

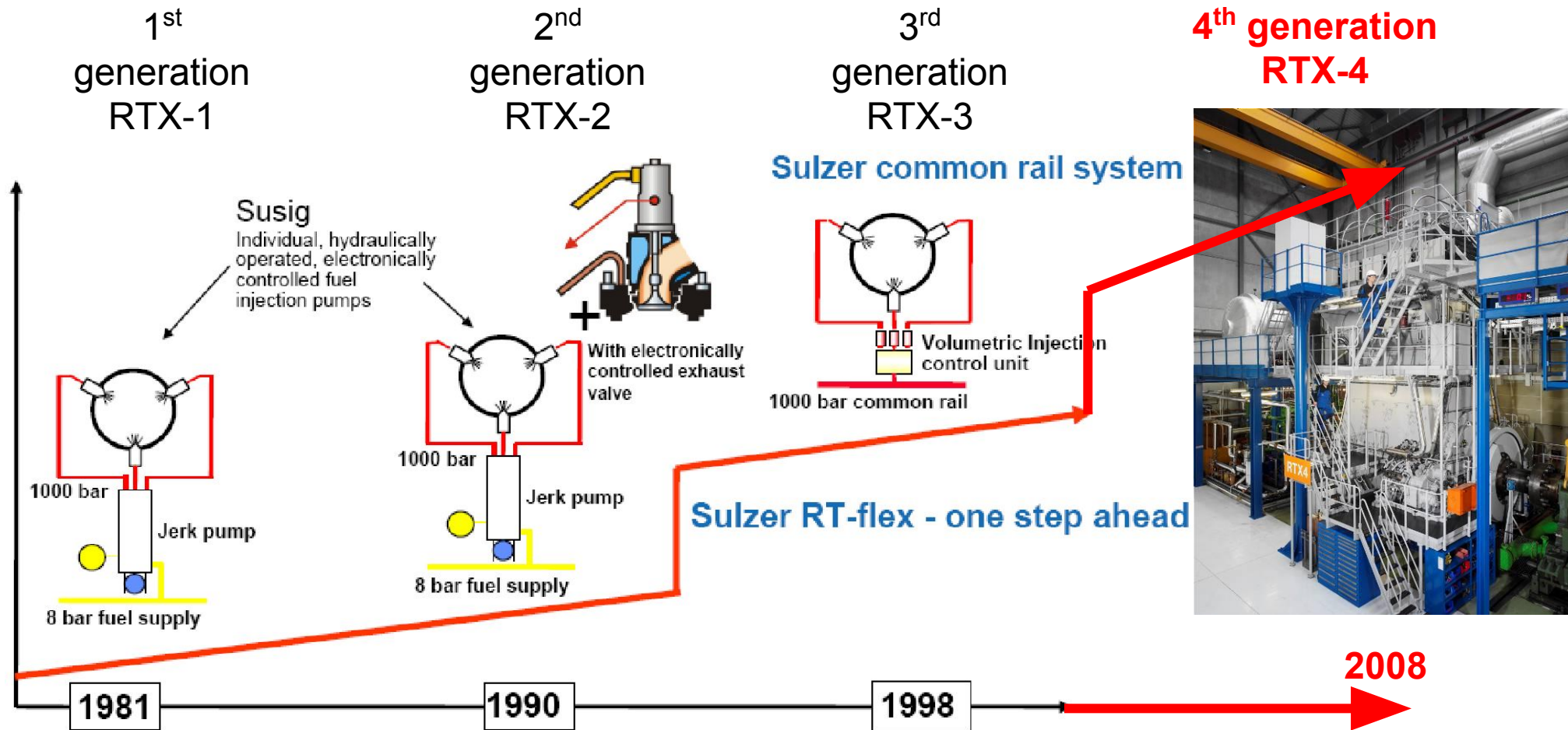
# **RT-flex Training**

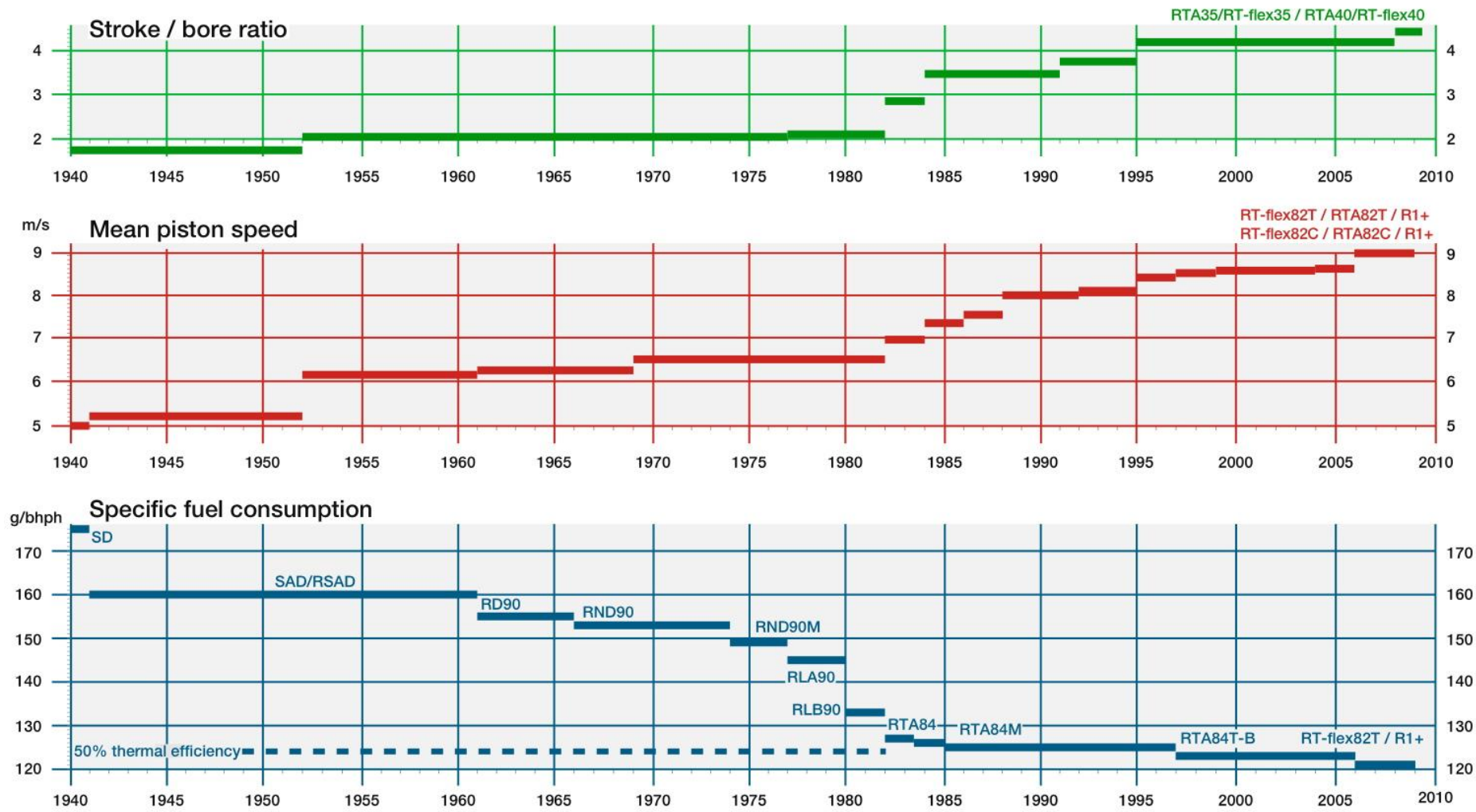
## **Philosophy and Design Aspects of RT-flex Technology and Differences to Conventional RTA Engines**

