STORK
A Fluor Company

VP INSTRUMENTS

Energy savings at a glass factory

By insertion flow meters combined with compressor controls

Introduction

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VPInstruments offers industrial clients Energy Management Solutions for compressed air, technical gases as well as other utilities.

> 20 years experience

Compressed air in glass industry

Critical utility for production

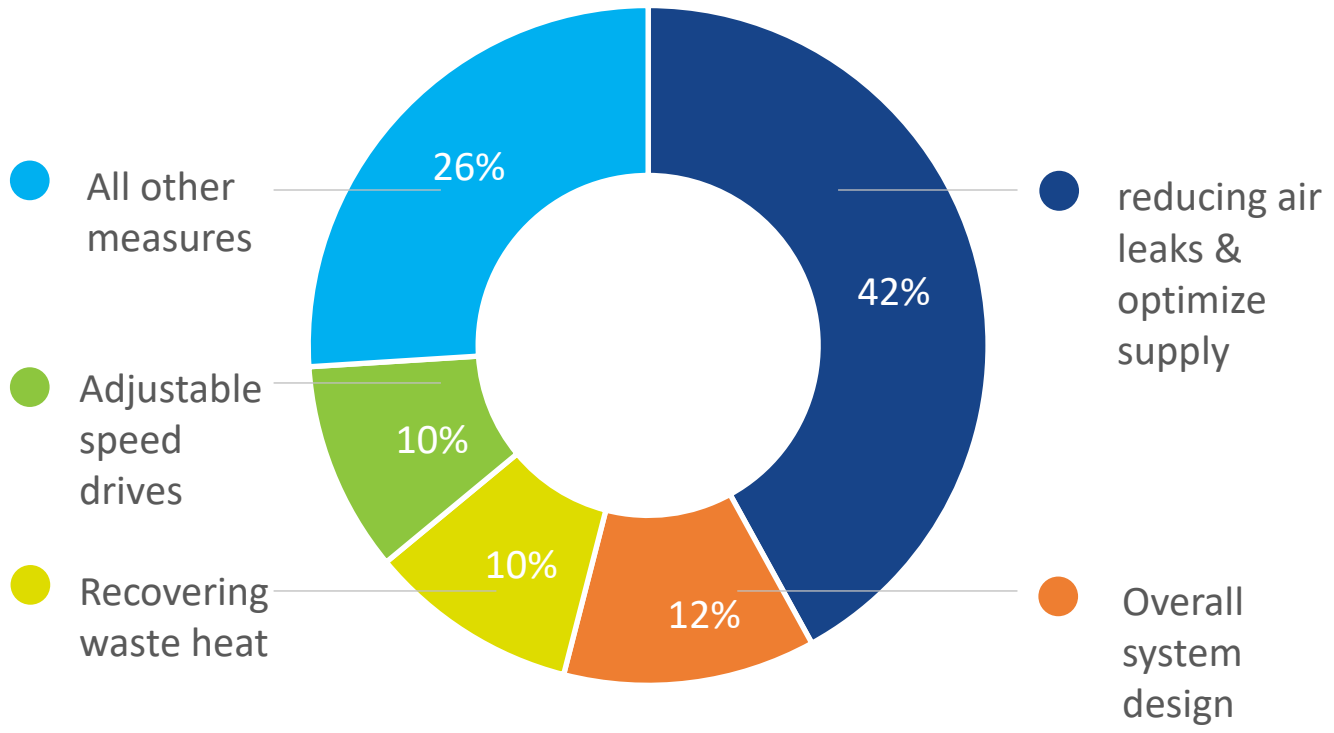
Up to 30% of electricity costs

Savings potential up to 50%

Pressure band width is critical:

