Forest Fire Prevention Officer

FORESTRY
SECTOR

Fostering innovation and better skills match with the green and digital sectors through the integration of emerging technologies (drones, VR, AR) in VET

Co-funded by the European Union

360 DRONES

✏️Short Description

Fire prevention and protection engineers study, design, and developed innovative solutions aimed to the prevention of fire and the protection of people, natural sites, and urban areas. They propose suitable materials for construction, clothing, or other applications and they design detection systems aiming to prevent fire or the propagation of it.

🎯Key Skills Required

- 🚁 **Drone piloting and regulations** – aerial surveillance of fire-prone zones within legal frameworks
- 🔥 **Operate fire extinguishers** – handling suppression tools in emergency scenarios
- 🧯 **Fire prevention procedures** – applying protocols to reduce ignition risks
- 🦺 **Safety engineering** – designing systems to minimize hazards in forest environments
- 📊 **Record test data** – documenting environmental and equipment performance metrics
- ⚠️ **Determine fire risks** – identifying and evaluating high-risk areas and conditions

💡Future Trends & Market Opportunities

The fire protection and fire prevention engineering market presents numerous opportunities due to the increasing focus on safety in critical sectors such as construction, energy industry, transport infrastructure and data centres. Increasing regulations and higher international standards are driving demand for advanced and customised solutions, creating opportunities for companies offering comprehensive fire protection system design, simulation and maintenance services. In addition, the use of drones in post-fire inspection and assessment tasks allows for a faster and safer response, especially in environments that are difficult to access or with structural risk, improving the efficiency of prevention services.

In terms of future trends, a strong adoption of smart technologies and interconnected systems, such as IoT sensors, artificial intelligence and predictive analytics, is expected to enable faster and more effective fire detection and response. Drones will play an increasingly important role, equipped with thermal cameras and gas sensors to perform preventive patrols and support real-time management during emergencies. Sustainability will also influence the design of more environmentally friendly fireproofing materials and the integration of less invasive passive protection solutions. In addition, augmented reality and virtual simulation will be used for training, design and risk assessment, opening new avenues for innovation in this strategic field.

🛩️Drone Applications

🔍 **Aerial inspection:** Survey critical infrastructure and forest areas to identify fire hazards and vulnerabilities.
🔥 **Post-Fire Assessment:** Evaluate structural conditions and damage immediately after a fire event.
🌲 **Preventive monitoring:** Continuously monitor forestry and industrial zones to detect early fire signs.
🚒 **Tactical support:** Provide real-time aerial intelligence to firefighting and intervention teams.
💨 **Extinguishing Agent Deployment:** Release fire suppressants in hard-to-reach or hazardous locations.
🧯 **Firewall Creation:** Assist in creating and monitoring firebreaks from the air to contain wildfires.

Sector & Classification

🌍 Sector: Agriculture / Urban Planning / Energy, etc.

🟦 ESCO Code: 2149.10.1

External Sources

🌐 How drones are being used to prevent wildfires

🌐 Dryad's Silvanet Wildfire Detection in action

🌐 Drone footage shows wildfire devastation in northern Athens

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Machine Learning–Based Early Fire Detection System Using a Low-Cost Drone

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