista

Cortar Copiar Copiar formato

Pegar Portapapeles

Arial 8 Fuente

Alineación

Ajustar texto Combinar y centrar

General

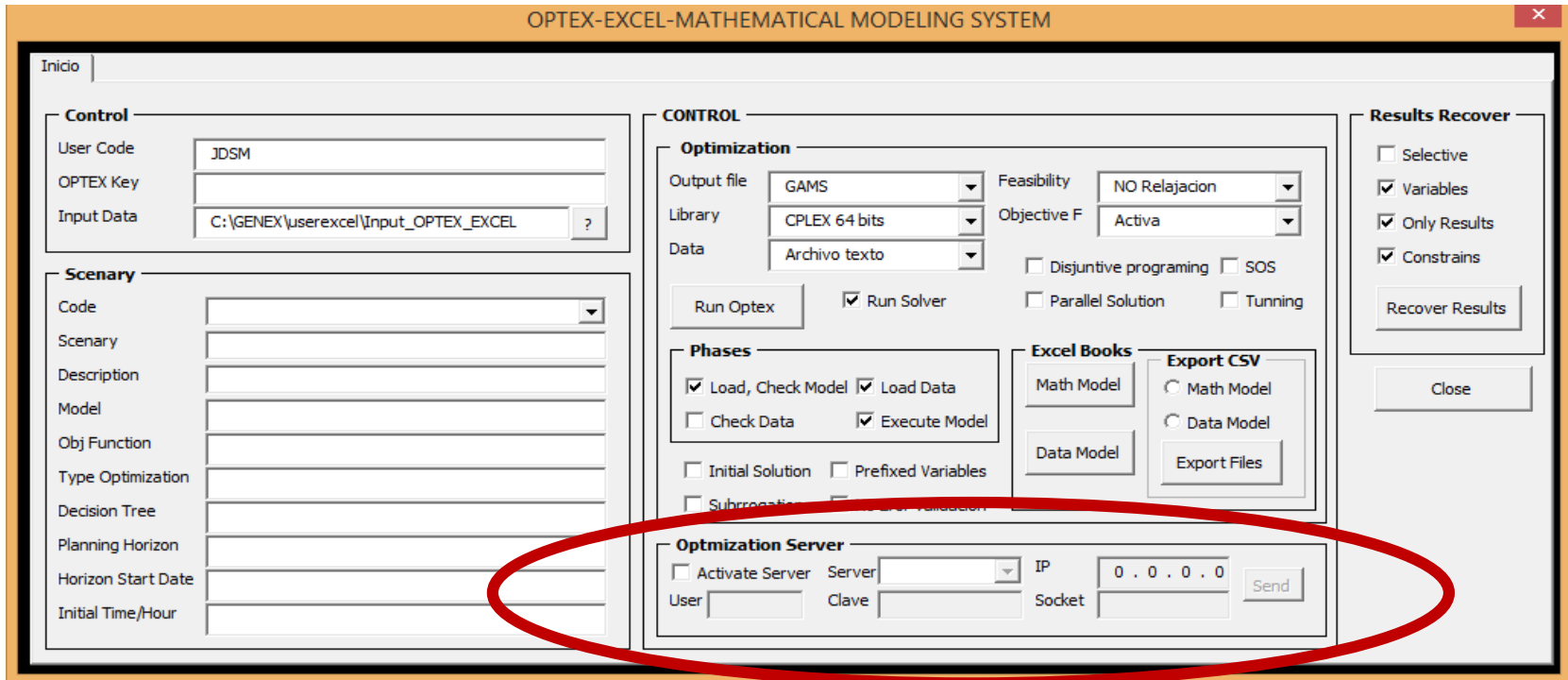
Número

Formato condicional Dar formato como tabla Estilos de celdas

A1		f <sub>x</sub> COD_VEH										
	A	B	C	D	E	F	G	H	I	J	K	L
1	COD_VEH	COD_NOD	VALOR	COTA_SUP	COSTO_OBJ	COSTO_RED	VALOR_DIF	OK_HIS				
2	SWK060	8300251421-0	0	1000000000	0	0	0	0				
3	SWK060	830025638-1	10.5	1000000000	0	0	0	0				
4	SWK060	830025638-17	0.5	1000000000	0	0	0	0				
5	SWK060	830025638-18	7	1000000000	0	0	0	0				
6	SWK060	830025638-22	0.5	1000000000	0	0	0	0				
7	SWK060	830025638-4	6	1000000000	0	0	0	0				
8	SWK060	830025638-5	10.5	1000000000	0	0	0	0				
9	SWK060	830025638-7	10.5	1000000000	0	0	0	0				
10	SWK060	860002095-136	3	1000000000	0	0	0	0				
11	SWK061	8300251421-0	0	1000000000	0	0	0	0				
12	SWK061	830025638-1	12.371812	1000000000	0	0	0	0				
13	SWK061	830025638-17	14.338397	1000000000	0	0	0	0				
14	SWK061	830025638-18	10.074007	1000000000	0	0	0	0				
15	SWK061	830025638-22	0.116028	1000000000	0	0	0	0				
16	SWK061	830025638-4	1.703519	1000000000	0	0	0	0				
17	SWK061	830025638-5	16.394843	1000000000	0	0	0	0				
18	SWK061	830025638-7	3.406167	1000000000	0	0	0	0				
19	SWK061	860002095-136	6.882439	1000000000	0	0	0	0				
20	SWK062	8300251421-0	0	1000000000	0	0	0	0				
21	SWK062	830025638-1	10.5	1000000000	0	0	0	0				
22	SWK062	830025638-17	0.5	1000000000	0	0	0	0				
23	SWK062	830025638-18	7	1000000000	0	0	0	0				
24	SWK062	830025638-22	0.5	1000000000	0	0	0	0				
25	SWK062	830025638-4	5	1000000000	0	0	0	0				
26	SWK062	830025638-5	10.5	1000000000	0	0	0	0				
27	SWK062	830025638-7	10.5	1000000000	0	0	0	0				
28	SWK062	860002095-136	3	1000000000	0	0	0	0				
29												
30												
31												
32												
33												
34												
35												