- Quality of glass
- Continued production

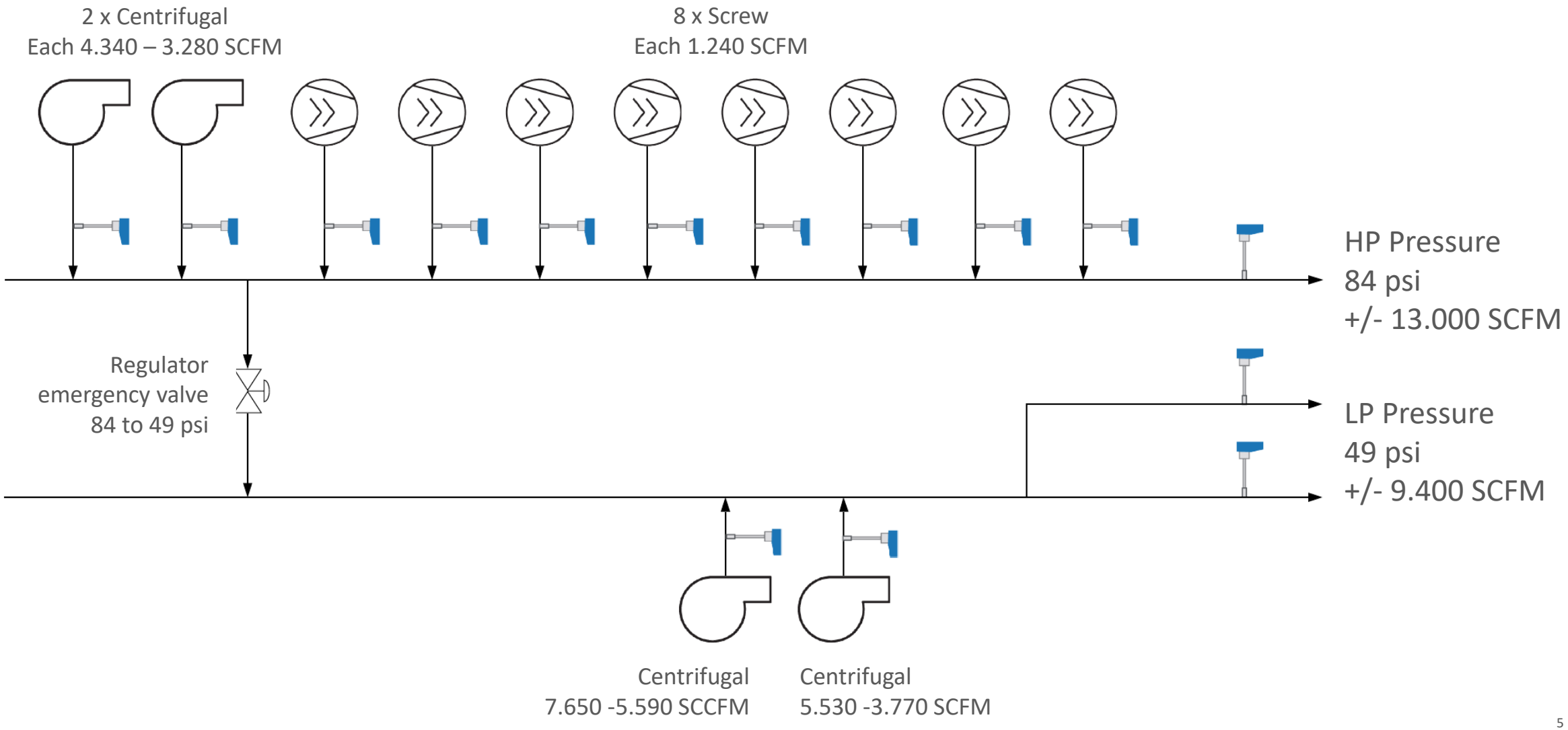
Major energy saving measures



Compressed air system lay out

Low pressure	@ 49 psi	av. consumption 9.400 SCFM
High pressure	@ 84 psi	av. consumption 13.000 SCFM

