

Main steps of Alessandro Birolini

Born on September 13, 1940 (18.00) in Lugano (CH)

55-58: Apprenticeship as electrician (**Electrician Dipl. Fed.**, 5.4; **Onken Certificate**, 1.2)

58-59: One year activity as electrician

59-62: Study at the Technicum Cantonal de Fribourg (**Dipl. Ing. HTL**, 5.6)

62-63: One year activity at Maschinenfabrik Oerlikon (MFO) AG Zurich

63-67: Study at the ETH Zurich (**Dipl. El. Ing. ETH (MS)**, 5.8)

67-74: Research assistant at the ETH Inst. of Appl. Physics (68-69 **rel. investigations** for the Swiss Army, 67-71 book ***Grundschaltungen mit Transistoren***, 71-74 **Dr. sc. techn. (Ph. D.) Thesis ETH 5375: *Semi-Markoff- und verwandte Prozesse: Erzeugung und einige Anwendungen auf Probleme der Zuverlässigkeitstheorie und der Übertragungstheorie*** (AGEN Mitt. Nr. 18 (1975), part in *IEEE Trans. Rel.* (1974)3 & (1975)5 and *Math. & Comp. in Simulation* XIX(1977))

75-78: **Senior Eng.** at Contraves AG Zurich (product assurance **concept and training**), **Lecturer** of Reliability Engineering at the ETH Zurich

79-83: **Creation of the Swiss Test Lab. CSEE** in Neuchâtel (8 MSFr. Swiss Gov. Project, 18 engineers & operators, 4MSFr equipment, 1.7 MSFr turnover in 1982)

84-85: Reliability consultant (Swiss Army and industry)

1985: **Habilitation Thesis: *On the Use of Stochastic Processes in Modeling Reliability Problems*** (Springer-Verlag, Lecture Notes in Ec. and Math. Systems Nr. 252)
1st Ed. of the book ***Qualität und Zuverlässigkeit technischer Systeme*** (Springer-Verlag, **4th Ed. 1997**, 2th Ed. 1988 revised 1990)

86-98: **Professor at the ETH Zurich** and head of the from him created Reliability Lab. (**full Prof. of Rel. Engineering** since 1992, retired 1998 for medical grounds, emeritus since 1998)

88-98: **Effective cooperation** with 30 medium and large industries in Europe (2 x 5 years contracts, 20.000 SFr. per year and company to purchase large equipment & support research projects, 20 engineers and physicists (7 paid by the ETH) of which 8 Ph. D. candidates, 8MSFr equipment, see ***Quality Eng.* 8(1996)4**, pp. 659-674)

1994: 1st Ed. of the book ***Reliability Engineering: Theory and Practice*** (Springer-Verlag, **8th and final Ed. 2017**, Chinese translation of the 8th Ed. in press)

September 13, 2017

Alessandro Birolini (born Sept. 13, 1940 in Lugano, Switzerland) is Professor Emeritus of Reliability Engineering at the Swiss Federal Institute of Technology (ETH), Zurich. After an apprenticeship as an electrician, his Dipl.Ing.HTL (TCF Fribourg), Dipl.El.-Ing.ETH (MS), Dr.sc.techn. (Ph. D., Thesis ETH 5375, 1974, *AGEN-Mitteilungen* Nr. 18 (1975), part in *IEEE Trans. Rel.* (1974)3 & (1975)5 and *Math. & Comp. in Simulation* XIX (1977)), and 15 years industrial experience (of which 4 in charge of setting up the Swiss Test Lab. for VLSI ICs in Neuchâtel), he was from 1986 to 1998 Professor and head of the from him created Rel. Lab. at the ETH (full professor of Reliability Eng. since 1992, retired 1998 (for medical grounds), emeritus since 1998, lecturer since 1975).

His research fields include fault-tolerant systems with hardware & software, stochastic processes for reliability theory, test & screening strategies, and failure mechanisms. He has also been involved in an effective cooperation with industry for over 10 years with more than 30 large and medium European industries (*Quality Eng.* 8(1996)4, pp. 659-674).

He is author of several monographs and books, among which the habilitation thesis "*On the Use of Stochastic Processes in Modeling Reliability Problems*" (Lecture Notes in Economics & Math. Systems 252, Springer 1985) and the book "*Reliability Engineering: Theory & Practice*" (Springer, 8th and final Edition 2017 (see preface for a history), 1st Ed. 1994, in addition to totally 5 German Editions 1985 - 1997 and a Chinese translation of the 8th Ed.). He has also published more than 40 research and tutorial papers / contributions.

Achievements include a new approach to compute transition and state probabilities for Markov, semi-Markov & semi-regenerative processes, a systematic investigation of the influence of arbitrary repair rates on system's reliability & availability, new models for human reliability & risk management (based on particular semi-Markov processes) and for failure rates in presence of multiple failure mechanisms, approximate solutions for complex systems (macro structures, key item, totally independent elements), and a strategy to mitigate incomplete coverage.

Alessandro Birolini is Life Member of the Swiss Academy of Engineering Sciences, Honorary Member of the Romanian Academy of Sciences, Member of the Accademia delle Scienze dell'Istituto di Bologna, IEEE Life Senior Member, Recipient of the IEEE Third Millennium Medal, Recipient of Diploma of Honor & Award of Excellence from the Romanian Soc. for Quality Assurance, and was President of the Swiss Information Technology Society, Chairman of the IEEE Switzerland Section, and Founder & Chairman of the Reliability Chapter of the IEEE Switzerland Section. He lives in the Centro Storico of Florence since 2010 to give homage to the Renaissance's birthplace from about Dante's birth 1265 to Galileo's death and Newton's birth 1642.

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