

Eurosets Workshop, December 9, 2021  
INNOVATIONS IN ECMO: ECMOLIFE CONSOLE WITH  
MAGNETIC LEVITATION



# Features of the ECMOLIFE Eurosets console

## *Spécificités de la console ECMOLIFE Eurosets*

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# Conflicts of interest

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## Consultant fees:

Abiomed

Abbott

Amomed

Nordic

Air Liquide Healthcare

# ECMOLIFE console

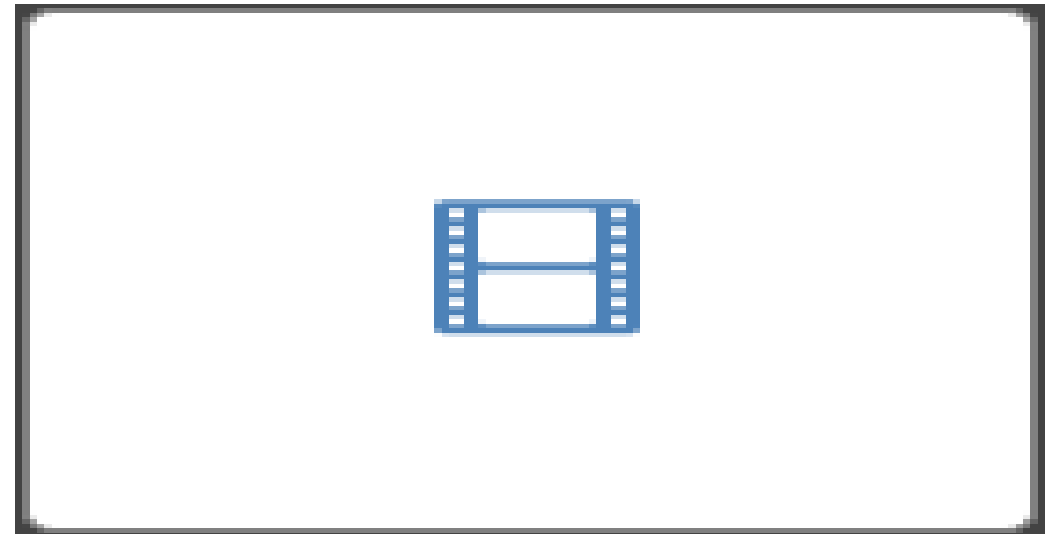
- Portable and flexible
  - Compact design but heavy !
  - Circuits for ECMO or MCS
  - « Leonardo » trolley for convenient intrahospital transportability
- Safety
  - Integrated backup full system
  - Noninvasive sensing system
    - Monitoring of flow, internal pressures, SvO2 and Hb



