

# LIEBERMAN PROCESS TROUBLESHOOTING SEMINAR

ACCREDITED as Continued Professional Development Activity

**19 to 23 November 2018** (postponed from July)

*(Registration key date 31 AUGUST 2018)*

**Graceland Hotel - SECUNDA**

## OVERVIEW



This popular PROCESS TROUBLESHOOTING SEMINAR is conducted by the internationally acknowledged expert in his trade and author of several world renowned books. The presentation is interactive and would benefit all working in the process engineering field from novice engineers to the most experienced. The full spectrum of troubleshooting methodology, practical approach as well as process fundamentals are addressed in a challenging, stimulating and enthusiastic manner. It is eye opening, challenging and inspiring!

## CONTENT

**Distillation:** Review of Fundamentals, Tray Hydraulics, Identifying Flooded Towers, Tray Deck Plugging – Downcomer Back-up, Damaged Trays, Effects of Excessive Preheat, Control Problems, Incipient Flooding, Expanding Tower Capacity, Crude Column Fractionation, Optimizing Pumparounds, Side stream stripping Problems, Tower Pressure Drop Surveys, Tower External Temperature Surveys, Tower Bottoms Steam Stripping, Packed Tower Design and Operation, FCCU Fractionator Problems.

**Reboiling and Condensing:** Thermosyphon Reboilers, How Reboiler Problems Cause Tower Flooding, Kettle and Forced Circulation Problems, Fouling in Shell and Tube Exchangers, Effect of Sub-cooling on Condenser Efficiency, Pressure Control in Light Ends Columns, Air Fin-Fan Coolers, Vacuum System Inter-Stage Condensers.

**Fired Heaters:** Proper Use of Excess Air, Heat Balancing Convective and Radiant Sections, Draft Control, Afterburn – Causes and Cures, Air Preheaters, Preventing SO<sub>3</sub> Condensing, On-Stream Cleaning Techniques, Coke Formation Inside Tubes, Debottlenecking Heaters.

**Pumps, Turbines and Steam Jets:** Operation of Centrifugal Pumps, Mechanical Seals and Bearings, Optimum Impeller Size, Sizing Motor Drives, Troubleshooting NPSH, Steam Turbines 0 Use of Hand Valves, Surface Condensers, Vacuum Pumps, Converging – Diverging Jets, Optimising Steam Jet Performance, Pumping Viscous Fluids.

**Compressors:** Centrifugal Compressor Fundamentals, Relationship of Polytropic Head to Surge, Rotor Fouling, Measuring Compressor Efficiency, Reciprocating Compressor Fundamentals, Volumetric Compression Efficiency, Head-End Unloaders.

## PRESENTERS

NORMAN LIEBERMAN is a chemical engineer with 35 years experience in process design and plant operations. He is an independent consultant specialising in oil refinery and chemical plant process problems and revamp studies.



Norman holds B.S and M.S degrees in Chemical Engineering from Copper and Purdue respectively and has taught in excess of 350 technical seminars on process troubleshooting and process equipment. He authored several highly acclaimed books - Troubleshooting Refinery Operations; Troubleshooting Process Operations 4<sup>th</sup> Ed; Troubleshooting Natural Gas Processing; Process Design for Reliable Operations 3<sup>rd</sup> Ed; A Working Guide to Process Equipment (co-authored by Elizabeth Lieberman); Troubleshooting Process Plant Control, Process Engineering for a Small Planet and Troubleshooting Vacuum Systems.

ELIZABETH LIEBERMAN is a chemical engineer with more than 20 years experience in the process industry. She works as a consultant in troubleshooting oil refinery and chemical plant process problems and is also experienced in ceramic processing, refractory processing and the conveying of non Newtonian fluids (slurry flow).



Elizabeth holds a Chemical Engineering BSc from the University of Wales and LRIC in chemistry. She co-authored the internationally acclaimed book "A Working Guide to Process Equipment" with Norman.

## VENUE

### Graceland Hotel

(S:26° 30' 44"; E: 29° 09' 42")

eMbalenhle Road

SECUNDA

Mpumalanga

South Africa

Tel: +27 (0)17 620 1000

Web Site: <https://www.graceland.co.za>



**SOUTH AFRICAN HOST : [www.resolvekzn.co.za](http://www.resolvekzn.co.za)**



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## COURSE FEE: (Excluding VAT and excluding attendee travel and accommodation)

The attendance fee (excluding VAT) is set on a sliding scale to give attendees the “economy of scale benefit”.