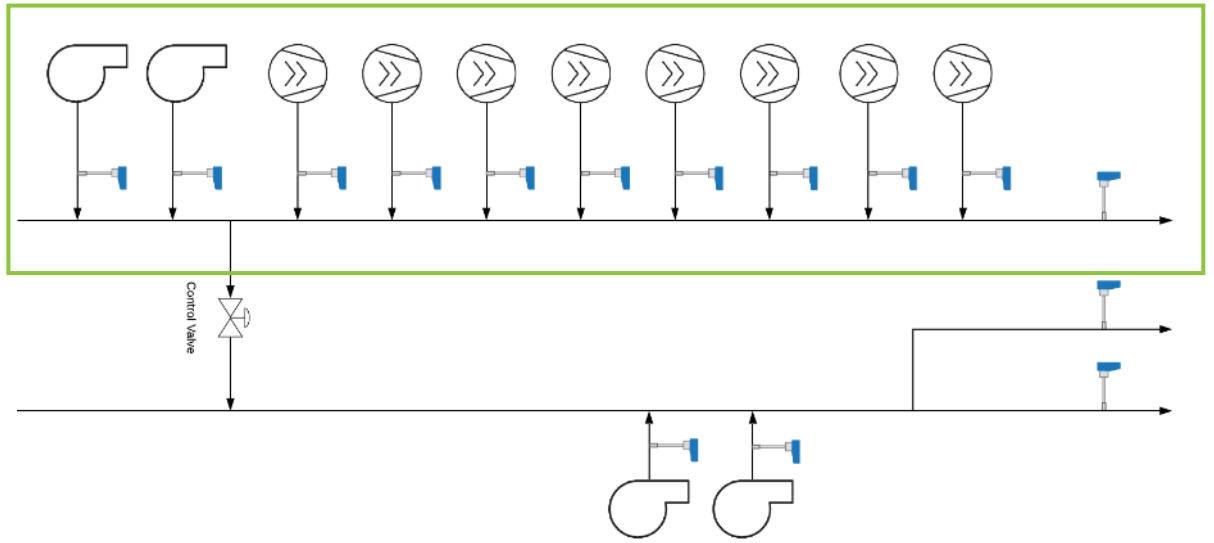
Compressor room lay out - before



Before implementation

High pressure system:

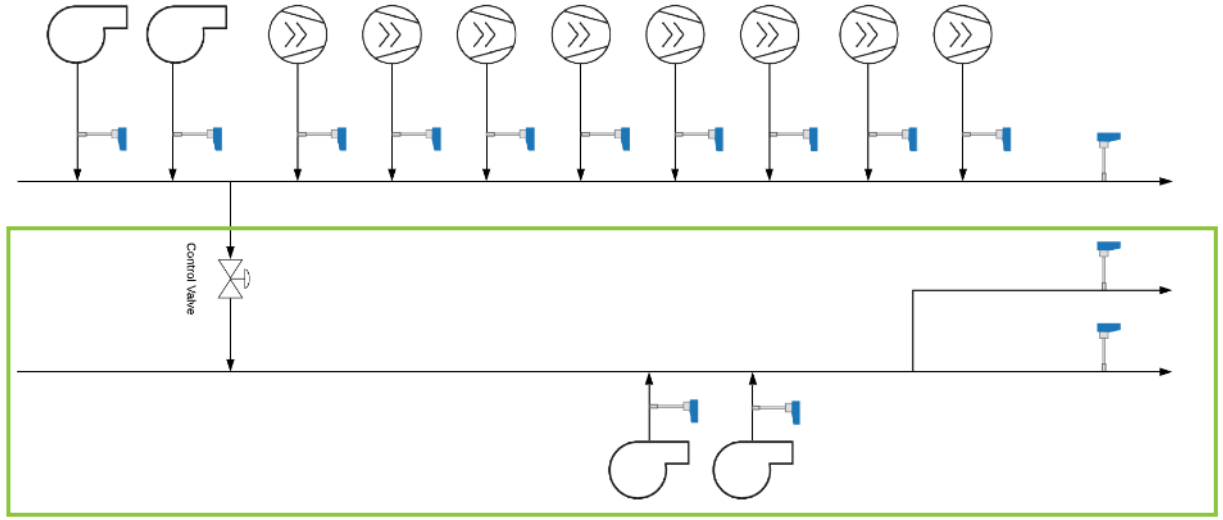
- Both centrifugal air compressors always running full load.
- Screw compressors started @ 84 psi: resulting in pressure fluctuations: 81,75..85,40 psi.
- Unloaded hours on screw compressors.
- Emergency regulator: only activated when pressure drops in LP system to 46,7 psi.
- Flow meters installed in 2013 + only for indication: observe flow/HP/h consumption.



Before implementation

Low pressure system:

- LP compressor: maintaining 49 psi in main header.
- Compressors running without communications but on same system pressure transmitter.
- No loadsharing.
- Occasional blow off.

