Lucas-Nuelle Best Practice: Supplying a Teacher Training College

We would like to welcome the participants and visitors of the
3rd German-Arab Education and Vocational Training Forum
In Berlin, October 6th – 7th, 2011

And we would like to extend our sincere thanks to the
organizers of this event

iMOVE and Ghorfa

Lucas-Nuelle GmbH

Speaker: Christian Staab Schmidt, Managing Director, Lucas-Nuelle Middle East

www.lucas-nuelle.com

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The Lucas-Nuelle Group of Companies

LUCAS-NÜLLE

Technical training systems

Employees: 100
Location: Kerpen
Established: 1979

PHYWE SYSTEME

Training systems for natural sciences

Employees: 250
Location: Göttingen
Established: 1913

INTEA

Basic and vocational training and consultancy

Employees: 20
Location: Kerpen
Established: 1978

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Brief Information about Lucas-Nuelle GmbH

Development, design and production of training systems for vocational and technical education in the fields of electrical engineering and electronics, mechatronics, automotive and process control.

Established 1979 in Kerpen, Germany, by Mr. Rolf Lucas-Nuelle

Approx. 100 employees, almost half of them M.Sc.EE

Turn-over approx. 25 Mio Euros, 80 % outside Europe

Active in the Middle East since 1980, since 2004 through…

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Lucas-Nuelle Middle East FZE

- Project Development
- Project Planning and Coordination
- Sales
- Order Processing
- Training
- After-Sales Services
- Exhibitions

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The Technical Trainers College in Riyadh

- A project developed by GIZ (formally GTZ)
- the first of its kind in KSA
- offers a three-year training programme to develop young Saudi college graduates into qualified trainers in Technical and Vocational Education and Training.
- GTZ started designing in November 2008. September 2009 it started operations

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Students are trained in the lab

Teacher adjusts the laboratory to his needs

Delivery & Installation of training systems by Supplier

Specifying the Equipment by Specification Specialists

Laboratory Planning/ Laboratory Design by Architect/ Contractor

Curriculum Development by Curriculum Specialists

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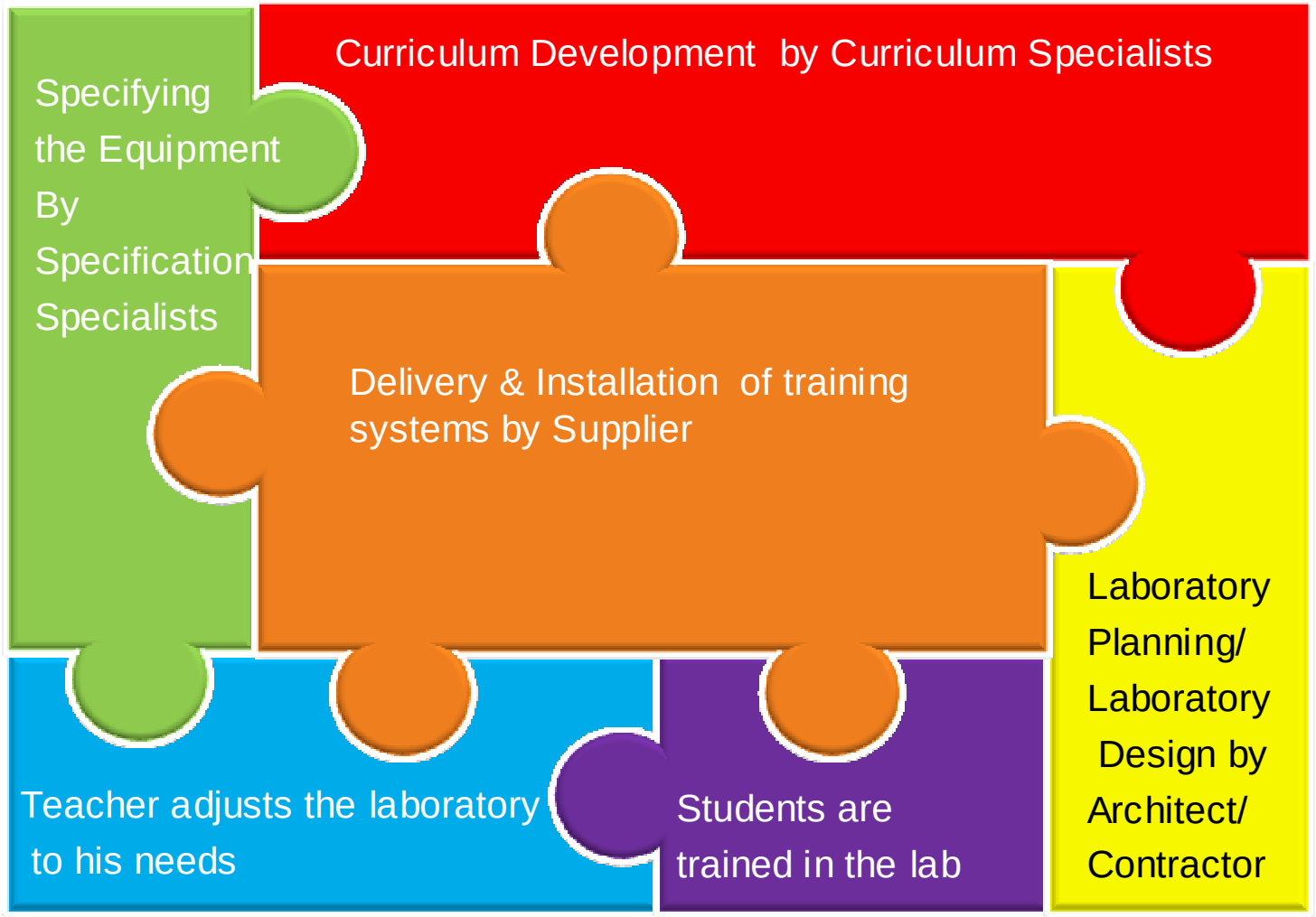