Discounts apply as follows for registration and bulk attendance based on registration received BEFORE 31 AUGUST 2018.

- -5% per attendee for all registration received before 31 August 2018
- -5% per attendee if a company registers more than 10 attendees before 31 August 2018
- -10% per attendee if a company registers more than 20 attendees before 31 August 2018

<b>Total Attendees Registration on 31 August 2018</b>	<b>-15 % : Early registration AND &gt; 20 attendees same company Before 31 August 2018</b>	<b>-10 % : Early registration AND &gt; 10 attendees same company Before 31 August 2018</b>	<b>-5% : Early registration Before 30 August 2018</b>	<b>Base Fee per person</b>
>40 - 50	R 29 750	R 31 500	R 33 250	R 35 000
36 – 40	R 34 000	R 36 000	R 38 000	R 40 000
30 – 35	R 38 250	R 40 500	R 42 750	R 45 000

**Order and Payment:** On 4 September 2018 or thereafter upon registration an invoice would be sent to the nominated contact for payment by electronic transfer within 30 days. Late payment could result in put attendance reservation of attendance at jeopardy.

## REGISTRATION

A MS-Word registration form can be obtained from the ‘Scheduled Events’ page of the RESOLVE web page at [www.resolvekzn.co.za](http://www.resolvekzn.co.za). Complete the required input fields and then e-mail the form to [andries@resolvekzn.co.za](mailto:andries@resolvekzn.co.za). Positions are limited and will be filled on a first-come-first served basis.

## RESERVATIONS:

Due to the popularity of this course early registration is advised as available places would be allocated according to sequence in which registrations are received.

Late payment could put reservation of attendance at risk. Full payment is the final guarantee of reservation.

For cancellations received after 31 August 2018 there would be no refund and the full attendance fee would be due. For cancellations received before 31 August 2018 there would be no payment due.

If you registered and are unable to attend the event you may substitute at any time. Such substitution and name changes must be communicated to RESOLVE by e-mail.

Presentation of the seminar is subject to a minimum attendees confirmed by 31 August 2018; the programme could be subject to change at the discretion of Norman Lieberman or RESOLVE and in the event of illness the date or presenter could be altered.

## 2018 LIEBERMAN PROCESS TROUBLESHOOTING SEMINAR

19 to 23 November 2018; Graceland Hotel; SECUNDA; Mpumalanga, SOUTH AFRICA

Download and complete registration form and either e-mail to [andries@resolvekzn.co.za](mailto:andries@resolvekzn.co.za) or fax to +27 (0) 865 477 846

Find herewith a request for the following reservation for the above training course:

**REGISTRAR DETAIL:**

Name: [ ] e-mail: [ ] Tel: [ ]

**INVOICE DETAIL:**

Company Name: [ ] VAT Nr. [ ] Quotation Required? (Yes / No): [ ]

Company Invoice Address: [ ] Order Nr. [ ]

Invoice Contact Name: [ ] Invoice Contact e-mail: [ ] Invoice Contact Tel: [ ]

**ATTENDEE DETAILS:**

	Name	Surname	ID Nr	e-mail	ECSA Nr	Dietary Limitations
1						
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**Course Fee:**

The attendance fee (excluding VAT) is based on the number of registrations received on 31 August 2018. The fee is set per sliding scale with potential discounts as indicated on the course brochure.

**Payment:** On 4 September 2018 or thereafter upon registration an invoice would be sent to the nominated contact for payment by electronic transfer within 30 days. Late payment could put attendance reservation at risk.

**Reservations:** If you registered and are unable to attend the event you may substitute at any time. Such substitution and name changes must be communicated to *RESOLVE* by e-mail. No refund for cancellation after 31 August 2018. Presentation is subject to minimum requirement of 30 attendees registered by 31 August 2018. The programme could be subject to change at the discretion of Norman Lieberman or *RESOLVE* and in the event of illness the date or presenter could be altered. Refer to course brochure for other rights reserved.