




***Diferro Calenders - Sublimation Calender Presses – All Models featuring a sealed oil-filled heated drum – Including DP-series, MP-series, DM-series, DE-series, DR-series, DX-series, DF-series***

Aspect	Details
Images	<p>Example images of Diferro Calenders</p> 
Alert Number	2402-0018
Product Type	Machinery – Piece & Roll to Roll Sublimation Calender Presses
Product Identifiers	<p>All Diferro sublimation calender press models featuring a sealed oil-filled heated drum. These include <b>but are not limited to</b> DP-series, MP-series, DM-series, DE-series, DX-series and DF-series models.</p> <p>The model can be identified from the manufacturer's identification plate as highlighted in red in the image below. For example where 'DP-20B600C' represent a DP model series followed by the drum length and diameter (e.g. 2.0m x 600mm). A separate Serial Number (e.g. D-*** ) and Year of Manufacture are also displayed on the plate.</p>



	
<b>Product Description</b>	Industrial sublimation calender press machines used to transfer designs onto fabrics or other materials. The press has a sealed oil-filled heated drum (roller), which is used to apply pressure and heat to transfer the designs. The machine incorporates a weekly programming function which allows the user to pre-heat the drum (roller) to a set temperature at a specific date and time. The machine also incorporates a cooling cycle. These features do not require an operator to be in attendance.
<b>Country of Origin</b>	Turkey
<b>Counterfeit</b>	No
<b>Risk Type</b>	Fire/explosion
<b>Risk Level</b>	Serious
<b>Risk Description</b>	<p>Sublimation calender presses within the scope of the corrective action have been identified as presenting a serious risk of explosion and fire.</p> <p>Two catastrophic Boiling Liquid Expanding Vapour Explosion (BLEVE) incidents have now occurred involving Diferro machines. Evidence suggests that in both cases the machines had been left unattended and connected to the electrical power supply and that uncovenanted and uncontrolled heating of the oil-filled drum has occurred. The built-in temperature control system has then also failed to operate to prevent overheating and over-pressurisation of the sealed drum (roller). No external source of heat has been present to cause the overheating of the oil-filled drum.</p> <p>There is potential for system control failure to result in unplanned uncontrolled heating of the oil-filled drum at any time when the machine is connected to the electrical power supply, including when left in standby mode after the normal cool-down cycle has completed and when using weekly programme function (timer mode). If the machine is unattended when this occurs failure to promptly shut down and isolate from the power supply may result in overheating and catastrophic failure of the drum and a BLEVE. The potential explosion and any subsequent fire is likely to cause catastrophic damage to the building and its surroundings, with potential for multiple fatalities and significant property destruction.</p> <p>The original Programmable Logic Controller (PLC) within the control system of these calender presses does not meet any required safety performance level. There is no independent secondary temperature</p>



	<p>monitoring and control system.</p> <p>The product does not meet the requirements of the Supply of Machinery (Safety) Regulations 2008.</p>
<b>Corrective measures</b>	<ul style="list-style-type: none"><li>• GB suppliers have been asked to stop selling Diferro calender presses containing a sealed oil-filled heated drum until further notice.</li><li>• GB suppliers have previously been asked to inform all persons supplied with Diferro calender presses containing a sealed oil-filled heated drum (DP-series, MP-series, DM-series, etc), that until further notice:<ul style="list-style-type: none"><li>○ These machines must not be operated using the weekly programming function.</li><li>○ These machines must not be left unattended whilst connected to power.</li></ul></li></ul> <p>In light of a second explosion the Health and Safety Executive (HSE) are now <b>updating advice</b> to users of all Diferro calender presses with a sealed oil-filled drum.</p> <p>The HSE instructs users to cease operating these machines until a second, independent Safety-Related Control System (SRCS) has been fitted. The second SRCS is required to monitor the calender's drum temperature and must be designed, installed, and validated in accordance with safety standard BS EN ISO 13849 Parts 1 and 2. Details of the requirements are given in <b>Appendix 1</b>.</p> <p>Users will also need to implement systems of work to ensure that the primary control system and this secondary SRCS are maintained and tested at appropriate intervals. The machine should be taken out of operation in the event of any anomalies in temperature monitoring/control or upon activation of any alarms or the secondary SCRS. Use should only resume after the cause of the alarm or SCRS activation has been established and rectified.</p> <p>If users deem the continued operation of these machines to be <b>essential</b> whilst they arrange installation of a second SCRS, they <b>must ensure that the machine is attended and monitored at all times when connected to the electrical power supply</b>. This includes standby, pre-heating, normal running, and the cool-down cycle stages. Details of the precautions and system of work required are given in <b>Appendix 2</b>.</p> <p>The interim measures described in Appendix 2 are considered to be short-term emergency arrangements which, if correctly implemented and managed will reduce the likelihood of fire and explosion, but cannot be relied upon as a long-term solution.</p> <p><b>The installation of the SCRS should be completed immediately, and no later than six weeks from the issuing of this alert.</b></p> <p>HSE has contacted all known users to share the original product alert (04/04/24) and will continue to share all revisions to this alert.</p> <p>If you own or operate a Diferro calender press with a sealed oil-filled heated drum and have not been contacted by HSE, or if you have any questions about this Product Safety Report, you can contact HSE by completing an enquiry at <a href="https://www.hse.gov.uk/contact/ask-us-about-health-and-safety.htm">https://www.hse.gov.uk/contact/ask-us-about-health-and-safety.htm</a></p> <p><b>These machines must not be supplied onwards to any other</b></p>