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Early consultancy with the responsible architects

The lab will fit …:

- The guidelines of the curricula
- The requirements of the training systems
- The needs of the teacher
- The students

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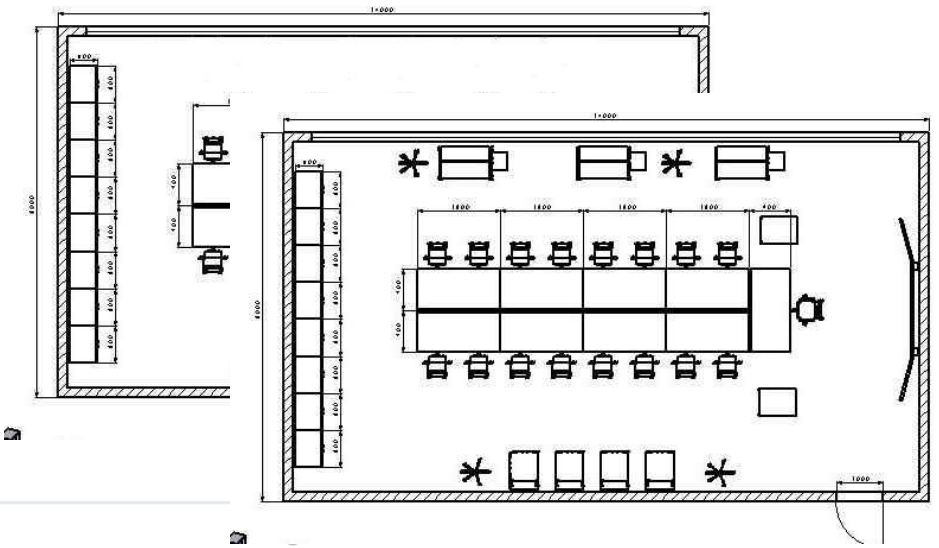
Providing adjusted solutions

…the architect can use



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Involving the teacher and the supplier in the Equipment Specification

- Curriculum and Training systems will fit, no requirements will be made that can't be fulfilled by the markets
- Harmonization with international standards comes automatically
- The teacher will be qualified in all subjects chosen
- High acceptance of the delivered equipment
- Gives room for development of new systems

D25

	A	B	C	D	E	F	G
1							
2	**Curriculum Planning**			Semester			
3		1	2	3	4	5	6
4	**Electrical fundamentals**						
5	Basic Electricity	X					
6	Electronics	X					
7	Digital Technology		X				
8	Circuit design		X				
9	Electrical Installation	X					
10	Microcomputers & Microprocessors			X			
11	Basic Instrumentation						
12	Basics of Closed Loop Control						
13	Basics of Mechatronics						
14	Basics of Electrical Machines						
15	Basics of Power Electronics & Drives						
16	Basics of Telecommunication						
17							
18	**Advanced Electrical Engineering**						
19	Advanced Instrumentation						
20	Advanced Mechatronics						
21	Advanced Closed Loop Control						
22	Advanced Electric Machines						
23	Industrial Applications of Power Electronic						
24	Electric Power Engineering						
25	Renewable Energy						
26	CAD-CAM						
27	Industrial Applications in Telecommunicati						
28							

