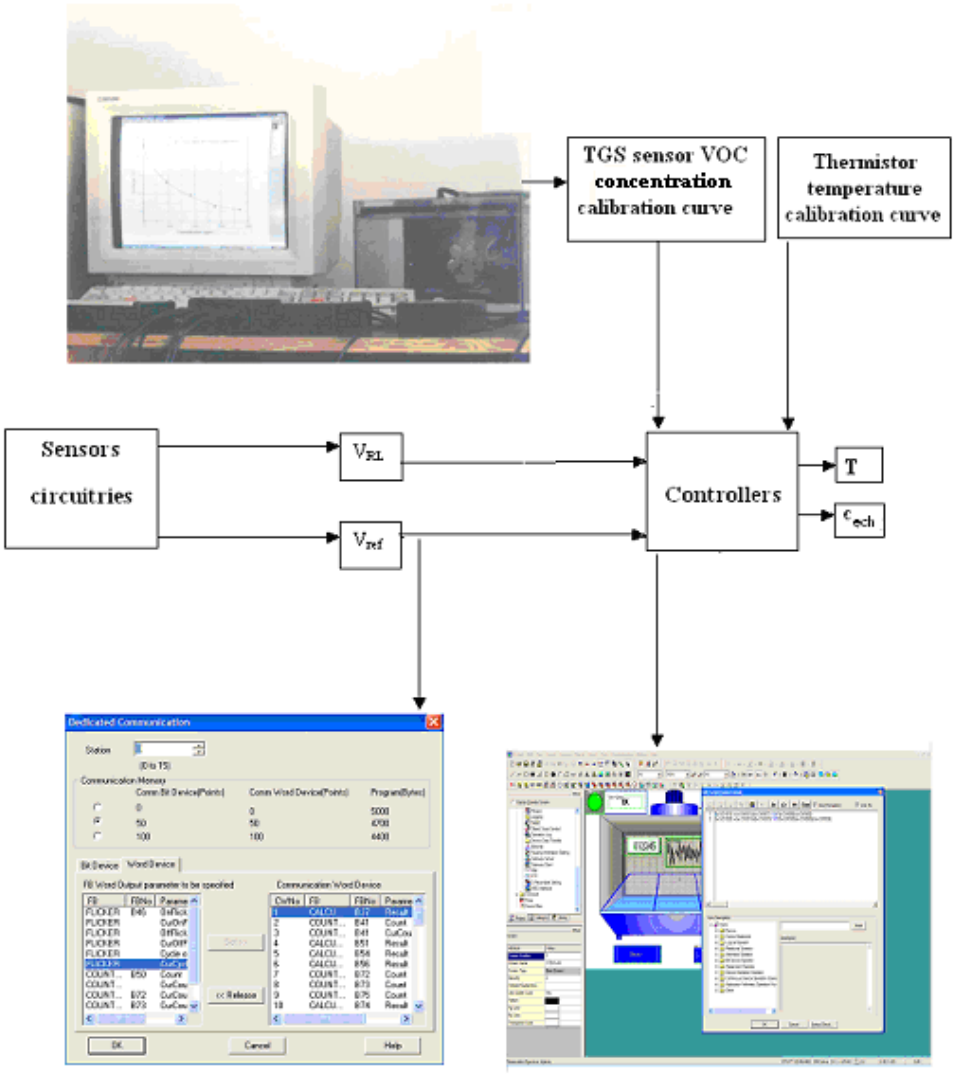
† Electronic Supplementary Information (ESI) available: Supplementary measuring chart and references hyperlinks



The measuring of the equivalent concentration of VOCs implies:

- Measuring the calibration curve, for the specific mixture of VOCs and TGS sensor, using the Figaro calibration chamber SR3
- Using the specific software, included in the PLC, whose input data are:
  - Output signal from the VOC sensor circuit (V_{RL})
  - Output signal from the temperature sensor circuit (V_{ref})

and the embedded data**:**

- Calibration curve for the tin dioxide sensor – normalized curve of its electrical resistance R_S to the pure air one R_0
- Thermistor resistance function of temperature
- Defined limit for VOCs concentration, in order to set the alarm

