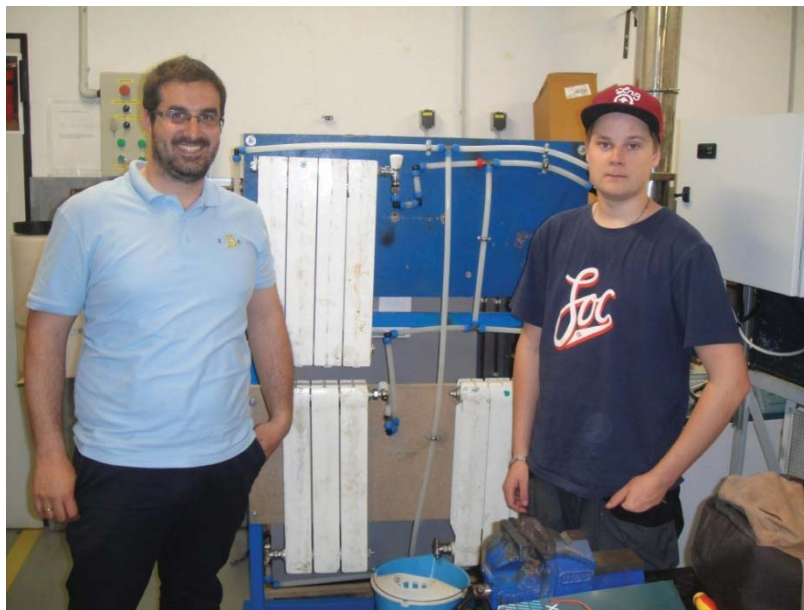


PROJECTX Nº 023

“TEST THE EFFICIENCY AND PERFORMANCE OF A BOILER IN TWO DIFFERENT INSTALLATIONS”

PRESENTATION



Promoting school:

XABEC, Vocational Training Centre
Spain



A. GENERAL DESCRIPTION

Title of the ProjectX

TEST THE EFFICIENCY AND PERFORMANCE OF A BOILER IN TWO DIFFERENT INSTALLATIONS

Core area

GENERAL / KNOWLEDGE **HEATING, PLUMBING, GAS**

PARTICULAR / ACTIVITY: **DESIGN, DRAWING AND ASSEMBLY**

Promoting school

XABEC

Schools participants in the revision of the ProjectX

SAVO

Reference to ECVET Credit System and EQF / NQF

ECVET	EQF	REFERENCE TO NATIONAL QUALIFICATIONS (NQF)						
		Spain	Finland	Romania	Portugal	UK	Turkey	France
2	3	3	3	2	3	2	3	3

Learning Outcomes achieved (to be developed in the future related with ECVET credit system)

1. 302.1- Assemble heat production equipment, transmitters and auxiliaries (boilers, radiators, fan coils, tanks and heat exchangers, etc..) interpreting drawings and manufacturer`s instructions and using assembly techniques
2. PLMAS01 (TopMost)- Assemble pipe network, fittings and control elements and circuits, interpreting blueprints, technical standards and specifications and using the tools and equipment safely
3. HTNMT02 (TopMost)- Testing heating installations

Time that is necessary to do the ProjectX (in hours)

Theory: 10 hours
Practice: 50 hours

Link to real companies in your region (it is just informative)

- | | |
|---------------------|-----------------------|
| 1. NAME:FONGAS | WORKPLACE: TECHNICIAN |
| 2. NAME: OFISAT | WORKPLACE:TECHNICIAN |
| 3. NAME: ART HORECA | WORKPLACE:TECHNICIAN |



B. THEORY

Objectives of the theoretical Knowledge

At the end of the theoretical part of this ProjectX, the student will be able to:

1. Know the requirements of design of heating systems
2. Identifies components and operation mode of domestic gas boilers
3. Identifies components and operation mode of gasoil boilers
4. Knows the boiler in use in the workshop

List of activities

1. Evaluation questionnaire
2. Multiple-choice test
3. Training exercises with a computer programme
4. Technical discussion

C. PRACTICE

Brief description of the Practice

The student will make two different installations of heating using two kinds of material (copper and plastic, like PEX, PPR or similar), he will make the commissioning and will collect data for the comparison between both systems