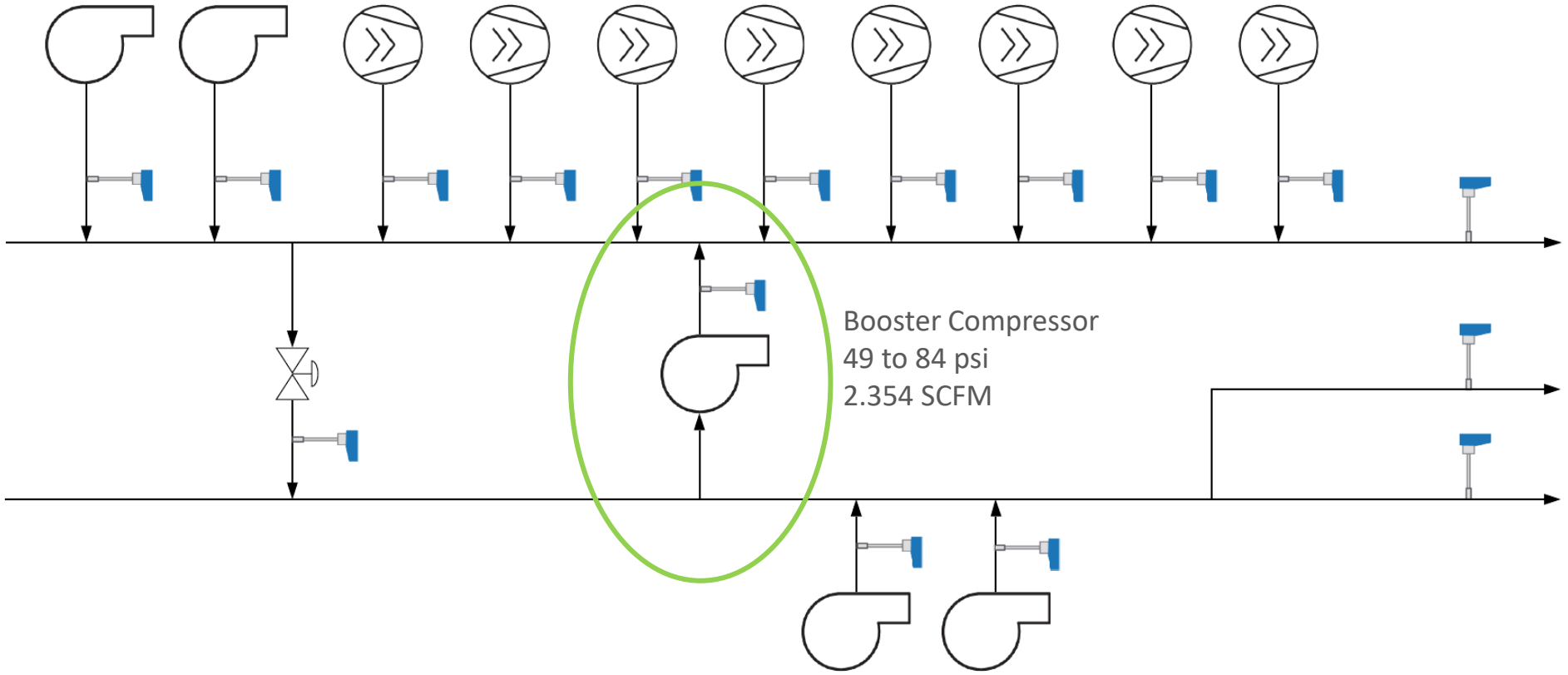


How do we add value

- ✓Install & connect flow meters
- ✓Install booster compressor
- ✓Modify regulator valve
- ✓Install Master controller

Energy savings !

