

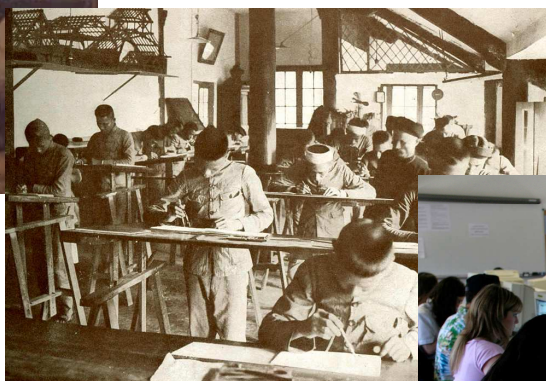
NEXTER MUNITIONS ENERGETIC MATERIAL TRAINING

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- ▶ **Introduction**
- ▶ **Pyrotechnic pole**
- ▶ **Several types of training**
- ▶ **Long training**
- ▶ **Short training**
- ▶ **Conclusions**

INTRODUCTION



INTRODUCTION

- ▶ Energetic materials training and NEXTER Munitions = a long history
- ▶ Since the beginning of the nineties, armaments industry has undergone substantial changes with alternation of generations
- ▶ 2000 : association of training actors located in Bourges : CFBS defense ministry center and ECIT GIAT Industries center leading to