Part V: Study Areas

Summary of the study areas for the subject of Electronics Technician

Nr.	Study areas	Recommended Times 1st. Year	2nd. Year	3rd. Year	4th. Year
1	Analyse and test the function of electro-technical systems	80			
2	Plan and complete electrical installations	80			
3	Analyse and adapt control systems	80			
4	Assemble technical information systems	80			
5	Ensure supply of electrical energy and safety of equipment		80		
6	Analyse and test systems and equipment		60		
7	Program and implement control systems		80		
	Power Engineering and Building Services Management				
8 EG	Select and integrate the drive systems		60		
9 EG	Plan and implement communication systems in residential and functional buildings			100	
10 EG	Operate domestic electrical systems and maintain in working order			100	
11 EG	Install technical power systems and maintain in working order			80	
12 EG	Plan and implement power systems and building service systems				80
13 EG	Maintain and modify power systems and building service systems				60
	Automation Engineering				
8 A	Select and integrate drive systems		60		
9 A	Integrate control and communication systems			80	
10 A	Install and operate automation systems			100	
11 A	Maintain automation systems in working order and rectify faults			100	
12 A	Plan automation systems				60
13 A	Assemble automation systems				80

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The result: Equipment Lists up to highest international standards

- Definition of training systems rather than components
- Equipment lists concentrate on a “lab approach”
- Lab concept rather than individual items
- Up-to-Date with Technology

	Project "Installation of new labs at a vocational training centre"	Budgetary unit price ex works	Labs: Digital & Microprocessor Technology	Labs: Measurement & Closed Loop Control	Labs: Computers & Applications	Labs: PC Software and prototyping lab		Basic Workshops: Electrical Installation	Basic Workshops: Basic Mechanics		Advanced Labs: Mechatronics lab	Advanced Labs: Electric Machines, Power Electronics and Drives	Advanced Labs: Power Engineering and Alternative Energy	Advanced Labs: Telecom and IT Technology	Total Qty	Budgetary total price ex works
38	**Training equipment**															
39	**Mechanical**															
40	Basic mechanical skills	4.000						2	12						14	56.000
41	Advanced mechanical equipment	8.000							6						6	48.000
42																
43	**Electrical fundamentals**															
44	Basic equipment for multimedia training	1.500	12	12	12	12	12				12	12			96	144.000
45	Basic Electricity & Electronics	5.000													12	60.000
46	Bread-board system for circuit design	600				12									12	7.200
47	Computer-based training software	10.000				12									12	120.000
48	Hands-on experiments in electrical installations	5.000						12							12	60.000
49	Industrial Applications of electrical installations)*	8.000						6							6	48.000
50	Digital Technology	4.000	12												12	48.000
51	Microcomputers & Microprocessors	3.000	12												12	36.000
52	Basic Instrumentation	5.000		12											12	60.000
53	Industrial Applications Instrumentation)*	8.000		6											6	48.000

16.5	Set of 7 weights, 0.1 to 2 kg contents: 1 ··· 100 g, 2 ··· 200 g, 1 ··· 500 g, 2 ··· 1 k and 1 ··· 2 kg; material: cast iron; each with hook and rod in the base for attachment to each other	
16.6	Resistor 1 Ohm plug-in unit 2/19; low induction	
16.7	Resistor 100 W, 2 W plug-in unit 2/19; tolerance 5 %	
16.8	Resistor 330 Ohm, 2 W plug-in unit 2/19; tolerance 5 %	
16.9	Resistor 22 kOhm, 0.5 W plug-in unit 2/19; tolerance 5 %	
16.10	Resistor 47 kOhm, 0.5 W plug-in unit 2/19; tolerance 5 %	
16.11	Resistor 100 kOhm, 0.5 W plug-in unit 2/19; tolerance 5 %	
16.12	Resistor 220 kOhm, 0.5 W plug-in unit 2/19; tolerance 5 %	
16.13	Book: Force Measurements with Strain-	

Literature for the Training Equipment Included i

1.14 **Set Didactical Material for the Training Systems**

The didactical material shall include:

- theory background information
- experiment instructions
- experiment sheets for the trainees
- experiment result sheets for the instructor
- Wherever applicable, maintenance-