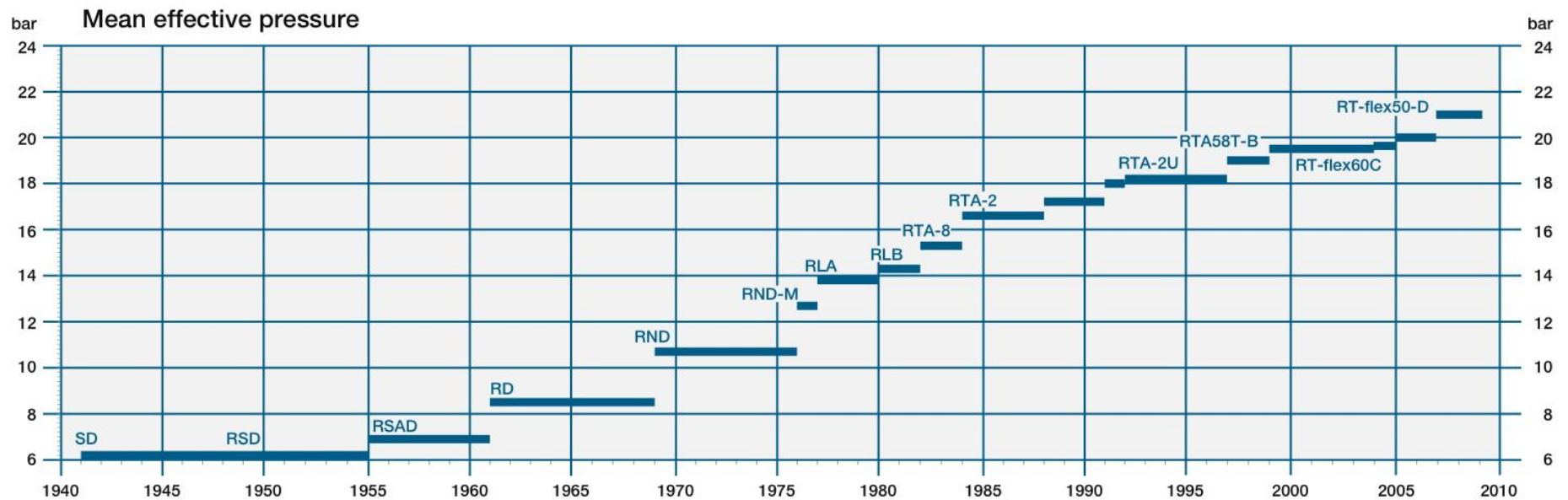
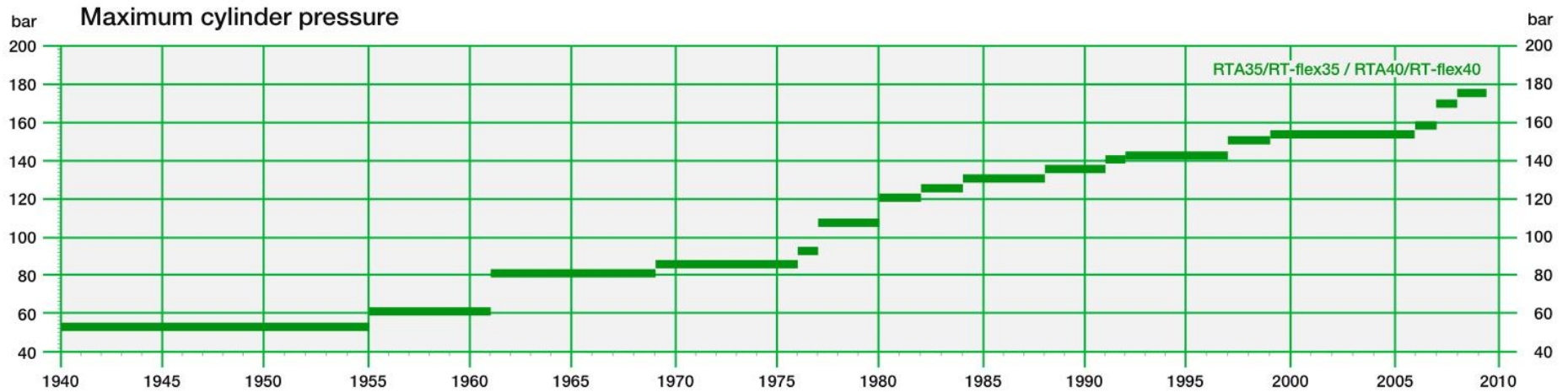