PYROTECHNIC POLE

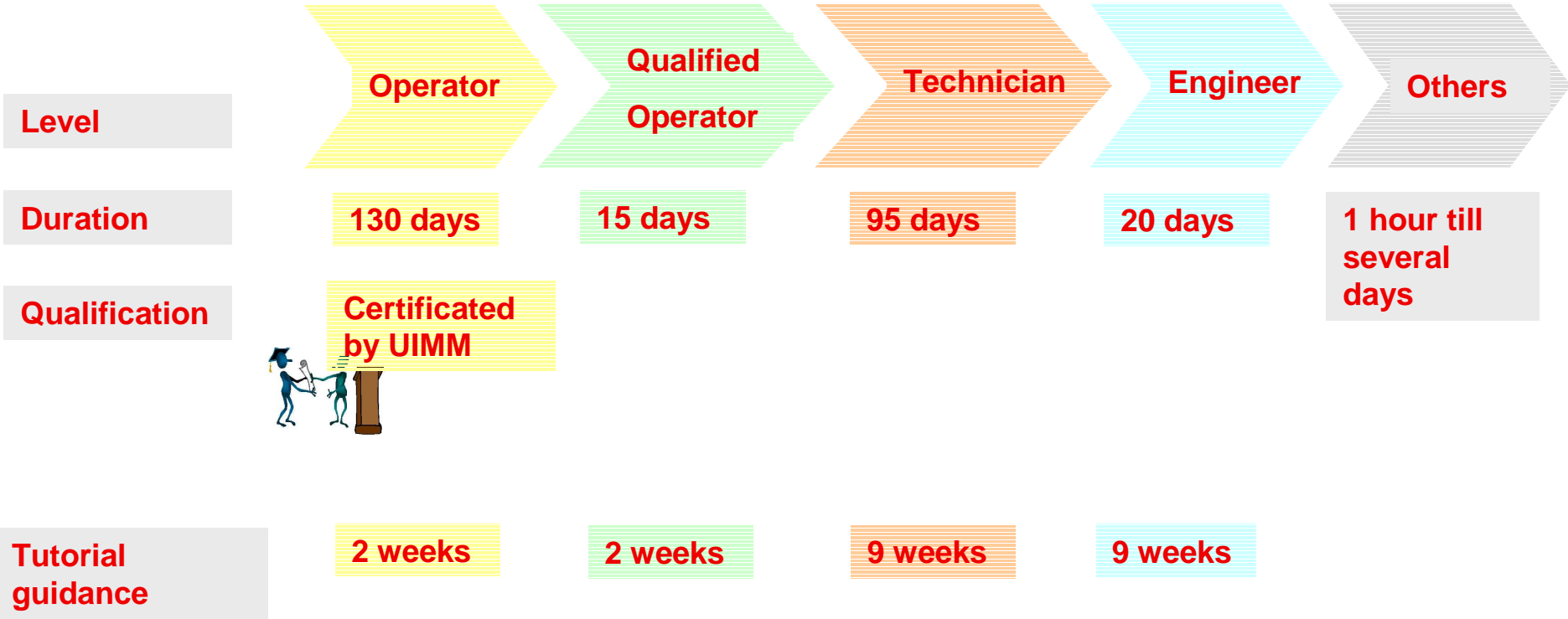
nexter
MUNITIONS

- ▶ its ambitions : develop the fundamental knowledges, skills, values
- ▶ its vocations : create and maintain a safe and efficient industry
- ▶ its resources : experts with long experience from professional body, adapted pedagogic tools
- ▶ its customers : not qualified to experienced people
- ▶ its constant cares : ***SAFETY and EFFICIENCY***

SEVERAL TYPES OF TRAINING



A well amalgamated combination of theoretical and practical learning



SEVERAL TYPES OF TRAINING

With different :

- ▶ **backgrounds : from operator to the top management**
- ▶ **ages : from 18 to 60 years old**
- ▶ **levels : from the general knowledges to specializations**
- ▶ **places : traditional classroom or directly at the workplace**
- ▶ **kinds : theoretical and practical training**

SEVERAL TYPES OF TRAINING

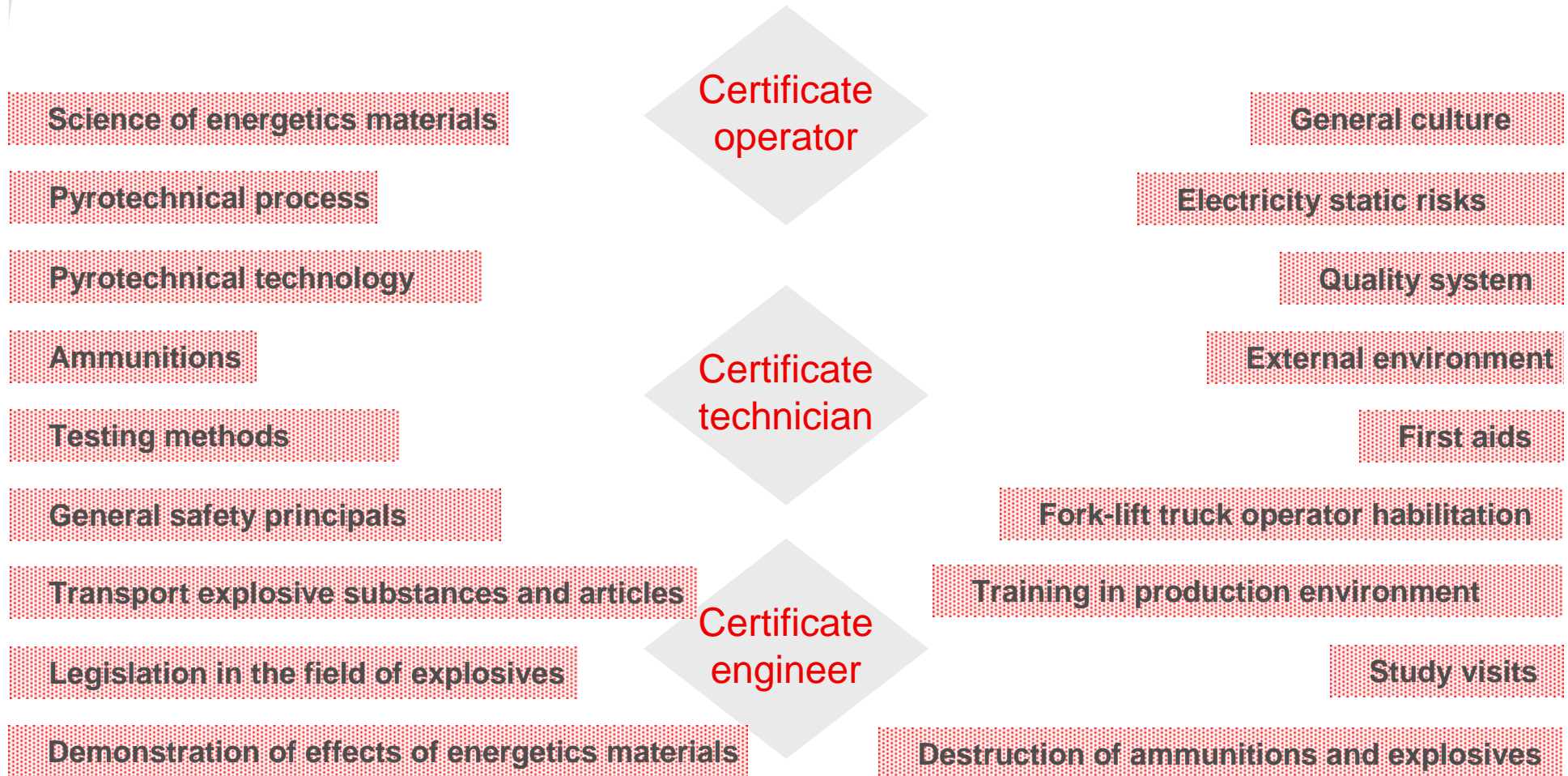
Flexibility in terms of levels, contents and arrangements :