Compressor room lay out - improvements

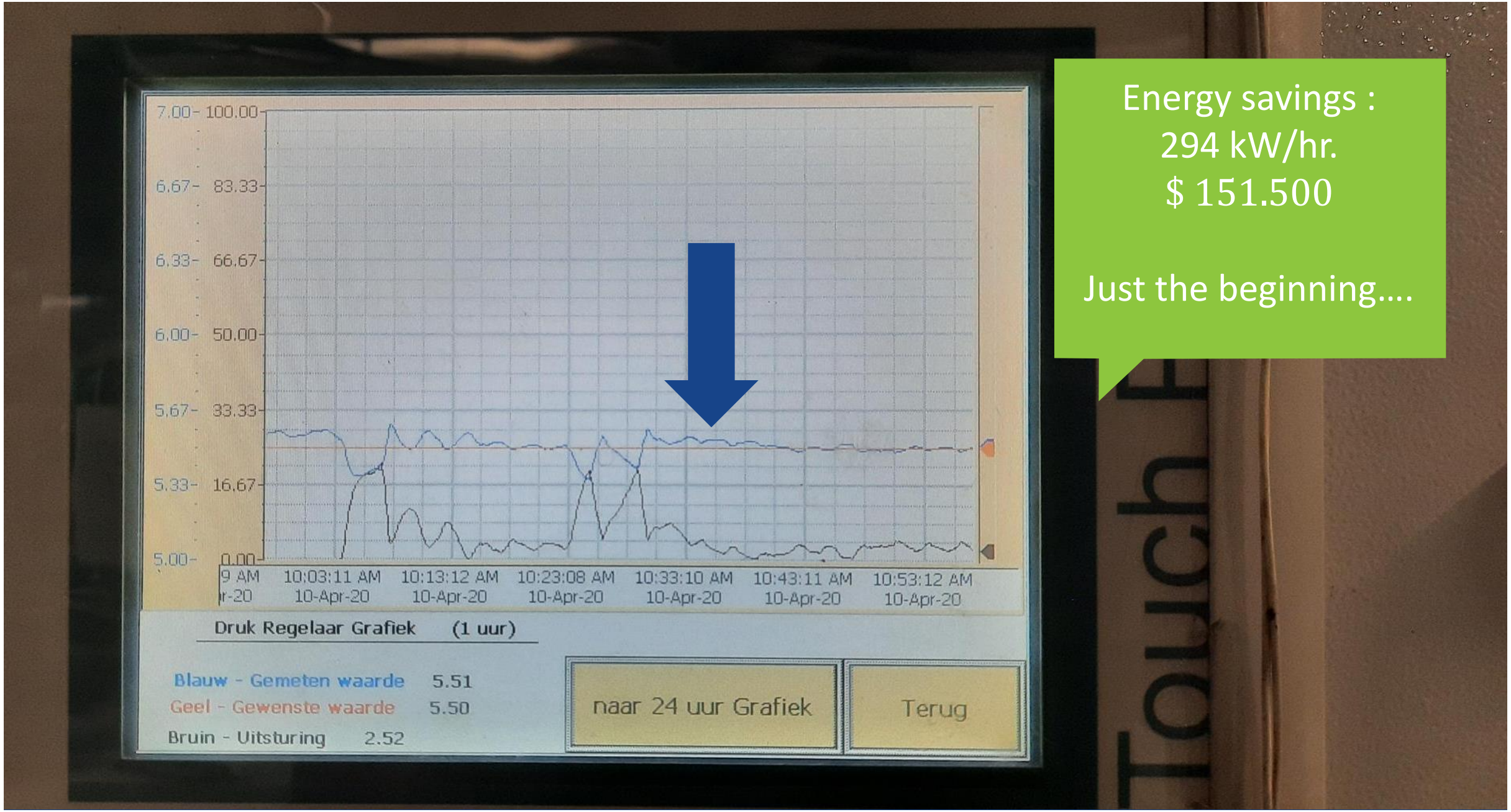


Requirement from customer

- LP system is most critical. Pressure 49 psi. Dev. +/- 0.7 psi.
- Energy savings @ maximum when booster compressor is running full load.
- Energy savings @ maximum when screw compressors are only running full load.
  (implemented at phase 2)
- When one of the low pressure units trips actions:
  - Booster should unload and stopped.
  - Screw compressors starts up depending on the needed flow.
  - Emergency regulator valve should open to maintain the low pressure.

1st Phase implementation results

- Installation centrifugal booster : capacity 2.354 SCFM.
  - Booster feeds the HP system: 2 screw compressors are not needed
- Rebuild LP + HP compressors to a new control system including load sharing.
- Rebuild existing control from emergency control valve to Stork controller.
- Use flow meters to control demand to booster.


7.00- 100.00
6.67- 83.33
6.33- 66.67
6.00- 50.00
5.67- 33.33
5.33- 16.67
5.00- 0.00
9 AM
r-20
10:03:11 AM
10-Apr-20
10:13:12 AM
10-Apr-20
10:23:08 AM
10-Apr-20
10:33:10 AM
10-Apr-20
10:43:11 AM
10-Apr-20
10:53:12 AM
10-Apr-20
Druk Regelaar Grafiek (1 uur)
Blauw - Gemeten waarde 5.51
Geel - Gewenste waarde 5.50
Bruin - Uitsturing 2.52
naar 24 uur Grafiek
Terug
Energy savings :
294 kW/hr.
$ 151.500
Just the beginning….

THANK YOU!

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easy insight into energy flows™

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