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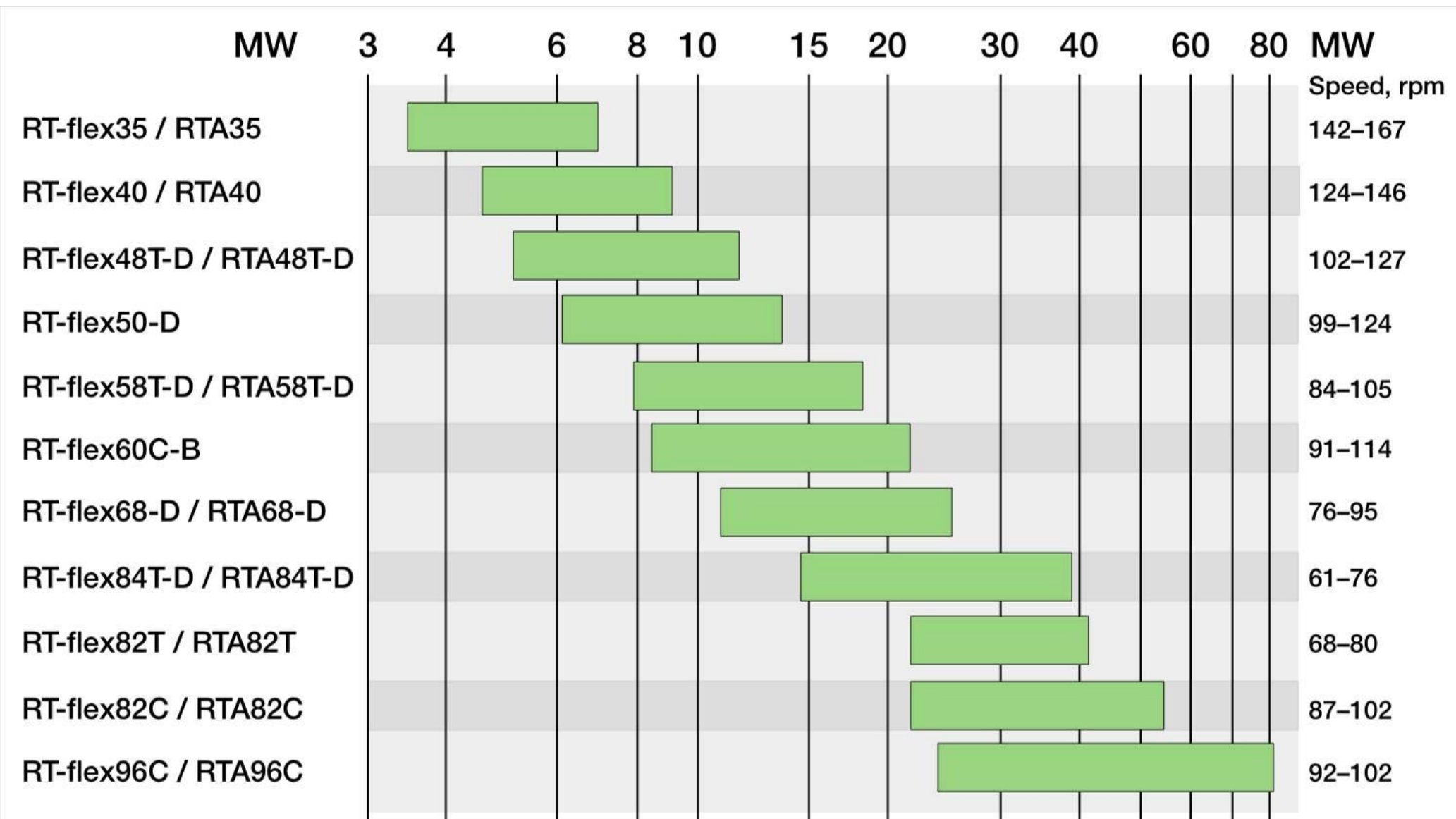
## History of