# Magnetic Levitation Centrifugal pump

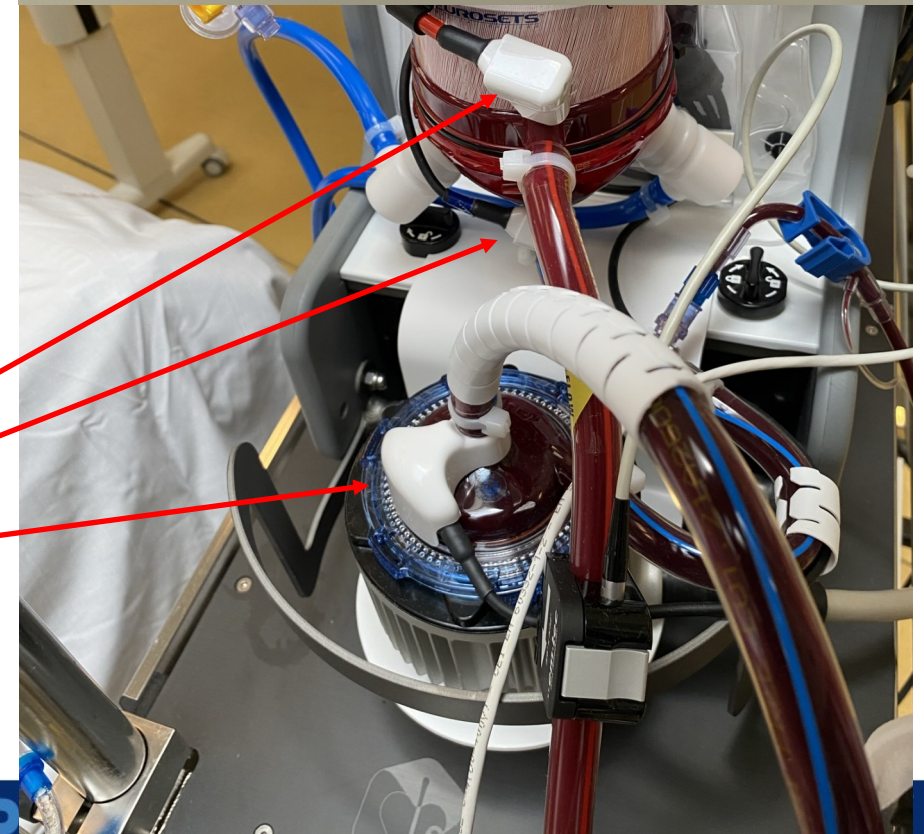
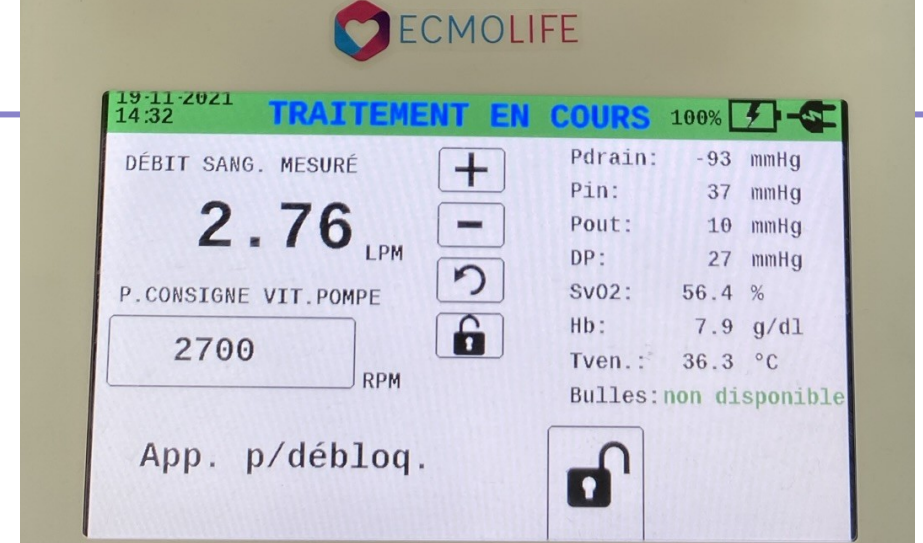
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- Full magnetically levitated centrifugal pump
- No direct contact between impeller and pump housing, no bearing
  - No friction and heat generation
  - Reduce hemolysis
  - Reduce thrombus formation
  - Decrease risk of mechanical failure (bearing)



# Gentle circuit

- Optimal biocompatibility
  - Magnetic levitating pump
    - => Minimizing hemolysis
  - Phosphorylcholine coated circuit
    - => Reducing platelet consumption
    - => Lowering UFH dosage in case of bleeding
  - Up to 14 days disposable validation
    - => Long runs and long term procedures
  - Integrated pressure sensors



# Temperature control devices

- ECMOLIFE Heater cooler
  - As usual
  - Thermo-regulation management during ECMO
- Warming system
  - Possible on MCS w/o oxygenator
  - Portable
  - Placed around ECMO tubing
  - Given to maintain core temperature from 33 to 41°C (but probably difficult to achieve!)