References hyperlinks

1 M. McGinness, *Proc. 25th Ind. En. Tech. Conf.*, Houston, TX, 2003, 59-68 http://repository.tamu.edu/handle/1969.1/91015

2 T. Poncet, *World Leather,* 2006, 19 (3), 16-19 http://www.aaqtic.org.ar/congresos/istanbul2006/Visual Displays/V 33 - Volatile organic carbons -VOCs- in the tanning industries.pdf

3 S. Ojala, U. Lassi and R. L. Keiski, *Chemosphere,* 2006, 62, 113-120 http://www.ncbi.nlm.nih.gov/pubmed/15893795

4 K. Solbu, M. Hersson, S. Thorud, E. Lundanes, T. Nilsen, O. Synnes, D. Ellingsen and P.Molander, *J. Environ. Monit.*, 2010, 12, 1195-1202 http://www.researchgate.net/publication/51050013_Compact_semi-automatic_incident_sampler_for_personal_monitoring_of_volatile_organic_compounds_in_occupational_air

5 R. G. Derwent, *Volatile organic compounds in the atmosphere* Eds.: R. E. Hester and R. M. Harrison, RSC, 1995, 1-6 http://books.google.ro/books?id=uN3xtF6vmAcC&pg=PA1&lpg=PA1&dq=RICHARD+G.+DERWENT+VOC&source=bl&ots=orpSduVkUK&sig=ZT8cFndROOPeXlTk7kkngPWugjg&hl=ro&ei=9QplTaLAGtLAtgfqp42WBg&sa=X&oi=book_result&ct=result&resnum=1&ved=0CBYQ6AEwAA" \l "v=onepage&q=RICHA

6 EPA APTI Course SI:417, *Controlling VOC emissions from leaking process equipment*, EPA 450/2-82-015 August 1982 http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000K763.txt

7 Directive 2004/42/CE on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations, *Official journal,* 30.4.2004 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:143:0087:0096:EN:pdf

8 On-line Figaro Catalogue – http://www.figarosensor.com

9 H. Lahlou, J.-B. Sanchez, X. Vilanova, F. Berger, X. Correig, V. Fierro, A. Celzard, *Sensor Actuat B-Chem,* 2011, **156,** 680-688. http://www.sciencedirect.com/science/article/pii/S0925400511001298

10 W. Gopel and K. D. Schierbaum, *Sens. Actuators* B, 1995, 26 (1-3), 1-12 http://www.sciencedirect.com/science/article/pii/092540059401546T

11 E. Llobet,. R. Ionescu, S. Al-Khalifa, J. Brezmes, X. Vilanova ; X. Correig, N.Barsan and J.W.Gardner, *Sensors Journal, IEEE*, 2001, **1**, 207-213 http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=954833&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxpls%2Fabs_all.jsp%3Farnumber%3D954833

12 F. Caldararu, M. Caldararu, A. Jelev and A. Iacob, *Proc. Int. Geoscience and Remote Sensing Symposium*, Pasadena, 1994, 13-15 http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=399036

13 M. Caldararu, A. Vasile and F. Caldararu, *International Symposium for design and technology of electronic packages SIITME,* Iasi, 2006 *http://telecom.etc.tuiasi.ro/siitme2006/program1.pdf*

14 A. Szczurek, M. Maciejewska, B. Flisowska-Wiercik, and L. Bodzoj, *J. Environ. Monit*., 2009, 11, 1942-1951 http://pubs.rsc.org/en/content/articlelanding/2009/em/b907820g

15 H. Teterycz , P. Halek , K. Wiśniewski , G. Halek , T. Koźlecki and I. Polowczyk, *Sensors,* 2011, **11**, 4425-4437. http://www.mdpi.com/1424-8220/11/4/4425