- ▶ **Long training** : with alternance school/workplace leading to the award of a qualification certificated by organism UIMM

- ▶ **Short training** : for each person who works with energetics materials to qualify or requalify people (each five years)

- ▶ **Modular training** : training at the workplace on specific subjects (for example the binders in pyrotechnic composition, how to evaluate component, nanocompound, chemical compatibility, static electricity,)

SEVERAL TYPES OF TRAINING



Example : long training « Operator »

Objectives :

- ▶ **Qualify people**
- ▶ **Give knowledge to be put in practice after**
- ▶ **To accredit the trainee to work with energetic materials**

Theory and practice :

- ▶ **With expert trainers to transfer knowledges and skills from experienced staff to new generations**
- ▶ **With alternating school and practice, a local tutoris the referent at workplace**
- ▶ **Implement theoretical training directly through practical work and demonstration in test center**

Practical works : study of work environment legislation

Study of concret case like :

- ▶ working on explosives
 - ▶ melting cast
 - ▶ compression
- ▶ working on pyrotechnic compositions
- ▶ working on firing
- ▶ working on destruction
- ▶ demonstration of effects of different energetic materials

Example : long training « Operator »

Practical works Working on explosives



Melting cast :

- ▶ Safety rules
- ▶ Explosives components
- ▶ Tools
- ▶ Process
- ▶ How to work
- ▶ Practical melting cast



Compression :

- ▶ Safety rules
- ▶ Energetic material components
- ▶ Tools
- ▶ Process
- ▶ How to work
- ▶ Practical compression

Practical works

Working on pyrotechnic composition

- ▶ Safety rules
- ▶ Different pyrotechnic compositions
- ▶ Tools
- ▶ Process
- ▶ How to work
- ▶ Making a pyrotechnic composition
- ▶ Testing a pyrotechnic composition



Practical works

Firing, destruction of ammunitions and explosives :

- ▶ **Safety rules**
- ▶ **Differents modes of firing**
- ▶ **Firing an igniter alone**
- ▶ **Electrical firing with a pseudo charge taking all the unknown not-functioning in account**
- ▶ **Demonstration of destruction**
- ▶ **Demonstration effects of different energetic materials**

Objectives :

- ▶ **Qualify people, maintain and upgrade knowledge**
- ▶ **Give knowledge to be put in practice after**
- ▶ **To accredit the trainee (or renew the accreditation) to work with energetic materials**

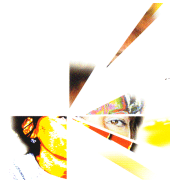
Theory and practice :

- ▶ **With experts trainers to transfer, increase or renew knowledge and skill**
- ▶ **Implement theoretical training directly through practical work and demonstration in test center**

Means : training courses adapted to needs

Theory and presentations :

- ▶ **Demonstration effects of different energetic materials**
- ▶ **Electricity static risks**
- ▶ **Workshops, laboratories, tests areas visits**



Pyrotechnic pole

It strenght : theoritical and practical association by :

- ▶ **Well experienced teachers who develop and strengthen awareness about safety and efficiency**
- ▶ **confrontation with practical pyrotechnic tools**
- ▶ **Pyrotechnic environment overview**

Workers sensitized with safety and efficiency

With better understanding of :

- ▶ **safety measures**
- ▶ **pyrotechnic phenomenons**
- ▶ **potential dangers**

THANK YOU