Steps or activities to be performed by the student

- | | |
|---------|--|
| First: | Draw the scheme |
| Second: | Assemble the piping |
| Third: | Fit the radiators |
| Fourth: | Perform the leakage checking |
| Fifth: | Check the proper operation and report it |



D. DETAILED DESCRIPTION OF LEARNING OUTCOMES.

Learning Outcome:	302.1 Assembling of heat production equipment, transmitters and auxiliaries (boilers, radiators, fan coils, tanks and heat exchangers, etc..) interpreting drawings and manufacturer`s instructions and using assembly techniques
Knowledge	
<ul style="list-style-type: none"> - The student knows the draws and manufacturer`s instructions of the boiler for assembly and use - The student knows the necessary occupational safety regulations, accident prevention regulations and environmental protection regulations - The student is aware of the characteristics of supply pipes, such as type of pipes, nominal pressures, nominal diameters, operating temperatures - The student knows the special provisions that apply when installing gas lines 	
Skills	
<ul style="list-style-type: none"> - The student is able to assemble the boiler according with the manual of the manufacturer. - The student is able to assemble the boiler according with the occupational safety regulations, accident prevention regulations and environmental protection regulations - The student is able to take into consideration the special provisions that apply when installing gas lines 	
Competences	
<ul style="list-style-type: none"> - The student is responsible for ensuring that the necessary tools and materials are available - The student is responsible for ensuring that fire safety regulations are complied during fitting the boiler - The student is responsible to bring start up the boiler - The student is responsible for ensuring that screw connections press fittings and joint connections are made durable and error free - The student asks questions for clarification appropriate and reasonable and listens carefully to the instructor 	



Learning Outcome:	PLMAS01(TopMost) Assemble pipe network, fittings and control elements and circuits, interpreting blueprints, technical standards and specifications and using the tools and equipment safely
Knowledge	
<ul style="list-style-type: none"> - The student knows the necessary occupational safety regulations, accident prevention regulations and environmental protection regulations - The student knows the special health and safety regulations when handling refrigerants - The student is aware of the characteristics of supply pipes, such as type of pipes, nominal pressures, nominal diameters, operating temperatures 	
Skills	
<ul style="list-style-type: none"> - The student is able to read and apply technical drawings - The student is able to prepare pipes for installation - The student is able to install fastening elements - The student is able to produce breakthroughs in masonry, with various tools - The student is able to assemble pipelines - The student is able to install protective devices, claddings, insulations 	
Competences	
<ul style="list-style-type: none"> - The student is responsible for ensuring that the necessary tools and materials are available - The student is responsible for ensuring that fire safety regulations are complied during soldering and welding - The student is responsible to bring various assemblies correctly into service - The student is responsible for ensuring that screw connections press fittings and solder connections are made durable and error free - The student is responsible for ensuring that thermal and acoustic insulation complies with the normative rules - The student asks questions for clarification appropriate and reasonable and listens carefully to the instructor 	



Learning Outcome:	HTNMT02 (TopMost) Testing heating installations
Knowledge	
<ul style="list-style-type: none"> - The student knows the safety rules in building services engineering - The student knows the environmental protection measures within building services engineering - The student knows the physics principles of pressure, flow, etc... - The student knows the testing plan for a heating installation - The student knows the components of a heating installation: pipes, indoor units, electrical connection, etc... - The student knows the instruments for measuring and testing the components of a heating installation 	
Skills	
<ul style="list-style-type: none"> - The student is able to use all the protection equipment according to the safety rules - The student is able to tests according to the legal requirements: strength integrity test, pressure tightness test, leak test, evacuations, vacuum rise test, etc... - The student is able to carry out basic electrical tests: continuity, insulation, polarity, resistance earth and visual check - The student is able to open system valves and run systems - The student is able to complete checks to confirm system is leak free - The student is able to record temperature differences 	
Competences	
<ul style="list-style-type: none"> - The student is responsible to use all the protection equipment according to the safety rules - The student is responsible to tests according to the legal requirements: strength integrity test, pressure tightness test, leak test, evacuations, vacuum rise test, etc... - The student is responsible to carry out basic electrical tests: continuity, insulation, polarity, resistance earth and visual check - The student is responsible to open system valves and run systems - The student is responsible to complete checks to confirm system is leak free - The student is responsible to record temperature differences 	