- RTA
  - RTA introduced in 1982
  - Over **2'800** RTA engines sold with **69'401'216** BHP / **51'030'306** kW
  
- RT-flex
  - First RT-flex workshop in 1996
  - Start of first RT-flex engine in 2001 (6RT-flex58T-B / **GYPSUM CENTENNIAL**)
  - Over **700** RT-flex engines sold with total more than **30'000'000** BHP (Dec. 08)

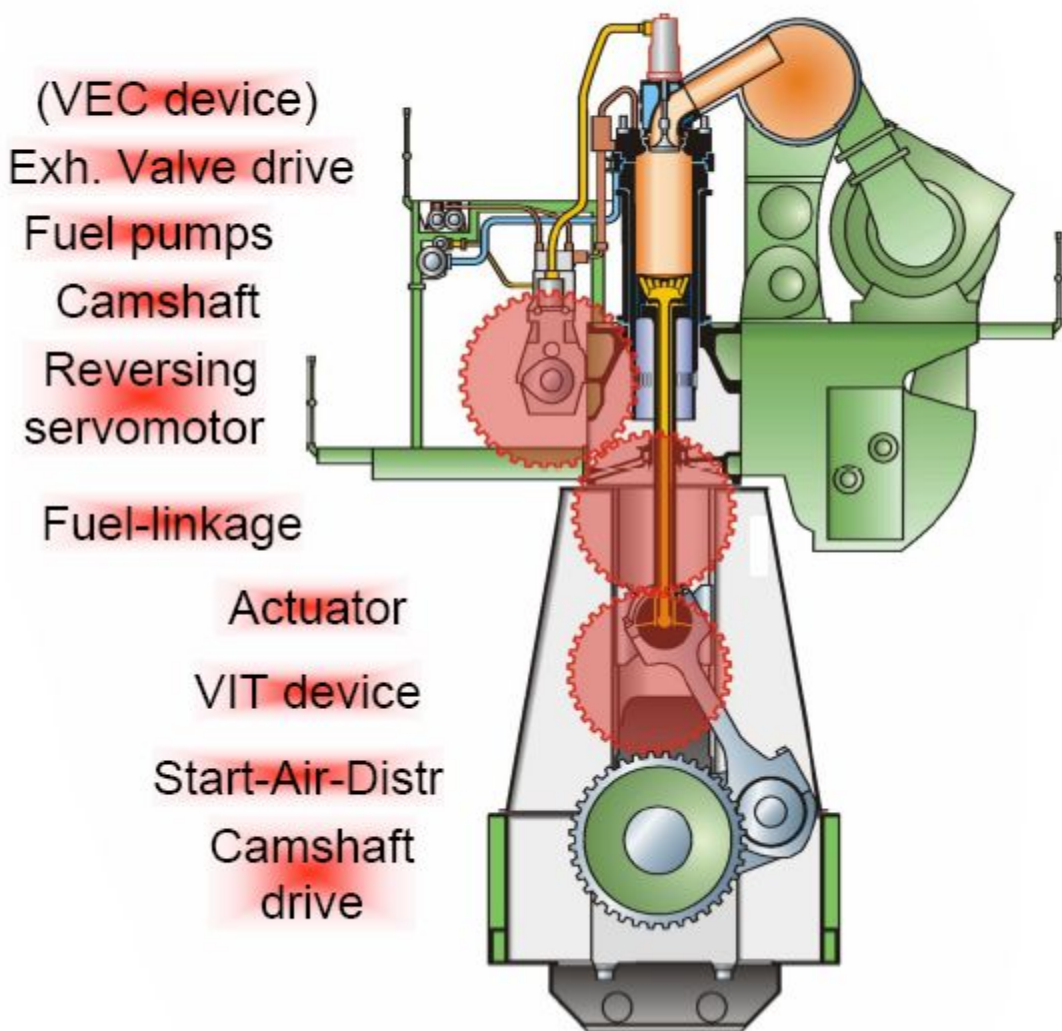




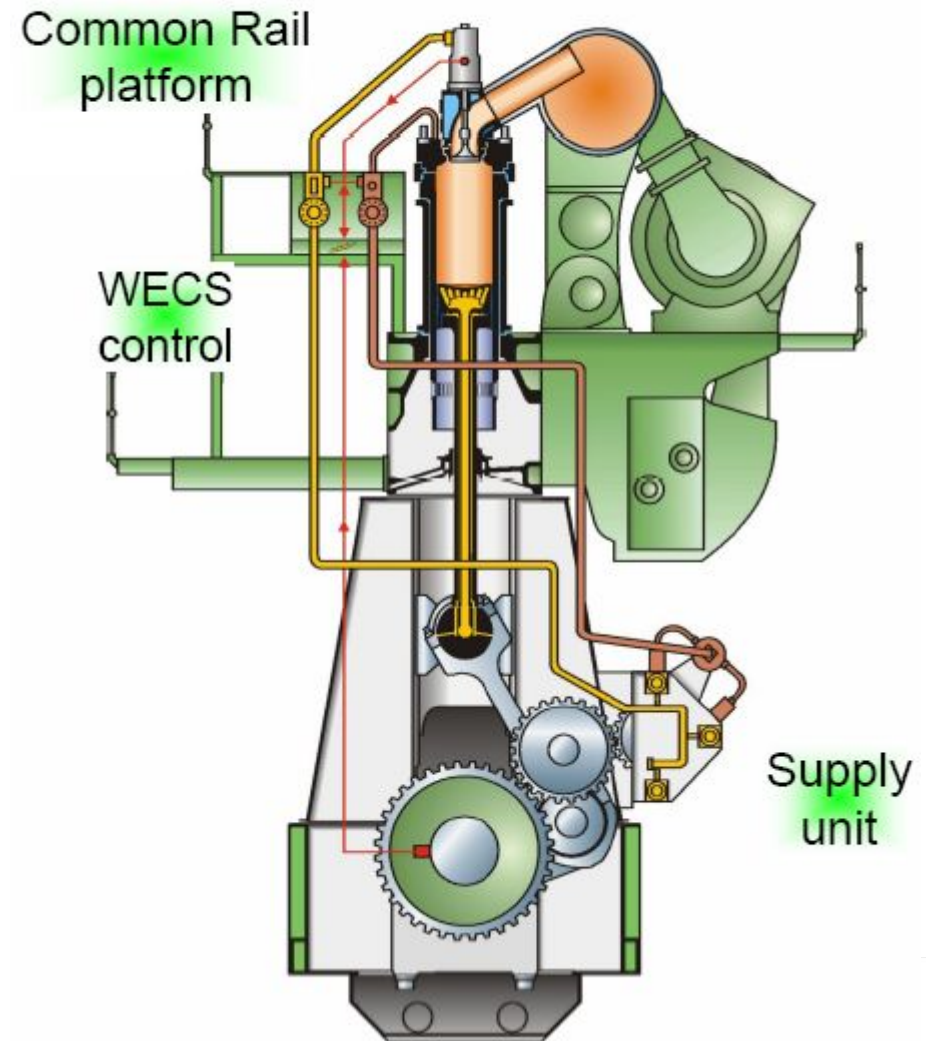




## Sulzer RTA



## Sulzer RT-flex







	<b>RTA</b>	<b>RT-flex</b>
Developing fuel oil pressure	One fuel pump per cylinder	Fuel pumps on supply unit
„Storing“ of fuel oil pressure	-	Fuel rail
Timing of injection	Fuel cam on camshaft	WECS-9520 / ICU
Developing pressure for exhaust valve activation	One activating pump per cylinder	Servo pumps on supply unit
„Storing“ of servo oil pressure	-	Servo rail
Timing of exhaust valve activation	Valve cam on camshaft	WECS-9520 / VCU
Fuel pump actuator	Regulating power/speed	Keeping fuel rail pressure
Electronic governor	Releasing fuel pump position to the actuator	Releasing fuel command to WECS
Power/speed control by	Fuel pump	Fuel quantity piston

	<b>RTA</b>	<b>RT-flex</b>
Timing of starting air	Starting air distributor	WECS-9520
Reversing	Reversing of cam	WECS-9520
Alarm and monitoring system	External (internal: OSC-3)	External
Emergency control	By mechanic shaft and cams acting on pneumatic valves of the engine control	Backup panels deliver manoeuvring signals and fuel commands to WECS inputs, independent from the RC inputs channels
Load signal	RC receives load signal from angle transmitter on intermediate shaft	WECS supplies a fuel command feedback as load signal to the RC system
VIT, VEC	Functions provided in RC system	Functions (plus VEO) included in WECS
Wiring from engine to external	Individual cables	Bus-system

- **Drastic smoke reduction at part load**
- **Possibilities to reduce emissions**
- **Reduced fuel consumption at part load**
- **Lower minimum engine speed**
- **Better manoeuvrability**

## Wärtsilä 6 RT-flex58T-B MV Gypsum Centennial Smoke measurement on combinator curve during sea trials

