

SEMINARIO
" TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING "
Enero 19 al 23 de 1970

Dr. Lawrence D. Miles

NOMBRE

EMPRESA

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7.- Ing. José E. Garza y Garza	CERVECERIA CUAUHTEMOC, S.A.
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10.- Ing. José Santos Martínez	CRISTALERIA, S.A.
11.- Ing. Manuel Regules	CRISTALES MEXICANOS, S.A.
12.- Ing. Loran Boughton	CRISTALES MEXICANOS, S.A.
13.- Sr. Pablo F. Engels	DISPOSITIVOS INDUSTRIALES, S.A.
14.- Ing. Martin E. Rosenfeldt	ELIZONDO, S.A.- PLANTA CARRIER
15.- Ing. Raul Zavala	FABRICAS MONTERREY, S.A.
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17.- Ing. Emilio de los Reyes V.	FABRICACION DE MAQUINAS, S.A.
18.- Ing. Rafael Espeleta	HOJALATA Y LAMINA, S.A.
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21.- Ing. Horacio González S.	PIGMENTOS Y OXIDOS, S.A.
22.- Ing. Francisco Guzmán	REPRESENTACIONES GENERALES, S.A.
23.- Ing. Hugo Rumayor	REPRESENTACIONES GENERALES, S.A.

EL PLAN DE TRABAJO DE LA TECNICA DE ANALISIS DEL VALOR
(VALUE ANALYSIS) PROPORCIONA LA SIGUIENTE DICIPLINA DE
PENSAMIENTOS.-

- I.- Investigación y Registro de la Información.
- II.- PENSAMIENTO ANALITICO: La decisión sobre cuales problemas habran de resolverse y que costos seran probables de obtenerse.
- III.- PENSAMIENTO CREATIVO: Abstenerse de juzgar de inmediato los problemas con el objeto de localizar nuevos enfoques del o los problemas específicos escogidos una vez realizado el "pensamiento analítico"
- IV.- JUICIO: La selección de uno o dos problemas de la lista obtenida en la etapa creativa, con el objeto de cubrir las necesidades de la empresa... y minimizar sus desventajas lo suficiente en forma tal que la solución resulte práctica.

Beginning after Day 1

Each day planned what
I felt had to teach -

These are the notes

FFM 1-1970

Before Day 2

What has been done.

Have showed pattern of 4 kinds of thought

2 kinds of Function

Only money into Function customer wants
Told them - no relation between Cost & Value.

What has not been done

Have not shown

1- Depth of info searching *Ended Day 3*

2 ^{1st ANALYSIS -} ENuf Function naming *did day 3 not experienced*
Function grouping *some more on Day 2*
ENuf Function / Value establishing.

3 Real Creativity
group creativity drill
small group creativity drill
ENuf of no judging - *well done on Day 2*

4 - Development - Judgement
Not ENuf depth *more day 2 - n*
NO Hang it with Rope *did day 2* *need still more*

3rd (non function requiring cost) 40 000 cover -

Examples aesthetic function
Knob - cold control *Did Day 2*
Knob motor screen *in answer to a question*
switch - TV - *Believe it was well done*

Reasons Disc thinking required -
Human characteristics

5/27

Horient
given stuff for translation and handout
did most of it preparing for day 2

Put across concept
"no relation between cost and value"
overcoming road blocks -

VA in use
Regulator job

Need a little Teaching by bad example
show how incomplete thinking reduces results

DAY 2 Finish Stud
Creativity
Judgement
Function - Deepen
Comment
90s tender -

GIVE OUT 4 KINDS OF THINKING
3 Deepen Info
Deepen Analysis
groupings refug. Radio

More evol. Function

Give out Q & A

4 ASK FOR ADDL Q or Comment -
Human Characteristics
Roadblocks Kix site
OVERCOMING #75 tools

Give out cont problem & VA approach -

5 VA IN USE -
Regulator job

VA in Gdm work -

Begin Day 4

Begin 8-18

STILL NEEDED

EXPERIENCE NAMING FUNCTIONS OK
" GROUPING FUNCTIONS OK
" Putting Value on functions OK

INSTR.- make small part into larger functional groups OK

Experience Judging

Another good "judging" example would be ^{would be good}

No Function concept \$40,000 story OK

Reasons

Discip. Thinking reqd - Human choice

Pre decision
wrong beliefs

Feelings -

(way we've done it - most comfortable)

Channeled by success

Shocked by failure

included

Need examples of some of above

Kirkcaldy

\$75 tools

Other

Stimulating VA in use examples OK

Roadblock and overcoming need more

Need a little teaching by bad example
How incomplete thinking reduces
results

Regulator Example need

Need Administration

Social organization

} case studies

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Day 1
1/970

MEXICO 1-19-70

My purpose is to give you something you
Coaching for Champions
VA is Disc Thinking -

- " " method of ~~getting~~ keeping & getting lower costs
- " " contains methods for dealing with factors in design which keep costs high.

