ZISIMOPOULOS S.A.
SANDBLAST & PAINT SYSTEMS

Documentation on Mandatory use of Personal Protective Equipment (PPE) for Water-Jetting ≥ 500 bar

Scope of Application:

Operators and technicians working with high-pressure water jetting machines, especially with pressures from 500 bar and above.

Legal and Standardization Framework

1) EN 1829-1:2021 — High-pressure water jet machines — Safety requirements
- Covers machines with a working pressure exceeding 35 MPa (350 bar).
- Specifies strict safety requirements, including protective measures for operators against hazards caused by high-pressure water projection.

2) Machinery Directive 2006/42/EC
- Requires employers and manufacturers to assess risks and implement protective measures for the health and safety of workers, including the provision and use of PPE where necessary.

3) EN 60335-2-79:2012 — High-pressure cleaners (up to 35 MPa)
- Covers lower-pressure equipment (up to 350 bar), where PPE use is recommended; however, for higher pressures the safety requirements are significantly stricter.

4) PPE Directive 89/686/EEC (now Regulation (EU) 2016/425)
- Sets the standards for PPE and certification requirements, especially for equipment protecting against high-pressure hazards.

Safety and Protection in Water Jetting ≥ 500 bar

- At pressures from 250 bar and above, the risk of injury becomes significant, with the risk of water injection into the skin increasing exponentially with pressure.
- At 500 bar and above, the hazard is critical, and without proper protection, serious injuries or fatalities can occur.
- The use of protective suits, gloves, eye/face protection, safety footwear, and hearing protection is essential and mandatory.

Conclusions and Recommendations

- The use of Personal Protective Equipment (PPE) is mandatory when operating water jetting machines at 500 bar and above, in line with EN 1829-1:2021, Machinery Directive 2006/42/EC, and PPE Regulation 2016/425.
- Failure to use PPE in such conditions exposes the operator to serious health and safety risks, in violation of EU legislation and safety standards.
- It is strongly recommended to use certified PPE specifically designed to withstand high-pressure water jetting, such as protective clothing made for 500 bar or higher.

Law 3850/2010: "The employer is obliged to ensure the health and safety of the employees in all aspects of their work and to take measures that guarantee health and safety. Within the framework of their responsibilities, the employer shall take the necessary measures for the protection of the health and safety of the employees, including activities for the prevention of occupational risks, information and training, as well as the establishment of the necessary organization and the provision of the necessary means."

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