

Industry based education programs in regulated professions «electrician» and «electro technician».

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“Work based Learning around the Mare Balticum”
on 19 – 21 January 2015 in Hamburg



According to research done by Mr. **MAX HOGFORSTER** **Latvia have about 28%** unemployment for 15 – 24-year young people.

Why?

One of the reasons is, that about 70% go to study social oriented programs, about 30% technical. So we, as a rule shall have 20% deficit in technical area and 20% overproduction in social area.

Why people do not go to technical school?

Cause it is hard!;) And teacher in physics and mathematic is good (or bad) as it can be.

But.. There is also a good story behind, so author will try to describe and analyze one of specialties used world wide – «electrician».



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First of all – the questions;)

- Who is the main 'electricians' consumer country?
- Is it possible to define order of 'electricians' to the education system?
- Does the current education system actually generates electricians unemployed? Prepared electrician – WHAT YOU intend to do in the future?



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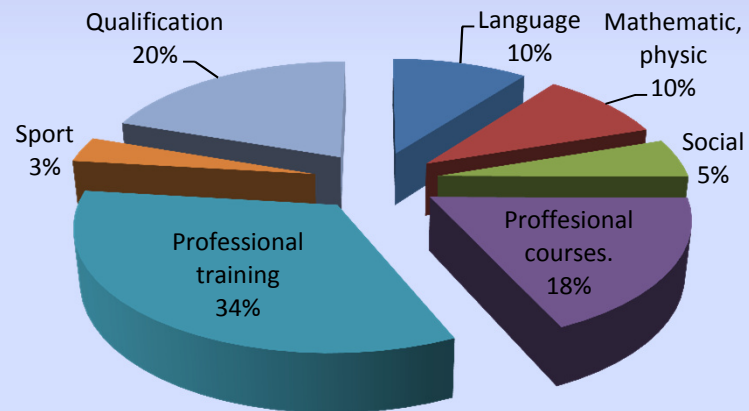
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**Second thing – existing situation.
 Research is done using Technical College of Riga.
 Department of electricity.**

Professional education 3.years (2nd level in 5 step system)						
Languages	Mathematic, physic	Social	Professional courses	Professional training	Sport	Qualification practice
439	406	224	777	1428	146	840

Profesional education. Electrician



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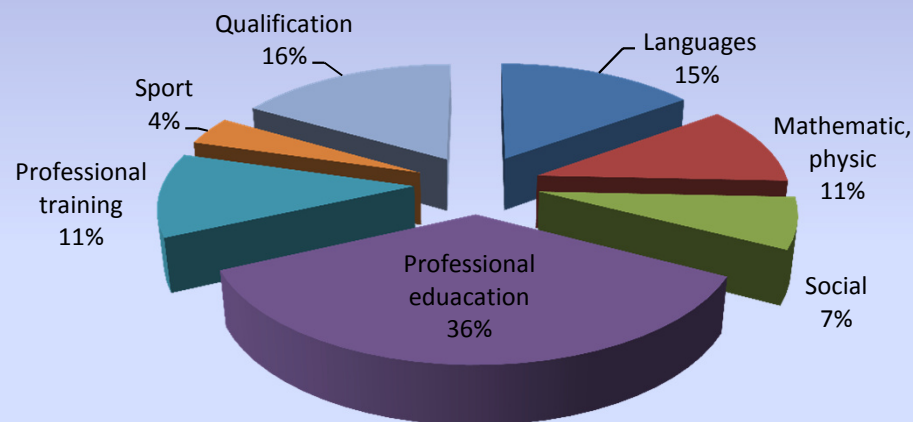
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Professional high school (mid school in Latvia) 4.years. (3rd level in 5 step system)

Language	Mathematic, physic	Social	Professional education	Professional training	Sport	Qualification
866	616	394	2060	648	224	960