In VA we consider something to be valid if it has functions customer wants at proper costs.

we consider 2 kinds of functions
use
aesthetic.

VA becomes a penetrating study of what functions customer really wants - and best way to provide them to him.

In VA, we identify the usual "stoppers" or "road blocks" which keep the higher cost designs in use, and develop means for dealing with them better.

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MEXICO

In a true sense the way we
perform a "service" - or a task - or a
communication is "designed" - some
thoughtout how to do it - so the
same thinking system of VA helps
do better "service of all kinds" social,
commercial, administrative etc.

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I shall teach

1. the system of disciplined thinking
2. the system of studying, analyzing and evaluating functions (which the customer wants) - is assigning specific \$ value to the action of customer wants.
3. means for dealing with factors which keep ~~higher cost~~ higher cost higher than necessary - without reducing quality.
4. how to use the VA system to benefit "services" as well as products.

I will show many actual examples of the results secured when the VA system was used.

I shall develop several case studies before the group.

To the extent that I find it is practical within the framework of translation I shall seek to "involve" the attendees in situations whenever possible.

Day 1

notes +
4

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47 ident costs
First applied products ~~services~~
like -

FILTER

Ra Dun spot focuser

200 gol gos - + old

Also applied to large items 1 to 5 per year

found from $\frac{1}{3}$ to $\frac{2}{3}$ cost usually removed

Now it is being applied to services -
govt adm, business adm.

^{rec}
it does not do - something - new -

But does it better than it was done

Basically it does 3 things better

Disciplined thinking

Better understanding of cost/function
ratios

Better understanding of what steps
good thinking & good solutions.

I will first teach it applied to products

Day 1

Notes 2
5

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Very simple for first step
at tables - B4

Info gathering thinking
use example - LDM

Next analysis thinking
use example LDM

Next Creative Thinking -
use example LDM

Next Judgement Thinking -

Now use Double nut -
each table work separate

Next get into Function Thinking
Tie etc

use - esteem

No value except what customer wants
Value lowest cost one. function

Wesok

Got ~~to~~ into Analysis on second job - stud - left it with
their groups & over note.

1. Have Translated Handout of 4 types of Thinking given ^{at start of day 3} men - also 13 questions + answers to give out at end of day 3 and "cost problem + VA approach" - to give out end of day 4
2. Give pencil to translator
3. → we have shown a system of disciplined thinking which will get better answers to our problems sooner.

It consists of 4 types

Info

An

CR

Judge.

} explain and expand each

we had Doubenut which we took thru
we started stud - took it to Creative and
left Judge for today.

we furthermore brought clearly to mind
that in buying products the customer
is buying functions he wants and
nothing else.

He wants some use

" aesthetic
we established that while we all feel
that cost and value are about the
same - cost may have no relation to
Value. Function and Value are
always related and

"Value is the lowest cost to accomplish
the function the buyer wants"

Finish STUD

Get best suggestion each group
suggestion from ea group was good

Show conclusion -

Now more depth in Creativity

Whogroup -

what might I make from Crotchanger

started slow 20/min
contest between 3 groups
up to 30/min
Then who's group 60/min

put on table good

Group of 4

How might I fasten 2 wires together -

Did not do - but would have been good

see for number -

How auto parts story -

Judgement

minimize Disad

"Hang it with rope"

Function - Deepen
Cement

gas tanks

Wesley
JUST finished it
Assigned "Deepen Info
thinking"
Told them "Tomorrow
say you with me into the
desert - 8 miles - should say
just told to mistoll
\$40,000 don't collect too."
"You ask the Q
Jill answer them."

Day 3

1

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we have established that VA is a desc.

Thinking system which courses men to get better results from their own thinking, on their own problems and opportunities.

(2) That was basically applied to the task of keeping quality while making large decreases in cost of products and processes. ~~at that~~

(3) it bases all considerations on the functions the user wants, and wants to pay for.

(4) it uses the 4 separate types of thinking separately, thoroughly and in proper order to achieve highest yield from work of the mind.

we have shown in some depth the type of thinking which is so effective in the creative work, and the judgement work

we will develop in more depth the scope of thinking in Info searching and in analysis thinking.

GIVE OUT PAPER. 4 KINDS OF ANALYTIC THINKING

Day 3 -

2

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Give info to start

"What are we really trying to do?"
then dust collector -

8 silos on desert - cement plant

"put dust collector on them" - \$40,000.

Keep it until they ask all Q

Have teams work on it - "What do we want to know?"