	<p><b>user without providing copies of this and any subsequent alert relating to the use of Diferro calender presses with a sealed oil-filled drum.</b></p> <p>Users should contact their local fire authority and make them aware of the presence of these machines in their premises, including the possibility of a BLEVE. They should seek advice on the appropriate arrangements for fire safety and emergency evacuation and response.</p> <p>Users may wish to contact their insurers to discuss the continued use of these machine in their premises.</p>
<b>Online Marketplace</b>	N/A
<b>Notifier</b>	Health and Safety Executive

### **Appendix 1**

A second, independent Safety-Related Control System (SRCS) must be installed. The secondary SRCS circuit shall be implemented by a competent person who has experience, knowledge and possesses the relevant qualifications to practice functional safety within industry.

**The fundamental principles of any additional new SRCS should achieve the following:**

1. If the temperature exceeds the high-temperature alarm setpoint of the SRCS, power to the heating elements shall be disconnected (This should be set 2-3 °C above the existing high temperature alarm setpoint to prevent both the existing and new temperature monitoring circuits tripping simultaneously).
2. In addition, the second SRCS will cross-check its monitored temperature against the existing temperature control circuit. If a deviation greater than 5°C is detected, the SRCS shall disconnect the heating element power supply.
3. The second SRCS **must not** be connected through the calender's existing PLC, as this system does not meet any required safety performance level.
4. In the event that the secondary SRCS circuit is triggered, an alarm should be illuminated and sounded.
5. Open circuit or short circuit of the second SRCS temperature probe shall result in power being disconnected from the heating elements of the drum.
6. It is permissible to use a retransmission signal from the SRCS to feed the calender's existing graphical interface, allowing the operator to view and monitor the newly implemented secondary monitored temperature circuit.

Users will also need to implement systems of work to ensure that the primary control system and this secondary SRCS (and primary control system) are maintained and tested at appropriate intervals.

In the event of the SCRS activating, and in response to any alarm signals, the machine should be taken out of operation. Use should only resume after the cause of any temperature control anomalies, alarms or SCRS activation has been established and rectified.



## **Appendix 2**

If users deem the continued operation of these machines to be essential whilst they implement the above control measures, they must:

- o Ensure that the machine is attended and monitored at all times when connected to the electrical power supply. This includes standby, pre-heating, normal running, and the cool-down cycle stages.
- o After use, and only after the cool-down cycle has been observed to be fully completed, the machine should be disconnected from the electrical power supply and measures taken to prevent reconnection i.e. by completely unplugging the supply connection or by isolating at the supply connection and locking off with a lockable hasp, and the key kept in the control of the senior person responsible for the site.
- o Operators who are attending and monitoring machines while connected to the electrical power supply must:
  - o Know what the normal temperature range and maximum temperature are for the machine model;
  - o Understand on-screen warnings and signal beacons;
  - o Be able to recognise the signs of unexplained heating or signs of overheating (these may include unusual noises smells, a haze or smoke, or signs of damage to the felt).
  - o Know how to stop and safely disconnect the machine from the power supply after normal use and in the event of unexplained heating or overheating.
- o Operators will need to continue to monitor the machine after an emergency disconnection to check that the drum temperature is cooling, and to observe for and be prepared to take appropriate action to prevent associated risks, e.g. burning of the felt.