Electro technician



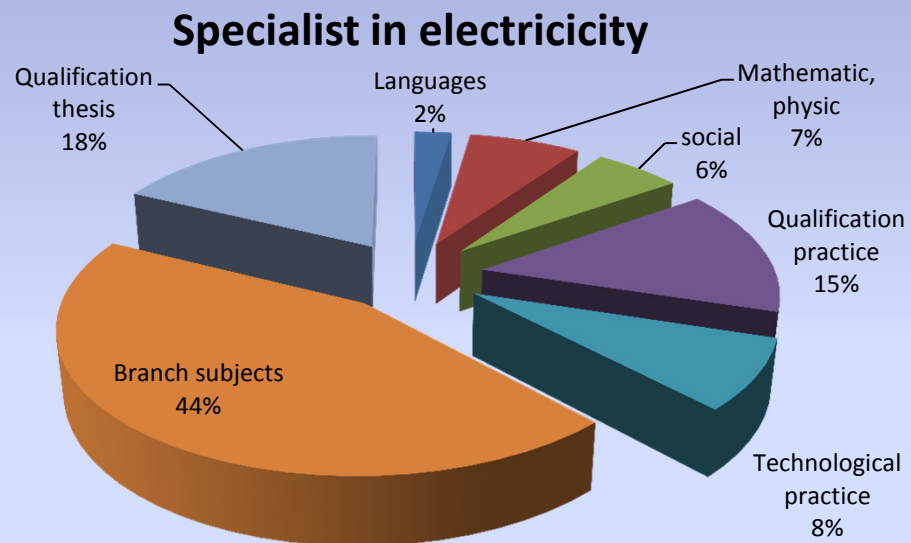
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Specialist in electricity (4nd level in 5 step system)						
Language	Mathematic, physic	Social	Qualification thesis	Technological practice	Branch subjects	Qualification practice
60	180	140	360	200	1100	440



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Ar specialitāti saistītie priekšmeti (Elektriķis)

- Praktiskā ķīmija
- Rasēšana
- Datorizēta projektēšana
- **Ievads specialitātē**
- **Elektroteh.pamati un elektriskie mērījumi**
- Materiālmācība un tehn. mehānikas pamati
- Darba aizsardzība
- **Elektrodrošība**
- **Elektriskās mašīnas, piedziņa un tās vadība**
- **Elektroiekārtas un to apkalpošana**
- **Elektroapgāde un elektriskie tīkli**
- **Elektronikas un automātikas pamati**
- **Specializācijas priekšmets**
- Vides zinības
- **Instalācijas projektēšanas pamati**

Ar specialitāti saistītie priekšmeti (Elektroiekārtu speciālists)

- **Ievads specialitātē**
- **Elektrotehnika**
- Inženiergrafika
- Datormācība
- **Elektriskās mašīnas**
- **Elektriskie mērījumi**
- **Elektropiedziņa**
- **Elektriskie tīkli**
- **Elektromontāža**
- **Rūpnīcu elektroiekārtas**
- **Apgaismes ietaises**
- **Apakšstaciju elektroiekārtas**
- **Rūpnīcu automātikas elementi**
- **Energosistēmu automātika**
- **Elektropiedziņas automātika**
- **Pārvades elektriskie tīkli**
- **Rūpnīcu elektroapgāde**
- **Programmējamie kontrolieri**
- **Elektroiekārtu apkalpošana**
- **Elektronika**
- **Datoru izmantošana projektēšanā enerģētikā**
- **Komunālo patērētāju un lauksaimniecības elektroapgāde**

Order to education system.. Or how many electricians and electro technicians do we have.

Generation(520), transmission (500), distribution (2500).

Official certificates are given to 2500 electricians and technicians, who are employed in building etc.

So in average we got about 6000 specialists in electricity. If we assume, that life of an active specialist is 30years (5 years to train+ 5 years as trainer), then each year we need about $6000/30 = 200$ specialists.

* If some think, that we can do it $6000/40$ or even $50 = 150$ till 120. Try to make 1m long chain form 10 x 10cm long pieces.

MS1
M



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Folie 9

MS1 Mārtiņš Silarājs; 08.01.2015

MS2 Mārtiņš Silarājs; 08.01.2015

«It is very good to decrease rules for maintenance (amount of specialists) to get some profit and decrease..» NOOO;)

- There are two ways how industry goes for specialists:
 - 1. one – they got it form technical school and train it for about 3-5 years. Expensive, bad.. But in long terms extremely effective. (company with >500 specialists). Normally each industry got they own training centers. (Gas industry already went to self education model, cause there are not some many specialists to go for education system, heat is somewhere in the middle, electricity – got basic training in school, then they go for narrow training with working teachers
 - 2. they ask for narrow trained specialist, when they do not get it.. They «steal» it form 1st. Of course it is not so bad.. Some industries (<50) start to work with a specialist from 2nd level and invest in him through all the education process.