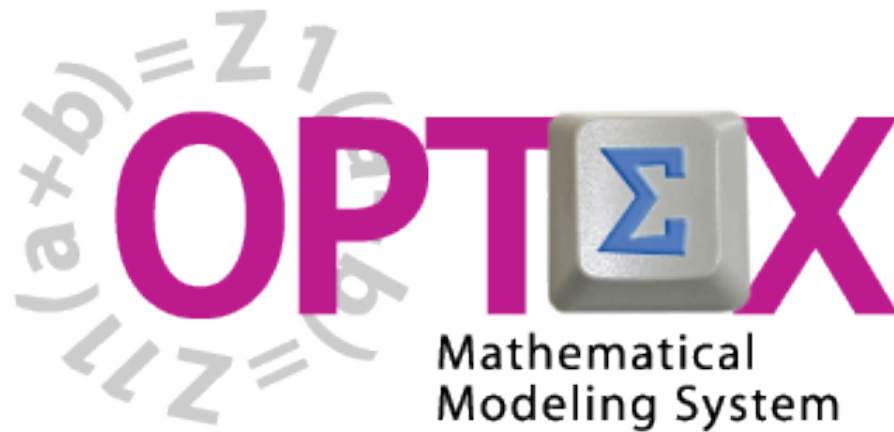
EXCEL BOOK

OUTPUT DATA





**OPTEX-EXEC-MMS FACILITATES TO SEND THE MODEL TO THE OPTEX-OPTIMIZATION REMOTE SERVER**

# CUSTOMIZING USER INTERFACES





OPTEXEXCEL\_CONTROL



Modelo

Generación de Código GAMS

Paralelismo     Gas  
 Perdidas     Estadísticos  
 Nodo Unico     Resumen Resultados

Generar Código GAMS

Ejecución del Modelo

Ejecutar Codigo GAMS

Abrir Interfaz de Entrada de Datos

Recrear Interfaz de Salida de Resultados

Abrir Interfaz de Salida de Resultados

Cerrar

Cambiar Parametros

Microsoft Excel window: SL\_ODC v2 - Un Bache - Microsoft Excel

Archivo Inicio Insertar Diseño de página Fórmulas Datos Revisar Vista

Calibri 11 A A Ajustar texto General

Cortar Copiar Pegar Copiar formato Portapapeles Fuente Alineación Combinar y centrar Número Formato condicional Dar formato como tabla Estilos de celda Insertar Eliminar Formato Celdas Autosuma Rellenar Borrar Ordenar y filtrar Buscar y seleccionar Modificar

Advertencia de seguridad Las macros se han deshabilitado. Habilitar contenido

A1

	A	B	C	D	E	F	G	H	I	J	K	L	P	Q	R	S
1																

## SISTEMA DE INFORMACIÓN

Digite el Horizonte:

[Generar ESC\\_HPL](#)

## EJECUCIÓN

**BOMBAS OPTIMIZA PATRON**

[Minimizar Consumo](#)

[Minimizar Costo](#)

[Minimizar Consumo  
Maximizar Flujo](#)

[Minimizar Costo  
Maximizar Flujo](#)

ecopETROL ENERGÍA PARA EL FUTURO

Inicio ESC\_BCH ESC\_BOM ESC\_EBM ESC\_ILP ESC\_ILQ ESC\_LDU ESC\_NOD ESC\_PBM ESC\_SDJ ESC\_TCL ESC\_TCR ESC\_TDU ESC\_THI ESC\_TRR BCH\_BCH BCH\_LDU BCH

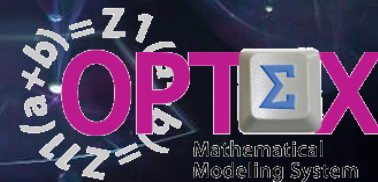
100%

Default Pr... Bandeja d... OPEX - P... Internet E... Windows... Word 2010 Skype OPEX - P... Microsoft ... 12:35 p.m.

# DoAnalytics



Think the model and



makes the software for you