# In real life, transportability?

## Intra-hospital transport

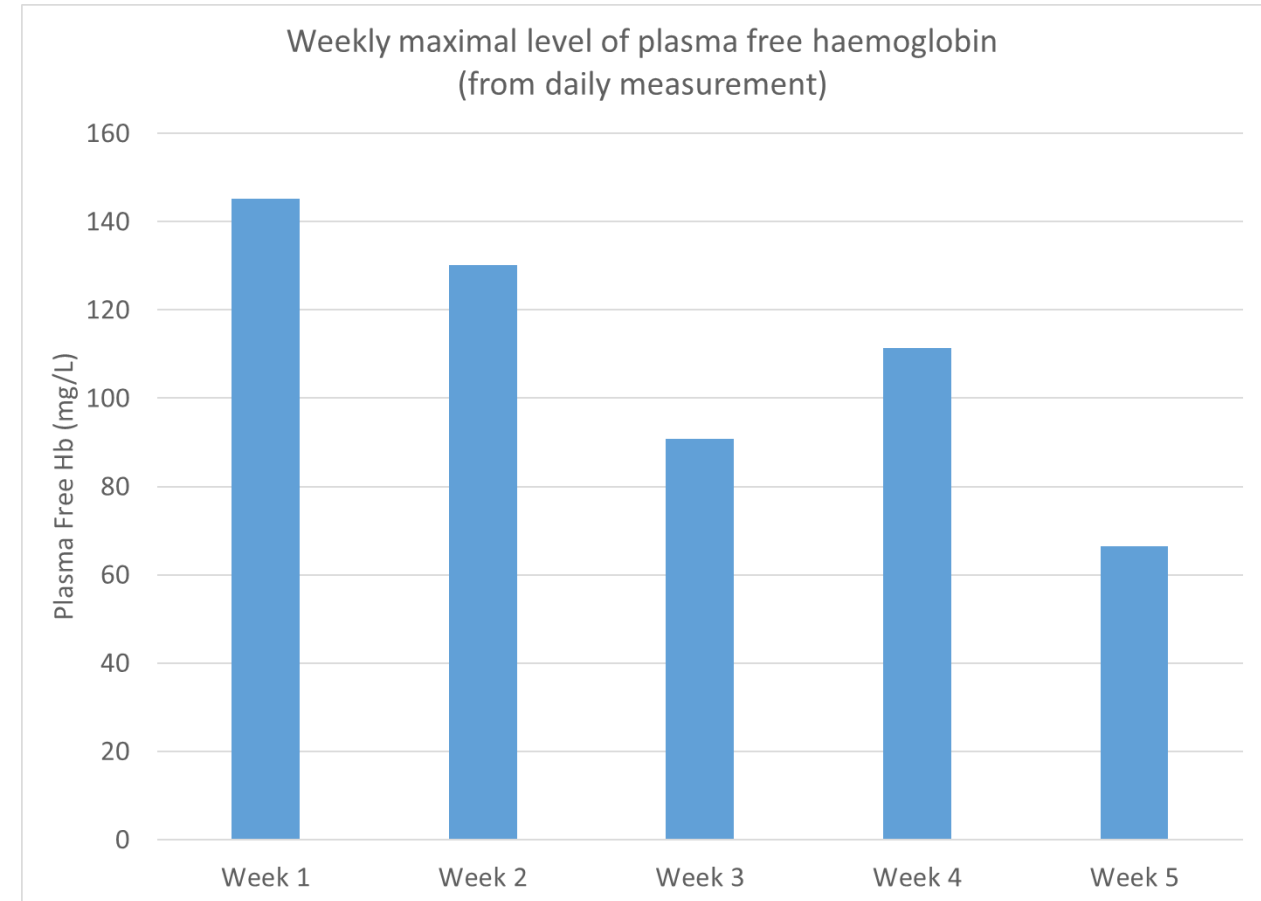


## Mobile ECMO to remote center



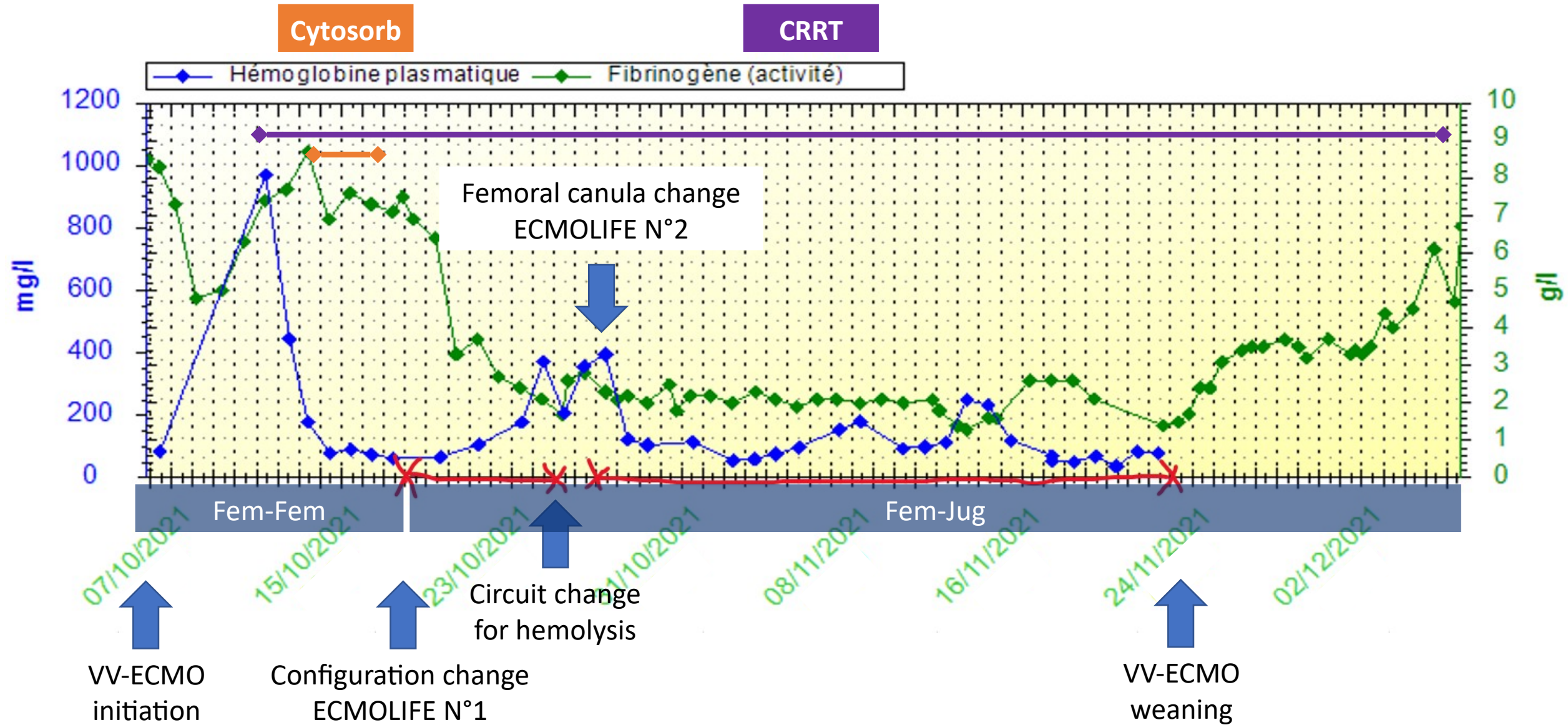
# In real life, reduction of hemolysis and circuit change?

- To date, 12 ECMO patients supported by ECMOLIFE (first in Nov 2020)
  - 4 V-A ECMO
  - 8 V-V ECMO
  - 6 V-V as a change from initial circuit for hemolysis
  - Mean duration on ECMOLIFE = 19 days [min 3 – max 35]
  - 2 circuits change (1 for change of canulas, 1 for hemolysis but pump was clean)





# An exemple of long run with VV-ECMO for COVID-19 related ARDS



# ECMOLIFE:

## Take home message

### Features

- Optimal biocompatibility
- Prolonged run possible
- Patient safety

### Advantages

- No bearing, no contact with impeller
- Possible decreasing risk of hemolysis, thrombosis and anticoagulation level target
- Increasing durability of circuit and pump life
- Full monitoring of extracorporeal circulation

### Limitations

- Weight of the console and size of the trolley
- Transport is possible but challenging



Thanks !!!