- Of course .. There are two ways how to define «technical problem»

- - Very effective (in short terms) is model, when technical problem is solved, when it happens. We spare on maintenance and decentralize all technical parts of process. In long terms (>5years) it will lead to technogenic accident.

Sorry Russia – you will be taken as an example – decentralized and not supervised work on Sajana-Sjusenska hydroplant. In a case of Latvia – it would mean destruction of capital city Riga and big electricity deficit.

- So i propose to keep it so, that technical problem is pre-solved. Expensive in short terms, but cheap in long terms.



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Does the current education system actually generate electricians unemployed? Prepared electrician – WHAT YOU intend to do in the future?

So – to understand the situation some small research was done in 2010-2012.

1. Will you continue studies:

RTU (university);

RTK (college)

Other school _____;

2. Will you go to work and is it related to specialty **yes / no**;

3. I got a work which is related to specialty;

I got salary which is:

Much better than average;

Is equal to average;

Is less than average.

4. Will look for work in some companies

5. Will go abroad.



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Results for 4th lvl

Specialists (4lvl) studies paid by their own.

Rating (0-10system)	Answer	Work
9	3.2.	Distr.
9	3.2.	Distr.
8	3.3.	Railways
8	3.2.	Distr.
8	3.2.	Distr.
8	3.1.	Distr.
8	3.2.	Distr.
8	3.3.	-
8	3.1.	-
7	1.a. 3.3.	Distr.
7	1.a.	
6	2	

	Specialists		
	9.-10.	7.-8.	5.-6.
3	9	2	7
Latvenergo	7	2	5
Other el. company	1		1
Not related to specialty			
Got contract with company	1		1
2	2		2
RTU	2		2
RTK			
Other			
4			
5			
No idea			



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Results for 2nd and 3d lvl

Electro technicians

Mark	Answer			Work place
10	1.a.			
10	1.a.			
9	1.b.	3.2.		LE
9	1.c.	3.2.		NCS
9		3.2.	5	SIA "J.E.F."
9		3.1.		SIA "JES"
9	1.a.			
8			4	
8				No idea
8	1.b.	3.2.		LE
8	1.b.	2		LE
8	1.b.	3.2.		LEC
8	1.b.	3.2.		REMEKS
8	1.b.		4	SIA "MARUSMERX"
8	1.b.	3.1.		SIA "VARMAA"
8	1.b.	3.2.	5	SIA Moduls Rīga
8			4	Talsu spriegums, CVS, AS ST
8	1.b.			
8			5	
8	1.a.			
8	1.a.			
8				
7	1.b.	3.1.		Construction
7	1.b.			LEC, LE
7			5	Canada
7	1.b.		5	Not in specialty
7	1.b.			Not in specialty
7	1.b.	3.1.		Reck
7	1.a.		4	SIA "Empower", AS "Ceļu pārvalde"
7	1.b.			
7	1.a.			
6	1.b.			
6	1.b.			
5			4	LEC, LE, Remeks
5	1.b.		5	
5		3.2.		

Electricians

		9.-10.	7.-8.	5.-6.
3	12	4	7	1
LE	3	1	2	
Other industry	10	3	7	
Not related to specialty	2		2	
Got contract	1		1	
2	25	5	17	3
RTU	7	3	4	
RTK	17	1	13	3
other	1	1		
5	6	1	4	1
4	5		4	1
No idea	2		2	



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Conclusions

- Situation in electricity is absolutely not so bad. According to research from about 100 people only 3 got no idea what do . But of course, it is the good story, when industry and education system can find common points of interests.
- It is good to have big industry (>500 specialists). Such industries are in need of new specialists every year.
- Small industries got no interest to invest in education system. They need a worker, that can bring profit already on next day. But the amount of need specialists is average 0.2 per year. So, to establish real work based education model, some «carrot-whip» system shall be introduced.
- Latvian education system shall do a real investment in technical specialties (starting from elementary school physics). Cause bad story is, that Latvia got about 70% young people going for social education, and only 30% for technical, cause «that teaches of physics is an xxxx and do not answer to my questions (he is just weak) and mathematics are very hard».



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