TO TEAMS Don't talk about or suggest any solutions.

If suitable let teams go into

CREATIVE - A few minutes

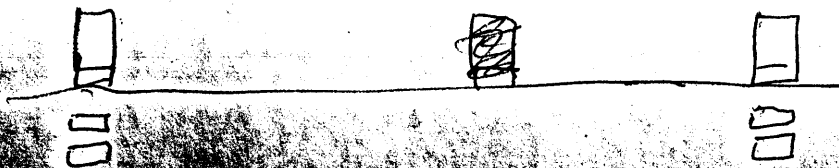
Judicial A few minutes

Refug - Function	COST now	Require
Cool	450	24
contain	22	15
insulate	10	6
Control	8	3
Phase Customer	20	22
	100	70

Sense Temp	3.00	1.00
move		
open Circ	1.50	.45
allow adj.	2.00	1.00
mount	1.00	.50
phase cut	50	.05
	8.00	3.00

some cost for no function \$40,000 cover

Increase skill in Evaluating Functions



we have now shown that to do well in competition which is in today's world - we can get more results with the Value Analysis thinking system in which we⁽¹⁾ gather info thoroughly before any other thinking.

(2) Analyze that info decide what we should do and establish our specific problems

(3) Then by Creative thinking get a great many different possible approaches - Not yet selecting any -

(4) finally chose 1 or 2 and make the dis-advantages small enough so the solution is excellent

TO HELP WITH OTHERS

MEAS - Explain -

Am leaving a copy to be translated for you

ONE MORE IMPORTANT TECH. IS
EVAL FUNCTION.

Will evaluate one now

Day 4 -

2

switch blade -

ok

THIS PROCESS OFTEN CAUSES MUCH LOWER COSTS
FEW EXAMPLES

~~OFTEN MANY FUNCTIONS~~

~~MOTOR SHIELD~~

Meter

~~STUD BOLTS~~

INSULATOR STUDS

ELECTRONIC EQ HANDLES

~~CONTROL DEVICE OPERATOR~~

~~40 - 25 - 10~~

good

OFTEN MANY FUNCTIONS

MOTOR SHIELD

exclude substance

allow ventilation

allow access

phase cutters

15
15
15
5
50

quite good -
Because they got a
"feel" for it by
joining it in their
hands

cost \$6.00

15 nob 60¢

became 1.25

w/o snub .80 ¢

HELPS TO BE ON LOOK OUT FOR OTHER FACTORS

no function cost \$40,000

wrong beliefs

Kirksite

975 FOLDS 140 - 40

Pre decision

comfortable feeling with past
channeled by success
shocked by failure

need more on human
sensors

These human factors become Road Block
overcome them in self.

" " " Others

use conference operator

40-25-10

~~summary~~

DO IT OURSELVES - NO

GET IT DONE

OLDEST TRANSFORMER

TEXTBOOK OUT IN SPANISH IN ABOUT
MARCH - Many means -

Task of Com man at 10h

not used.

After our busy 4 days in which you have, I believe, learned the

1. The thinking system separating the four types of thinking -

2. The means for identifying or separating functions and for

evaluating them, that is determining about how much test function should

cost.

3. The means for dividing a large product into separate functions or groups so that each can be judiciously improved in cost.

4. The ~~means~~ system of grouping several individual parts into one or more functions or groups so that the whole may be improved - perhaps ~~eliminating~~ many of the parts.

There remain some very important matters for us to discuss today. Stay on!

- 1- More thinking about the emotional impact of the new solutions to the problems on the people who have been identified with the work before.
2. The necessity to develop ~~a~~ ~~del~~ an expectation that "roadblocks" or "stoppers" will occur all thruout the progress of the new problem solutions, and the necessity to avoid stopping, - dealing successfully with the "stoppers" to a final good achievement.
3. The necessity ^{to} and importance of getting help in specific ~~areas~~ parts of new thinking
4. The number of people who can successfully take part in each ~~type of~~ of the 4 types of thinking.
5. The means for using the V A system in administrative or social group work
6. Some guides in communicating it to others -

- 7 Some measures of the benefits to people who have learned to work by the system
- 8 A unifying example showing
 - (1) a severe ^{cost} problem to a business -
 - (2) How it organized to correct it.
 - (3) Results obtained.
- 9 Some questions and answers transcribed for you
- 10 Your own questions and comments.