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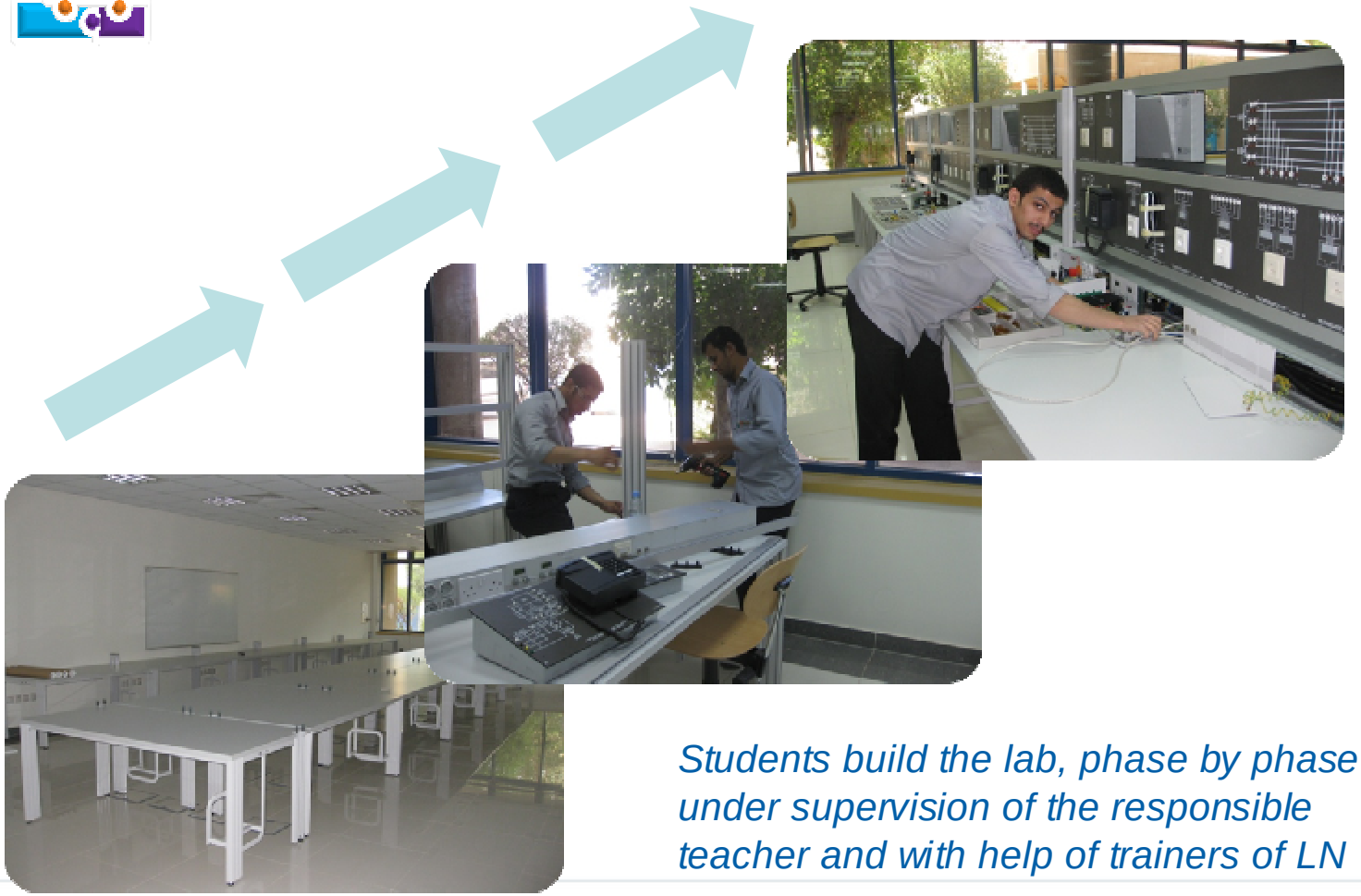
Involving the students in the installation – a project work



Students build the lab, phase by phase under supervision of the responsible teacher and with help of trainers of LN

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Today's Students – Tomorrows Teacher

- Students have learned about the concept of a lab setup
- They know to formulate their needs in the future and to necessity of early involvement
- High acceptance of the delivered equipment with the students

Students receiving their certificates for the project work from LN, GTZ and dignitaries of the TVTC

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The Final Result – a perfect lab

- State of the art technology
- 100% in line with the curriculum
- Teacher knows every experiment and can run them
- High acceptance of the delivered equipment

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What Lucas-Nuelle can do for you:

- Study of the present situation
- Pin-pointing important subjects
- Curriculum Development
- Laboratory Planning
- Laboratory design
- Updating training methodologies
- Defining of requirements
- Delivery & Installation of training systems
- Technical and didactical training
- After-sales services through local partner

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Thank you for your attention

Questions are welcome

For further information please also contact us
at our presentation area in the foyer or at our booth in hall

Sincerely yours

Christian Staab Schmidt