16 M.A. Craven, J.W. Gardner, P.N. Bartlett, *Trend Anal.Chem*., 1996, **15**, 486–493. http://www.sciencedirect.com/science/article/pii/S0165993696000611

17 W. Bourgeois, A. C. Romain, J. Nicolas and M. Stuetz, *J. Environ. Monit.*, 2003, **5**, 852-860. http://pubs.rsc.org/en/content/articlelanding/2003/em/b307905h

18 S. Capone, P. Siciliano, N. Barsan, U. Weimar, L. Vasanelli, *Sens. Actuators B-Chem*, 2001, **78**, 40–48. http://www.sciencedirect.com/science/article/pii/S0925400501007894

19 E. Llobet.,. J. Brezmes, X. Vilanova , J. S. Sueiras and X. Correig, *Sensors and Actuators B: Chemical*, 1997, **41**, 13-21. http://www.sciencedirect.com/science/article/pii/S0925400597802729

20 S. M. Hosseini-Golgoo and F. Hossein-Babaei, *Meas. Sci. Technol*., 2011, **22**, 1-11. http://iopscience.iop.org/0957-0233/22/3/035201

21 X. Vilanova, E. Llobet, R. Alcubilla, J.E. Sueiras and X. Correig *Sensors and Actuators B: Chemica*., 1996, 175–180. http://www.sciencedirect.com/science/article/pii/0925400596800633

22 J.-B. Sanchez, F. Berger, M. Fromm, M.-H. Nadal, *Sensor Actuat B-Chem,* 2006, **119**, 227–233. http://www.sciencedirect.com/science/article/pii/S0925400505009767

23 X.Vilanova, E. Llobet, J. Brezmek, J. Calderer and X. Correig *Sensors and Actuators B: Chemica*., 1998, **48**, 425-431. http://www.sciencedirect.com/science/article/pii/S092540059800080X

24 J.-B. Sanchez,A. Schmitt, F. Berger and C. Mavon, *Journal of Sensors*, 2010,Article ID 409687, doi:10.1155/2010/409687. http://www.hindawi.com/journals/js/2010/409687/

25 N.D. Hoa, and S. A El-Safty, *Nanotechnology,* 2011, **22,** 485503, doi:10.1088/0957-4484/22/48/485503. http://iopscience.iop.org/0957-4484/22/48/485503

26 P. Sun, W. Zhao, Y. Cao, Y. Guan, Y. Sun and G. Lu, *CrystEngComm*, 2011, **13**, 3718-3724. http://pubs.rsc.org/en/Content/ArticleLanding/2011/CE/C1CE05073G

27 On-line Mitsubishi Controllers Catalogue 2012 - https://my.mitsubishi-automation.com.

28 M. Batzill and U. Diebold, *Physical Chemistry Chemical Physics* 2007, **9**, 2307-2318. http://www.surface.tulane.edu/pdf/PCCP_GasSensingReview_Feb07_final.pdf

29 H. Teterycz, P. Halek, K. Wiśniewski, G. Halek, T.Koźlecki and I. Polowczyk, *Sensors* 2011, **11**, 4425-4437. http://www.mdpi.com/1424-8220/11/4/4425

30 J. S. Steinhart and S. R. Hart, *Deep Sea Research and Oceanographic Abstracts,* 1968, **15**, 497-503. http://www.sciencedirect.com/science/article/pii/0011747168900570

31 Betatherm Sensors - http://ro.farnell.com/betatherm

32 O. Niculescu, M. Leca, *Rev. Chim,*. 2007, 58, 276 –282. http://www.revistadechimie.ro/pdf/3_2007_6.pdf

33 J. Lin, B. Ding , J. Yang , J. Yu and G. Sun, *Nanoscale*, 2012, **4**, 176-182. http://pubs.rsc.org/en/Content/ArticleLanding/2012/NR/c1nr10895f

34 ECO SIMPLEX NOVA - http://www.ecosimplexnova.ro