- 1- Emotional Impact
Need to overcome in ~~our~~
ourselves
o + hers

Tendency to believe task can be very
little improved

Embarrassment

Cold control example -

\$40,000 -

30,000 "no function" cost

new models -

- 2.- Road blocks - or stoppers everywhere
Manager

Proactive example

3 Get Help Fluorescent Transformer

4, number of people

- 1 Info gathering - any number
- 2 analysis 1 or 2
- 3 Creativity 3 to 5
- 4 judging 1 - getting help by talking
with others 1 at a time as
needed

5 Administrative

city

health dept

water dept

finance dept

money spent - function occurs

Engineering dept -

- 6 people must see what is done
know how it is done
cards
+ example sheets
- 7 some measures
cards -
- 8 unifying example
regulator
Hand out results
- 9 Questions & Answers -
Hand out
wait while they read
- 10 then Further Questions
or discussion.

ANALISIS DE CAMBIOS EN LAS CLASIFICACIONES I y II

I - No se requiere ningun cambio en los métodos de producción

<u>Nombre de la Parte</u>	<u>Cambio #</u>	<u>Costo</u>	<u>Costo del Cambio</u>	<u>Ahorro</u>	<u>% Reducción</u>
<u>A. Sin cambios en ingeniería o diseño</u>					
<u>Veniedor en la idea del cambio</u>					
Tablero de control	1-409	\$24,041	\$10,881	\$13,160	55%
Tuercas s lidadas	1-404	1,737	165	1,572	90
Tuercas s lidadas	1-410	3,760	729	3,031	81
Placa	1-408	3,618	729	2,889	80
Cuello	1-004	1,293	400	893	69
Opresor	1-1-1A	494	176	318	64
Alambres aisladores	1-204	9,400	3,995	5,405	58
Conección	3-003	846	47	799	94
Conección	2-206	13,372	8,249	5,123	38
Separadores	3-014	17,891	9,605	8,286	46
Pucto	3-025	413	307	106	25
Motor	2-004	29,281	25,544	3,737	13
				<u>\$46,761</u>	
<u>Comprar para Hacer</u>					
Bobina	1-209	7,050	2,256	4,794	68
Bobina	1-210	4,677	2,162	2,515	54
Pñón de motor de					
medidor de tiempo	1-004	5,264	235	5,029	95
Bobina	1-108	20,750	15,345	5,405	25
				<u>\$17,743</u>	
<u>Procedimientos de ordenar en la fábrica</u>					
Costos por preparación	1-900	6,674	- 0 -	<u>\$ 6,674</u>	100
SUB-TOTAL.				<u>\$71,178</u>	

B. Cambio menor de ingeniería o diseño

Cambio en el diseño

Neostato	1-406	\$8,460	\$6,251	\$2,209	26%
Interruptor	1-303	3,455	2,726	729	20
Resistor	1-006	2,632	423	2,209	84
Capacitor	1-103	6,439	4,371	2,068	32
Bushing	1-206	2,773	682	2,091	75
Engraje	1-008	6,369	1,340	5,029	79
Capacitor	1-003	5,217	1,632	3,525	68
Neostato	1-306	16,662	8,037	8,625	52
Base	2-003	752	34	658	88
Indicador de arranque	2-006	10,763	7,214	3,543	32
Switch indicador	2-009	10,763	2,063	8,700	82
Tenazas	2-202	5,456	1,706	3,750	69
Tenazas	2-208	8,026	2,538	5,458	68
Alambre	4-002	6,946	936	5,980	86
Aserrin	4-003	4,670	1,130	3,540	76
Indicador	4-002	5,475	1,292	4,183	76
Cimentación	3-002	1,057	164	893	85
				<u>\$63,196</u>	

Cambio en diseño y vendedor

Repisa	1-401	4,348	1,110	3,238	75
Tubo y tuerca	1-402	2,115	423	1,692	80
Manibela del tablero(2)	1-403	2,209	235	1,974	89
Repisas	1-701	1,786	611	1,175	66
Repisas	1-702	3,055	611	2,444	80
Placa de borne	1-400	2,120	846	1,274	60
Transformador	1-001	8,061	3,713	4,348	54
Panel	1-102	5,335	1,410	3,925	73
Soporte	1-205	2,186	494	1,692	80
Transformador	1-001A	3,713	3,055	658	18
Tornillos tapon tubo	2-002	1,704	1,069	635	39
Repisa	2-014	7,050	2,350	4,700	67

Nombre de la parte	Cambio #	Costo	Costo del Cambio	Ahorro	% Reducción
Conecciones	2-015	\$3,888	\$1,763	\$ 2,125	55
Conecciones	2-016	8,281	3,385	4,896	60
				<u>\$34,776</u>	
<u>Cambio de diseño y material</u>					
Sostén de llaves	2-203	3,150	352	2,798	88
<u>Cambio en el tamaño de material</u>					
Papel	3-011	3,040	1,040	2,000	66
Correas	3-022	36,162	25,379	10,783	30
				<u>\$12,783</u>	